

ICPC 2019

WORLD

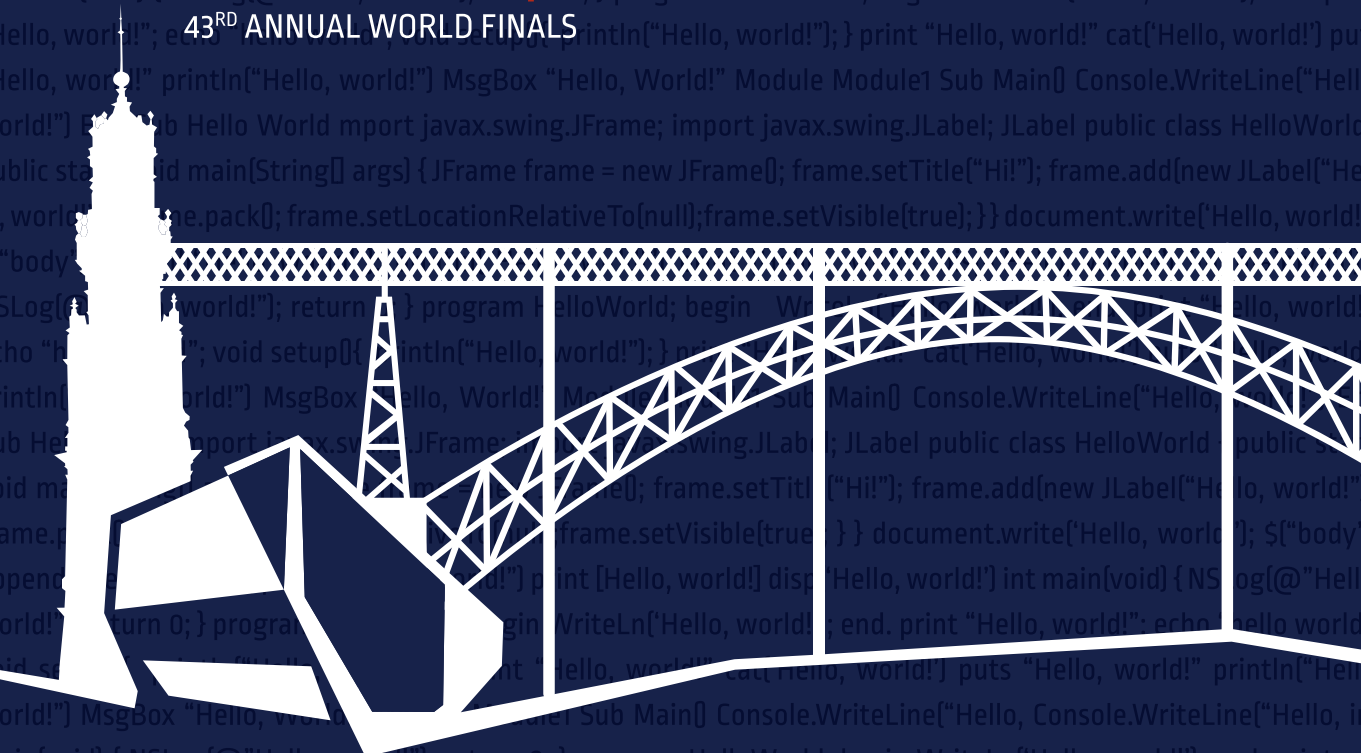
FINALS

hosted by University of Porto

Porto, Portugal

31 Mar — 5 Apr

43RD ANNUAL WORLD FINALS





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01

WELCOME



WELCOME FROM

the Rector of the University of Porto

The University of Porto and I are delighted to welcome the university teams of the 43rd Annual World Finals of the International Collegiate Programming Contest (ICPC).

It is very gratifying for the University of Porto to host the oldest, largest, and most prestigious programming contest in the world. Besides that the event is held in our country and has a Portuguese team for the first time, so we have extra reasons to be proud and honoured.

The ICPC is an event that improves the relations between students and institutions of higher education of different countries; develops the digital competencies of the players; captures the interest of a public at the forefront of scientific and technological knowledge; and serves as an interface between academia, community and industry.

It is also an excellent opportunity for international promotion of the city of Porto and its University. We have the privilege to host highly qualified young people with special talent in an area of great scientific, economic and social potential, such as computer programming.

We're going to do everything within our reach to make sure that all students, coaches, team attendants and other members of each team have a pleasant stay in Porto. I'm sure the University of Porto will honour the hospitality tradition of our city, which is known for the warm way it receives its visitors.

Porto is also full of surprises. In our historic city visitors can find traces of the roman period; the World Heritage riverfront medieval district; many works of art from the Romantic and Baroque styles; neo-classical and neo-gothic buildings; some of the finest contemporary architecture; and the monumental bridges linking the margins of the Douro River.

Regarding the University of Porto, it was formally established on the 22nd of March 1911, but indeed its origins date back to the 18th century. Today it is the second largest Portuguese university. With more than 30,000 students, the University of Porto is made up by 14 faculties covering all major areas of knowledge. We are also the academic partner of a business school, in association with the major companies and institutions of the region.

The University of Porto has 49 certified research units and 9 major interface institutes, being responsible for more than 20% of the Portuguese scientific production indexed in the Web of Science. Several indicators of academic quality show a continuous progress along the years, and particularly a consolidated reputation nationally and at international level.

I would like to invite all participants at the 2019 ICPC to enjoy the architectural heritage and the cultural and human wealth that our city and university have to offer.

A handwritten signature in black ink, which appears to read 'António de Sousa Pereira'. The signature is fluid and cursive, with a long horizontal stroke at the end.

ANTÓNIO DE SOUSA PEREIRA

Rector of the University of Porto



WELCOME FROM

the Mayor of Porto

Dear ICPC Finalists,

You've come a long way to be here. You raised the bar, challenged yourselves and overcame many obstacles. Your endurance brought you here.

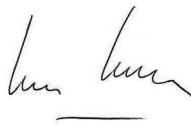
You're just one step away to become champions, but as cliché as it may seem, you are winners already. You are the ones that will be shaping the future of technology and developing the most amazing innovations. It is with great pleasure that we host you in our city.

Knowledge, innovation and technology are central in Porto's strategy. The city is committed in working together with academia, tech communities, industry, startups and scaleups to develop a competitive tech ecosystem. Porto is home to hundreds of startups and scaleups, tens of thousands of higher education students, many international tech companies and dozens of R&D centers.

During your stay, you'll find that we have uncommon safety levels, high quality of life and a vibrant culture. But take your time: we encourage you to try and look deeper. With state-of-the-art knowledge being produced by our academia, a strong pool of talented engineers and managers and a growing local investors network, this is much more than a welcoming city.

Porto is known as the 'Invicta', for it was never conquered during the Portuguese civil war and withstood a siege for over a year. There is a tenacity and perseverance which are part of our DNA. You too have the kind of endurance that characterizes Porto and its people. You can only find yourselves as part of this city, during your stay and, obviously, when you return. Yes, we know you will!

Welcome to Porto!

A handwritten signature in black ink, which appears to be "Rui Moreira". The signature is written in a cursive style with a horizontal line underneath.

RUI MOREIRA

Mayor of Porto



WELCOME FROM

the 2019 ICPC World Finals Director

Dear Participants, Colleagues and Friends,

It is a privilege and honour for me to welcome you to the 43rd International Collegiate Programming Contest (ICPC) World Finals in Porto, Portugal, as well as to welcome you to the University of Porto and the city of Porto that I hope you will discover and enjoy.

A very large number of students, coaches, regional contest directors, judges, and many others, have worked tremendously over the year to prepare and excel on the preliminary regional contests that lead to the World Finals. We are grateful for their wonderful work. A special word of welcome and recognition goes to the 135 teams that qualified to the 2019 World Finals. They already are champions, based on merit, given the competitiveness and difficulty of the qualifiers they had to go through.

For 22 years, teams from the University of Porto have been participating very successfully in the South-Western European Regional Contest (SWERC), an event that we have organized five times, which gave us the experience and endurance to host the World Finals. Our faculty, from both the Faculty of Sciences, Computer Science Department, and Faculty of Engineering, Informatics Engineering Department have embraced competitive programming as a motivational vehicle for students to develop problem-solving skills, critical thinking, and teamwork strategies, among others skills that will highly impact their future professional careers.

The University of Porto is privileged to host the 2019 ICPC World Finals at the Alfândega Congress Centre located in the historic city centre by the Douro River. In this beautiful historic building, we have prepared a lively entertainment program to enable all our guests and local community to enjoy the World Finals, including areas for technology showcase and a special chill zone. We thank the Municipality of Porto, Tourism of Portugal, and CCDR-N, as well as our host friends for their gracious support and partnership. A special commendation is due to the local staff team, who worked relentlessly to organize a successful event.

Finally, I would like to wish a very successful World Finals to all participating students, colleagues, and friends, and hope that your time at Porto will be enjoyable and remembered.

A handwritten signature in black ink, appearing to read 'Fernando Manuel Augusto da Silva'.

FERNANDO MANUEL AUGUSTO DA SILVA

Vice-Rector, University of Porto

2019 ICPC World Finals Director



WELCOME FROM

the ICPC Foundation President

Welcome to the 2019 ICPC Porto World Finals hosted by the University of Porto!

This year, ICPC Regional Competitions hosted 52,709 team members and their 5,043 coaches at the 3,233 universities in 110 countries at 653 sites. From this crucible, 135 teams have advanced to the 2019 ICPC World Finals here in Porto. Outstanding coaching, regional leadership, and over 5,000 volunteers made this happen globally!

Congratulations to you, the 2019 ICPC World Finalists! Your team outperformed 99% of the teams who challenged you to do your best. You are champions all, competing to do your best, once again, competing to earn medals – bronze, silver, and gold – and vying to make the “2019 ICPC World Champions” prove their worth! One team will take the trophy home. Your commitment to excellence made that trophy precious.

I would like to thank University of Porto Rector António de Sousa Pereira and professors Fernando Silva and José Paulo Leal, World Finals Director and World Finals Deputy Director, for their extraordinary support.

They are the champions of bringing ICPC 2019 to Porto.

Thank you, JetBrains, the official ICPC Programming Tools Global Sponsor. JetBrains is the quintessential ICPC alumni company. They are the ICPC Gold Global Sponsor, supporting the ICPC globally, regionally, and ICPC 2019 Porto.

Thanks go to our ICPC Regional Sponsors. Huawei has sponsored ICPC Europe, Two Sigma has sponsored ICPC North America, and Endure Capital has sponsored Africa & Middle East. JetBrains sponsored all regionals and was principal sponsor of ICPC Latin America. Thank you RDI Group for your advocacy in ICPC Northern Eurasia. Thanks to all. It takes steadfast institutional commitment to serve a global community. The UPE Honor Society has participated for 50 years since the very first competition in 1970. Baylor University has Hosted ICPC Headquarters and supported regional contests for 35 years. They make global impact possible.

With the combined forces of the 2019 ICPC Porto volunteers and ICPC Global Headquarters headed by Jeff and Lisa Donahoo, we look forward to see what the best ICPC teams ever do in the crucible of the most demanding ICPC Judges ever! Together, we are truly, ICPC Global.

Best Wishes from the ICPC family, from 320,000 ICPC Alumni, the ICPC Foundation, and me!



WILLIAM B. POUCHER

ICPC Foundation, President
Baylor University, Professor of Computer Science



WELCOME FROM

the ICPC Deputy Executive Director

It is with great pleasure that I welcome you to the 43rd Annual World Finals of the ICPC International Collegiate Programming Contest, hosted by the University of Porto. We are here today on the banks of the beautiful Duoro River in one of the oldest cities in Europe and a UNESCO World Heritage Site to celebrate you – the world’s top collegiate problem solvers – and the global community that has been faithful in cheering for you.

You are the champion of champions. You are the problem solvers who will make history and improve the lives of generations to come. You have persevered through extraordinary circumstances, mastered the art of collaboration, and dedicated yourselves to the pursuit of excellence. The work you do here will set the standard for students of computing for years to come. By solving some of the most challenging problems in ICPC World Finals history, you will transform the “impossible” into the achievable. What better place could we be than Porto to celebrate your excellence than this gamma-level global city, recognized as a world leader in economic networking?

Porto is a city immersed in a heritage of creativity: Creativity in architecture, as evidenced by its stately bridges, the Livraria Lello, the Cais da Ribeira, the Palacio de Bolsa, and the beautiful Alfândega Porto Congress Centre, in the heart of Porto’s city center. Creativity in the arts, as shown by the beautiful murals exhibited all throughout the city, the multitude of galleries lining the Rua Da Miguel Bombarda, and the unparalleled craft of the many port wineries lining the banks of the majestic Duoro River. Creativity in problem-solving, as evidenced by the way community, academia and industry have all collaborated to make the 2019 World Finals a distinctive experience you, the world’s brightest students of computing, will never forget.

This year’s ICPC contests included over 50,000 of the most outstanding students and over 5,000 dedicated coaches from over 3,000 universities. Through your dedication to excellence and uniquely forged solutions, you are shining a bright spotlight on yourselves, your families, your coaches, and your universities. You are the true heroes, and the ICPC is proud of all you have and will accomplish.

I’d like to offer a personal word of thanks to the ICPC volunteers, particularly those from the University of Porto, who have made planning and executing the 43rd World Finals labor of love for over a year. Your hospitality will not soon be forgotten. You are the community that allows our amazing 135 teams to discover the possibilities within.

Best wishes to all of you in the contest!

A handwritten signature in black ink, appearing to read "Michael J. Donahoo".

MICHAEL J. DONAHO

ICPC Deputy Executive Director

Executive Director of the World Finals



WELCOME FROM

Executive Director of UPSILON PI EPSILON

On behalf of UPE, I would like to welcome the student teams and their coaches, ICPC support personnel, and guests to Porto, Portugal for the 2019 ICPC World Finals. This competition is truly a significant event for all of us in UPE as we are again privileged to recognize the World's best and brightest students in the computing and information disciplines. The ICPC World Finals is always an exciting time for UPE as we strive and continue to expound on the primary mission of the ICPC as "an extra-curricular, competitive programming sport of the universities of the world."

The ICPC will show to the world that we can provide new venues for our participating students so they can be recognized as the best of the best in the globally-competitive world of computing. We wish to encourage everyone to experience as much of the Porto environment as they possibly can with the knowledge that this city is the academic and cultural center of Portugal.

Finally, I take the opportunity to say muito obrigado to our hosts and sponsors, especially the icpc.foundation, Jet Brains, Huawei, and Baylor University who have all collaborated successfully to ensure the success of the 2019 ICPC World Finals.

Sincerely yours,

A handwritten signature in black ink that reads "Orlando J. Madrigal". The signature is written in a cursive style.

ORLANDO MADRIGAL

Executive Director of UPE



WELCOME FROM

Baylor University's Vice Provost for Academic Affairs and Policy

Dear ICPC participants,

I'm delighted to welcome you on behalf of Baylor University to the 43rd Annual International Collegiate Programming Contest World Finals.

We congratulate those of you who have qualified, through countless hours of diligent work, to compete as contestants and coaches. We're also very grateful to all of you who are contributing your expertise, time, and energy to administer the competition and make all the ancillary arrangements for the event.

We very much appreciate the hospitality and the commitment of other resources that have been contributed this year by the University of Porto. We're glad to have the opportunity to deepen our relationship with all of the individuals from this institution who are collaborating so generously with us in order to make this competition possible, and we know that this will be an unforgettable experience for all involved.

Being able to serve ICPC for 36 years has been a tremendous privilege for Baylor. Our institutional mission statement describes "educat[ing] men and women for worldwide leadership and service". The competitive process that culminates with the World Finals very much addresses these goals. As students solve programming challenges they necessarily develop the ability to lead in important ways. Even more importantly, they can become equipped to serve, as the tasks that they undertake in the competition are the types of problems that bear on the needs and potential for people throughout the world to flourish.

All of you who have gathered here, please accept our best wishes for a deeply rewarding time of competition and fellowship in Porto.

A handwritten signature in black ink, appearing to be 'JB' with a stylized flourish.

JAMES BENNIGHOF

Professor of Music Theory and
Vice Provost for Academic Affairs and Policy
Baylor University



WELCOME FROM

Baylor University's Vice Provost for Strategic Initiatives, Collaboration, and Leadership Development

Dear ICPC participants,

It is my pleasure to welcome you on behalf of Baylor University to the 43rd Annual International Collegiate Programming Contest World Finals in Porto, Portugal.

Congratulations to the 2019 finalists who represent the world's best and brightest students in the science of programming, and our sincere thanks to their coaches for their invaluable mentorship that led to this achievement. We are also grateful for all of those who committed their time and expertise to the regional competitions which included 52,709 contestants from 3,233 universities in 110 countries. Lastly, we would like to extend our deepest appreciation to those who have planned and prepared for well over a year, as well as to those who will work tirelessly during the competition, to make this ICPC World Finals the best yet.

ICPC is the oldest, largest, and most prestigious competition in computing science and engineering. It is a privilege to have ICPC headquartered at Baylor University and an honor to support of this commendable organization. In addition, we are grateful to the University of Porto for your hospitality in hosting extraordinary event.

We are excited to have the world's brightest students on the World Finalist teams, and our best wishes go out to each of them.



LORI E. BAKER

Vice Provost for Strategic Initiatives, Collaboration,
and Leadership Development
Baylor University



WELCOME FROM

ICPC Global Programming Tools and ICPC Latin America Sponsor

I am pleased to welcome you, on behalf of JetBrains, to Porto, Portugal, a city steeped in more than 2300 years of history, for the 43rd Annual ICPC World Finals.

Getting this far in the competition shows you already have the resolve and dedication it takes to accomplish great things. Your hard work through months of competition all cumulates here, with some of the brightest young minds from some of the World's best universities, making this the most prestigious programming competition of its kind. Congratulations!

But where would we all be without the passion and effort of the academic and computing communities who serve as team coaches, regional directors, and contest event supporters? They have dedicated so much of their time to making this event, and all the events leading up to this such a massive success. So first I would like to say an enormous "thank you" to all these individuals, for your passion, dedication, and commitment to developing the next generation of technology leaders.

The organizers have filled the week full of activities. I would like to recognize and thank the ICPC leadership and their staff of volunteers, and our hosts the University of Porto, who have all worked incredibly hard throughout the year to make this week an enjoyable and memorable one for all of you.

We have prepared a Tech Talk in the morning of April 1st for you, where we are delighted to be talking about Kotlin, our rapidly developing programming language which many of you may find yourselves using in the future.

We invite you to the JetBrains booth at the Tech Showcase, where you can come and have a talk with us about our technologies, tools, and Kotlin.

Also, in parallel with our Tech Talk, those of you who will be at the Tech Showcase area can play the game Kotlin Trail, which is a set of tasks to solve. Take the task checklist and the first task from the JetBrains booth, complete as many tasks as you can and you could win a prize!

This is it, this is the culmination of all you have been working toward. Weeks of effort, months of preparation, years of commitment and perseverance all to make the 2019 ICPC World Finals! You have already accomplished so much to be proud of. This is your time, something to go down in your history as an extraordinary life experience. So with that, we want to wish all of you the very best for this week. The memories that you will make during this exciting and momentous time will remain with you forever!

A stylized handwritten signature in black ink.

EUGENE TOPOROV

VP of Marketing
JetBrains



WELCOME FROM

ICPC Challenge and ICPC Europe Sponsor

It is an honor for me to welcome you, on behalf of Huawei European Research Institute, to Porto, for the 43rd Annual World Finals of the International Collegiate Programming Contest (ICPC).

You have worked hard and persevered through challenging competitions to make it to the World Finals. It's fantastic to see you all here! As ICPC Europe Gold sponsor, Huawei feels proud of and deeply appreciates the efforts of all contestants, organizers, and volunteers. Congratulations to you all!

Huawei European Research Institute is a research institute designed for the future. It focuses on the exploration of cutting-edge technologies in the world. Huawei has maintained a close partnership with ICPC. Our vision is to bring digital to every person, home and organization for a fully connected, intelligent world. To make this ambition a reality, we must inspire the passion and courage of the entire organization and all employees, and encourage them to innovate. This resonates with the very idea ICPC advocates – Encourage students to solve the most real-world problems, fostering collaboration, creativity, innovation, and the ability to perform under pressure.

As an international enterprise, Huawei operates in more than 170 countries and regions, helping to connect more than one third of the world's population. At the same time, we maintain productive partnerships with world-leading universities and research institutes. Our Huawei Innovation Research Program has been sponsoring innovations in the areas of communications, computer science, engineering, and other associated domains. The program now has over 1,000 partners around the world.

Scientists and recruiters from Huawei will be on location at the World Finals. We encourage those interested in Huawei's business, research work, internships or job opportunities to come and meet with us at Huawei booth.

We will be hosting a technical workshop in the morning of April 1. You will receive a small gift from Huawei if you attend the workshop and participate in discussions. On April 4, we will hold the ICPC Challenge powered by Huawei, and you can participate to win a prize! We are looking forward to meeting you.

Congratulations again to you and your partners for your fantastic achievement. I would also like to recognize and thank the organizers and volunteers who have all worked incredibly hard to make the event a complete success.

Finally, I would like to give our kind host, the University of Porto, our most heartfelt thanks.



DR. HONG ZHOU

President of European Research Institute
Huawei

WELCOME FROM

ICPC North America Sponsor

On behalf of Two Sigma, welcome to the 2019 International Collegiate Programming Contest (ICPC) World Finals in Porto, Portugal. We are thrilled to support the World Finals again and congratulate all those who have made it to this exciting competition.

Two Sigma is a different kind of investment manager that views the world through a technology lens. We partner with ICPC because we share the belief that programming competitions are an important way to encourage students to follow their passions and ultimately find fulfilling careers. Many of our hundreds of engineers launched their own careers through competitions like the ICPC. In fact, we proudly employ a number of ICPC alumni.

Two Sigma engineers and recruiters will be on location at the World Finals in Porto. We are looking forward to meeting ICPC contestants and encourage those interested in an internship or job opportunity to come meet with us.

Congratulations again to all those participating in the events this week. Two Sigma would also like to give special thanks to Baylor University, UPE, the ICPC Foundation and the University of Porto for their dedication to making the 2019 World Finals the best yet. Good luck!

TWO SIGMA TEAM



WELCOME FROM

ICPC Asia East Continent Sponsor

Welcome contestants from all over the world to participate in the 2019 Annual World Finals of the International Collegiate Programming Contest. It is a great honor for me to extend the welcome on behalf of the Jisuanke community. Jisuanke has deep connections with ICPC in that a large number of our faculty used to be the World Finals teams and the Asian Regional Contest Gold Medalists. We are proud of sponsoring the 2018 contests in China and being invited to the 2019 World Finals.

Jisuanke was born to bridge the gap between industry and academia for outstanding computer talents. We commit ourselves to providing online education for talents who aspire to excel in the computer science field in China and beyond. We also strive to train outstanding engineer and academic elites who will learn quickly, embrace change, and dare to discover.

In 2018, Jisuanke provided technical platform to support the ICPC Asia EC Regional Online Competitions and established a good cooperative relationship and model with the ICPC events in China. Jisuanke has served a great many Internet technology companies in China, provided platform of competition, and assisted companies in selecting excellent algorithmic talents, while building a bridge of mutual choice between enterprises and our students.

On behalf of the team of Jisuanke, I sincerely wish all contestants participating in the 2019 ICPC World Finals will exert the highest level during the competition and I would like to thank the University of Porto for its efforts to host this competition.

A handwritten signature in black ink, appearing to be the Chinese characters "杨斌" (Yang Bin).

YANG, BIN

Co-founder and COO
Jisuanke



WELCOME FROM

ICPC Africa & the Middle East Sponsor

On behalf of Endure Capital, it is an honour to welcome you to the 2019 ICPC 43rd World Finals in Porto. This is an exciting movement and we are proud to support the ICPC.

Firstly we would like to congratulate all the teams Coaches, and universities for reaching this far, this is the culmination of all the hard work, late night practising, university and regional competitions it took to get here. And for that, we congratulate you and hope you enjoy this moment.

Endure is a Venture Capital, based in Palo Alto, that invests in Early stage tech driven startups worldwide, and have so far been able to gather a very diverse portfolio filled with amazing companies tackling different issues such as ride-sharing, bio-printing, supersonic jets, and much more. We believe in the power of problem-solving and programming education, and to do that in a competition format engages the students even more and gives them a platform to showcase their talents and elevates their skillset. We have thousands of programmers between all the companies in our portfolio, with the number constantly increasing, and we believe that competitions like these play a vital part in job and talent generation.

We want to congratulate the organizing team and all those who worked hard to make this event possible. It's amazing to see how movement keeps growing year after year.

Finally Good luck to all the teams again, you all deserve to be here, now enjoy this moment.

TARIQ FAHIM

Managing Partner, Endure Capital

MOHAMED HOSSAM

Partner, Endure Capital

WALEED KHALIL

Partner, Endure Capital



WELCOME FROM

ICPC South Pacific Sponsor

Computer programmers change the world. From helping map the human genome and creating software that improves the treatment of illness, to putting encyclopaedias worth of knowledge into our pockets, and sending us to space.

Each new piece of code links together to create a chain of innovation that strengthens as it grows, driving and shaping the world around us.

Computer programmers are change-makers that fuel innovation and technology. They are changing the world.

Technology is at the forefront of everything we do at WiseTech Global, which is why we're proud to be involved with the International Collegiate Programming Contest. Each year, teams of programmers come together from around the world to compete in this highly prestigious global event, giving us the opportunity to see curious and talented minds at work, and we expect this year to be no different.

At WiseTech, our innovations and global technology enable, improve and empower the world's supply chains, which can only be built by programmers like yourselves, who connect the unconnected and challenge the status quo. This competition is the beginning of an exciting and remarkable future. We look forward to seeing how you change the world.

A handwritten signature in black ink that reads "Richard".

RICHARD WHITE

Founder and CEO
WiseTech Global



02

ABOUT THE CONTEST



THE 43RD ANNUAL WORLD FINALS OF THE INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST (ICPC)

Hosted by the University of Porto & the City of Porto
Porto, Portugal, 31 March – 5 April, 2019

The International Collegiate Programming Contest (ICPC) is the premiere global programming competition conducted by and for the world's universities. The ICPC is affiliated with the ICPC Foundation, enjoys the auspices of the ICPC Foundation, and is headquartered at Baylor University. For over four decades, the ICPC has grown to be a gamechanging global competitive educational program that has raised aspirations and performance of generations of the world's problem solvers in the computing sciences and engineering.

In ICPC competitions, teams of three students represent their university in multiple levels of regional competition.

Volunteer coaches prepare their teams with intense training and instruction in algorithms, programming, and teamwork strategy. Several ICPC universities and ICPC volunteers provide online judging systems to all free of charge. Top teams from regional competition advance to the final round. This year's regional competitions will advance teams to the World Championship round – the 2019 ICPC World Finals hosted by the University of Porto and the City of Porto – which will be conducted on 4 April 2019 in Porto, Portugal.

The ICPC traces its roots to a competition held at Texas A&M in 1970 hosted by the Alpha Chapter of the UPE Computer Science Honor Society. The idea quickly gained popularity within the United States and Canada as an innovative initiative to raise the aspirations, performance, and opportunity of the top students in the emerging field of computer science.

The contest evolved into a multi-tier competition with the first Finals held at the ACM Computer Science Conference in 1977. Operating under the auspices of the ICPC Foundation and headquartered at Baylor University since 1989, the contest has expanded into a global network of universities hosting regional competitions that advance teams to the ICPC World Finals.

In the past 20 years alone, ICPC participation has increased by more than 2000%. Last year, ICPC Regional participation included 52,709 of the finest students and faculty in computing disciplines from 3,233 universities in 110 countries on six continents. A record 53,446 students and 5,411 coaches competed in ICPC and ICPC-assisted competitions last year, setting new records in participation.

The contest fosters creativity, teamwork, and innovation in building new software programs, and enables students to test their ability to perform under pressure. Quite simply, it is the oldest, largest, and most prestigious programming contest in the world.

The annual event is comprised of several levels of competition:

- **Local Contests** – Universities choose teams or hold local contests to select one or more teams to represent them at the next level of competition. Selection takes place from a field of over 300,000 students in computing disciplines worldwide.
- **Regional Contests** – In last year's regionals, 52,709 contestants from 3,233 universities in 110 countries on six continents competed at over 530 sites to advance to the World Finals.
- **World Finals 31 March – 5 April, 2019** in Porto, Portugal – Hosted by the University of Porto and the City of Porto, the World Finalist teams will compete for awards, prizes, and bragging rights. These teams represent the best of great universities on six continents – the cream of the crop.



BATTLE OF THE BRAINS

The contest pits teams of three university students against eight or more complex, real-world problems, with a grueling five-hour deadline. Huddled around a single computer, competitors race against the clock in a battle of logic, strategy, and mental endurance.

Teammates collaborate to rank the difficulty of the problems, deduce the requirements, design test beds, and build software systems that solve the problems under the intense scrutiny of expert judges. For a well-versed computer science student, some of the problems require precision only. Others require a knowledge and understanding of advanced algorithms. Still others are simply too hard to solve – except, of course, for the world’s brightest problemsolvers.

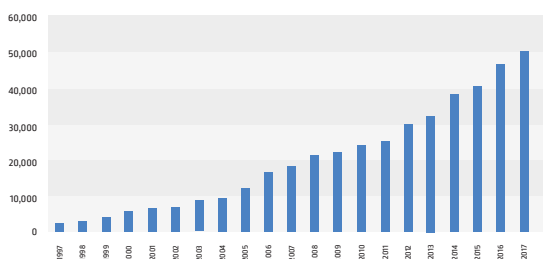
Judging is relentlessly strict. The students are given a problem statement – not a requirements document. They are given an example of test data, but they do not have access to the judges’ test data and acceptance criteria. Each incorrect solution submitted is assessed a time penalty. You don’t want to waste your customer’s time when you are dealing with the supreme court of computing. The team that solves the most problems in the fewest attempts in the least cumulative time is declared the winner.

To learn more about the ICPC, please visit icpc.global. For full coverage of the World Finals including social media, photos, video, live coverage, and live scoreboard go to ICPCNews, icpcnews.com.

CONTEST GROWTH

The ICPC Foundation, UPE, and Baylor University are thrilled that the contest continues to attract the best and brightest students from around the world. This year 52,709 contestants from 3,233 universities in 110 countries competed in regional competitions at over 530 sites worldwide. The ICPC student participation has increased by 20X in 20 years. For more information on previous contests, and last year’s final standings and problem sets, please see icpc.global.

ICPC – Student Participation





WORLD FINALS 2019 HOSTED IN PORTO, PORTUGAL – the final round following the 2018 Regionals

Teams from regional contests servicing universities worldwide will advance to the World Finals to be held in Porto, Portugal, 31 March – 5 April, 2019. The 2019 World Finals is hosted by the University of Porto and the City of Porto.

Recent medal winners in order of finish are:

2018 BEIJING – CHINA

GOLD

Moscow State University
Moscow Institute of Physics & Technology
Peking University
The University of Tokyo

SILVER

Seoul National University
University of New South Wales
Tsinghua University
Shanghai Jiao Tong University

BRONZE

St. Petersburg ITMO University
University of Central Florida
Massachusetts Institute of Technology
Vilnius University
Ural Federal University

2017 RAPID CITY – USA

GOLD

St. Petersburg ITMO University
University of Warsaw
Seoul National University
St. Petersburg State University

SILVER

Moscow Institute of Physics & Technology
Tsinghua University
Peking University
Fudan University

BRONZE

KAIST
Ural Federal University
KTH - Royal Institute of Technology
The University of Tokyo

2016 PHUKET – THAILAND

GOLD

St. Petersburg State University
Shanghai Jiao Tong University
Harvard University
Moscow Institute of Physics & Technology

2015 MARRAKECH – MOROCCO

GOLD

St. Petersburg National Research University ITMO
Moscow State University
The University of Tokyo
Tsinghua University

2014 EKATERINBURG – RUSSIA

GOLD

St. Petersburg State University
Moscow State University
Peking University
National Taiwan University

2013 ST. PETERSBURG – RUSSIA

GOLD

St. Petersburg National Research University ITMO
Shanghai Jiao Tong University
The University of Tokyo
National Taiwan University

ORGANIZERS



ABOUT THE ICPC FOUNDATION

The ICPC Foundation is a 501(c)(3) organization founded to advance the art and sport of competitive programming for the benefit of society. The foundation is responsible for ICPC sponsorship, fundraising, outreach, and operational matters. The ICPC Foundation strives to provide ample opportunity for the underserved, to create a tier of regional championships to recognize far more star performers and showcase emerging talent, and to bring ICPC alumni together, assuring future generations paths of excellence to being great problem solvers. The ICPC Foundation is actively engaged in creating equal opportunities for women or other underrepresented groups to pursue excellence within a culture of global inclusion and authenticity. For more information about the ICPC and the ICPC Foundation visit icpc.foundation.



ABOUT THE UNIVERSITY OF PORTO

The University of Porto is the most sought-after university in Portugal and one of the top 150 universities of Europe. Close to 32,000 students and 2,000 teaching and research staff attend its 14 faculties, one business school and nearly 50 research units, covering the whole fields of knowledge and all levels of higher education.

Representing itself as a leading research university, the University of Porto is responsible for almost 25% of all Portuguese scientific production and for some of its greatest innovations. The Science and Technology Park of the University of Porto, with its 180 startups, is the center of Porto's innovation ecosystem, considered one of the strongest in Europe.

Embedded in a city classified as a UNESCO World Heritage Site and elected as Best European Destination for the third time in five years, the University of Porto offers a vibrant and multicultural environment, to which close to 6,000 international students, comprising 100 nationalities, contributes each year. Learn more at www.up.pt.

Porto.

ABOUT THE CITY OF PORTO

Porto is one of the oldest cities in Europe. Unique, hospitable and cosmopolitan, the city of Porto is situated in the north of Portugal. It is the second largest city in the country, with approximately 237,000 inhabitants and, in total, the district of Porto has 1,300,000 inhabitants. It lies in a very special geographical setting, between the river and the sea, and can easily be described as the amphitheatre overlooking the Douro River, beside which it was born and presides.

It is impossible to consider Porto's history without referring back to prehistoric times. Paleolithic Age engravings over twenty thousand years old found on the rock faces in the city of Foz Côa, a city bathed by the Douro River and located in the highland winemaking region of Alto Douro, attest to human settlement in this area. These findings led to the creation of the largest open-air rock face engraving museum in this city, the Museu do Côa, at the site of the crossing point between the Douro River and Côa. However, historical reports allege that the city of Porto dates back to Roman times, more specifically to the 8th Century B.C., at a time when it was named Cale or Portus Cale, the origin of the name of Portugal. Celtic ruins have also been found in Porto, proving that the city attracted a variety of settlers, each different group contributing to the city's development on the granite hillsides, along the river banks. Thanks to its fierce resistance during two battles and sieges in history, it has earned the epithet of 'Cidade Invicta' (Invincible City). For more information www.porto.pt.



BAYLOR
UNIVERSITY
ICPC HEADQUARTERS

BAYLOR UNIVERSITY'S COMMITMENT

Baylor University has been the home of the ICPC since the late 1980s, where it has been managed under the direction of Executive Director and Professor, Dr. William Poucher, with global enterprise technology development headed by Dr. Jeff Donahoo, Deputy Executive Director. The ICPC contributes to Baylor's global mission to encourage the next generation to develop and apply their problem-solving talents to the challenges that face the world today and the world to come. Chartered by the Republic of Texas, Baylor is the oldest institution of higher learning in the State of Texas.

You may find more about Baylor at baylor.edu.



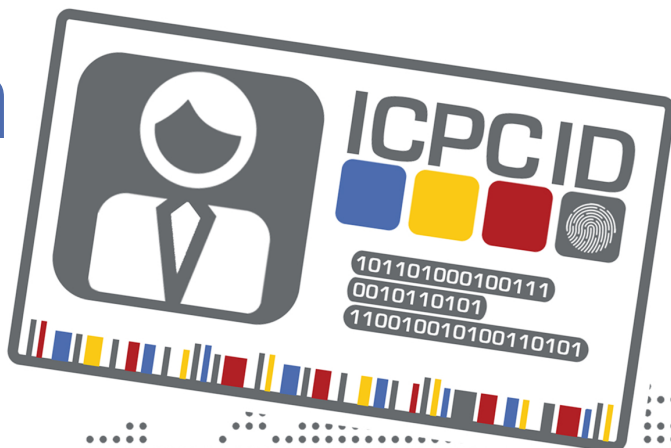
UPSILON PI EPSILON'S COMMITMENT

The Upsilon Pi Epsilon International Computer Science Honor Society recognizes the best students of computer science and engineering in the world. Since its earliest participation, the UPE has provided support and scholarships to the World Finals teams. The UPE boasts the longest continuous relationship to the ICPC, dating back to 1970 with the first event held at Texas A&M by members of the Alpha Chapter of the UPE. For more information about other UPE activities, its chapters, and its membership click on upe.acm.org.

Show the world your ICPCID!

ICPCID is an official record of your verified participation as an ICPC contestant, coach, or volunteer. By default, nobody can see your ICPCID. Activating your ICPCID will allow everybody to see your ICPC history at icpc.baylor.edu. Once activated, you can share your ICPCID URL to show your accomplishments.

Distinguish yourself.



Activate your ICPCID today!

Visit bit.ly/start_ICPCID



2019 WORLD FINALS RULES

MISSION

The International Collegiate Programming Contest (ICPC) provides college students with opportunities to interact with students from other universities and to sharpen and demonstrate their problem-solving, programming, and teamwork skills. The contest provides a platform for industry, and academia to encourage and focus public attention on the next generation of computing professionals as they pursue excellence (from the ICPC Policies and Procedures).

INTRODUCTION

The contest is a two-tiered competition among teams of students representing institutions of higher education. Teams first compete in Regional Contests, held around the world from September to December each year. The winning team from each Regional Contest advances to the International Collegiate Programming Contest World Finals, typically held between March and June. Additional high-ranking teams may be invited to the World Finals. Up to 135 teams will be invited. These rules are subject to change.

ORGANIZATION

The ICPC is organized according to the ICPC Policies and Procedures. The Executive Committee, chaired by the Executive Director, sets the policy and general rules for the conduct of the contest. The Executive Director is solely responsible for interpreting the rules and for ruling on unforeseen situations.

WORLD FINALS SITE AND DATES

The 2019 World Finals will be held in Porto, Portugal, March 31 – April 5, 2019, hosted by University of Porto. The World Finals and most associated events are planned to be in the Alfândega Porto Congress Centre.

TEAM REQUIREMENTS

Teams qualify to advance to the World Finals through Regional Contests. Only one team from a given institution may advance to the World Finals. No team member on the qualifying team may have competed as a contestant in two previous World Finals.

The coach of a qualifying team is the point-of-contact before and during World Finals activities. A contestant of a team may not serve as the coach. The coach must complete certification at the Team Certification Web Site within five (5) business days of notification. Qualifying teams will be invited by email and postal mail (if requested) soon after completing certification.

All team members who are attending the team's institution on visas must have permission to return to their destination after the World Finals. Qualifying teams requiring visas must initiate the process of applying for visas within 10 business days of being invited to apply for a visa. Teams failing to comply with any of these requirements will be ruled ineligible to compete in the World Finals. Upon completion of these requirements, a qualifying team will be advanced to the World Finals.

A team advancing to the World Finals will be comprised of the same three members as when it qualified. (Reserves are not allowed at the Finals.) If a team member is unwilling, unable, or unfit to compete in the World Finals, the coach must notify the manager in a timely manner. A team member who is unwilling or unfit to compete in the World Finals will be disqualified from further ICPC competitions. The team member may appeal disqualification to the Appeals Committee.



At on-site registration, participants must provide picture ID (passport, driver's license, etc). Contestants must show proof of enrollment at the university during the term of the regional contest at which they qualified. A letter on university stationery with the signature of a university official accompanied by an English translation is sufficient.

ATTENDANCE

Finalists must attend all required events from On-Site Registration to Celebration as indicated in the Schedule of Events. Failure to attend any required event will result in disqualification and forfeiture of scholarships and prizes. Coaches must be accessible during On-Site Registration, Dress Rehearsal, the World Finals, and the Closing Ceremony.

SUPPORT AND PRIZES

Each finalist team will be provided with hotel accommodations for the coach and three contestants according to dates published on ICPC Invitations. The hotel accommodations will provide gender privacy. The teams and coaches will be treated to a full schedule of activities including a full course of complimentary food functions.

Transportation to the World Finals is the responsibility of the finalists. The ICPC encourages teams to raise funds for transportation and extracurricular activities from local sources to better strengthen community ties among academia, industry, and government.

Teams finishing in the top four positions will be awarded Gold Medals. Those teams finishing fifth through eighth place will be awarded Silver Medals. Those teams finishing ninth through twelfth place will receive Bronze Medals. Additional Bronze Medals may be awarded to teams solving the same number of problems as the twelfth place team and in a total elapsed time no more than 60 minutes more than the twelfth place team. Such teams will be awarded twelfth place.

The highest scoring team is the World Champion and will receive the World Champion Cup and plaques. The other top eleven teams, the Africa & Middle East Champions, the Asia East Champions, the Asia Pacific Champions, the Asia West Champions, the Europe Champions, the Latin America Champions, the Northern Eurasia Champions, and the North America Champions will also receive plaques.

CONDUCT OF THE FINALS

Ten or more problems have been posed in recent World Finals.

Problems will be posed in English. During the contest, all communications from contest officials to contestants will be in English. Each team may identify an interpreter for translating questions posed by contestants to contest officials. Contestants may bring electronic natural language translators provided that they do not support math operations.

Solutions to problems submitted for judging are called *runs*. Each run is judged as accepted or rejected, and the team is notified of the results. *Rejected runs* will be marked as follows:

- run-time error
- time-limit exceeded
- wrong answer

Notification of accepted runs may be suspended at the appropriate time to keep the final results secret. A general announcement to that effect will be made during the contest. Notification of rejected runs will continue until the end of the contest.

A contestant may submit a claim of ambiguity or error in a problem statement by submitting a *clarification request*. If the Judges agree that an ambiguity or error exists, a clarification will be issued to all contestants.

While the contest is scheduled to last five hours, the Finals Director has the authority to lengthen the contest in the event of unforeseen difficulties. Should the Contest duration be altered, every attempt will be made to notify contestants in a timely and uniform manner.

SCORING OF THE FINALS

The World Finals Judges are solely responsible for determining the correctness of submitted runs. In consultation with the World Finals Judges, the Director of Judging is responsible for determining the winners of the World Finals. They are empowered to adjust for or adjudicate unforeseen events and conditions. Their decisions are final.

Teams are ranked according to the most problems solved. Teams placing in the first twelve places who solve the same number of problems are ranked first by least total time and, if need be, by the earliest time of submittal of the last accepted run.

The *total time* is the sum of the time consumed for each problem solved. The *time consumed* for a solved problem is the time elapsed from the beginning of the contest to the submittal of the first accepted run plus 20 penalty minutes for every previously rejected run for that problem. There is no time consumed for a problem that is not solved.





COMPUTING ENVIRONMENT

The World Finals programming language tools include Java, C, C++, Kotlin and Python. See the Programming Environment Web Site for detailed configuration information. Before the World Finals, the judges will have solved all problems in Java and C++.

Each team will be provided with a single computer and a calculator. All teams will have equivalent computing equipment.

Contestants may not bring any printed materials or machine-readable versions of software or data to the Contest Area. Contestants may not bring their own computers, computer terminals, calculators, or other electronic devices to the Contest Area.

Each team member may bring an unannotated natural language printed dictionary. Online reference materials will be made available as described in the Reference Materials section of the Programming Environment Web Site. Each team will be permitted three copies of the Team Reference Document described in the On-Site Registration Instructions.

CONTESTANT CONDUCT

DO NOT TOUCH ANYTHING at the team workstations until so directed by the Finals Director.

Contestants are not to converse with anyone except members of their team and personnel designated by the Finals Director. Systems support staff may advise contestants on system-related problems such as explaining system error messages.

A team may be disqualified by the Finals Director for any activity that jeopardizes the World Finals such as dislodging extension cords, unauthorized modification of contest materials, or distracting behavior.

2019 ACTIVITIES

TEAM REGISTRATION

All teams and coaches must present themselves for registration at the time selected by appointment. Provided by The ICPC Foundation, UPE, and Baylor University, representatives certify that team paperwork and Team Reference Documents comply with ICPC rules.

PARTICIPANT WELCOME

A dinner is hosted to welcome all registered attendees.

TECH SHOWCASE & CHILLZONE

An area where contestants can relax, play games, engage with other teams, and interact with neat demos featuring varied, innovative technologies.

OPENING CEREMONY

This required event recognizes some of the hundreds of volunteers who have worked to make this year's World Finals a reality and represents the first public introduction of this year's World Finals contestants – the best of the best collegiate programmers.

THE WORLD FINALS DRESS REHEARSAL

A full-scale rehearsal and practice of the World Finals.

DINNER IN HONOR OF UPE

This event features dinner and an evening of fun and interaction.

THE WORLD FINALS

The time has come. Teams from six continents battle in a five-hour competition to see who takes home this year's prizes, accolades, and bragging rights as the top collegiate programmers in the world.

CLOSING CEREMONY

This required event will be held to crown the ICPC World Champions and medal winners!

THE WORLD FINALS CELEBRATION

The place and activities are always exciting. The result is always a phenomenally fun time for contestants and volunteers alike.

TECH SHOWCASE

The special on-site event, courtesy of University of Porto, Porto Digital and ICPC Foundation. It's a great way to learn about new technologies and innovative practices directly from industry leaders. Try to solve challenges that top companies are working on, meet your future colleagues and discover future job trends and opportunities. Don't forget to bring your business cards!

ICPC ALUMNI

ICPC World Finals is a great celebration as well as an opportunity to get together, know each other better, share your knowledge and simply help your fellows.

This year ICPC Alumni Association has prepared an open panel discussion about the future of tech industry jobs. They will be sharing their experience as founders, co-founders, chief technology officers and software engineers at top international companies. We hope this opportunity will provide some tips and answer all questions with regards to your professional career path. Don't miss this chance and ask them questions!

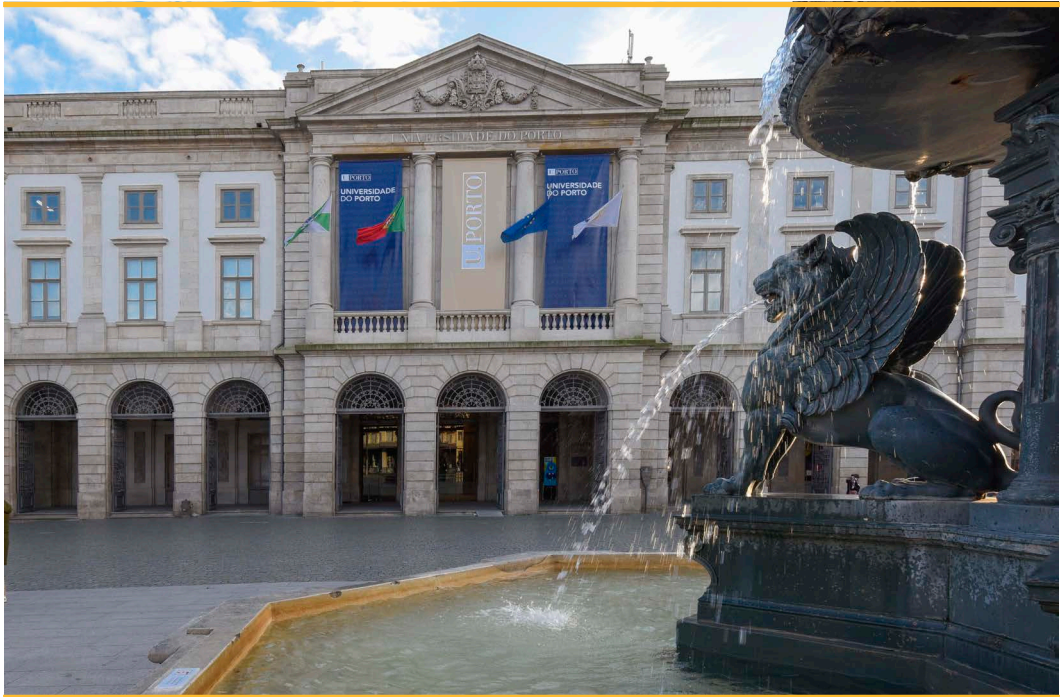
ICPC CHALLENGE

The ICPC Challenge presents a problem from some domain in computing. The domain and problem style may be very different from the standard ICPC problems. This contest provides ICPC participants the opportunity to learn about and experience leading-edge issues in computing, typically of contemporary interest to industry. The ICPC Challenge also provides a platform for ICPC to experiment with new problem types.



03

THE HOSTS



UNIVERSITY OF PORTO

Founded in 1911, the University of Porto (U.Porto) is a benchmark institution for Higher Education and Scientific Research in Portugal and one of the top 150 European Universities according to the most relevant international ranking systems.

The U.Porto combines high quality education focused on individual vocations and talents as well as market needs with the claim to being the greatest birthplace of science in Portugal. It is committed to converting into social assets the talent and innovation from its 14 faculties, one business school and nearly 50 research centres. The U.Porto has the richest academic community in Portugal and brings together the country's highest ranked students, a highly qualified scientific and teaching staff and a growing number of international students, teachers and researchers. Its fully equipped campus embedded within the city guarantees an optimal academic, scientific, and also social and cultural experience.

Being open to the community and business is the main trademark of the U.Porto. The University is itself an important driving force for economic, social, cultural and scientific development in Northern Portugal and in the country as a whole. The U.Porto creates leaders, promotes innovators and encourages entrepreneurs. In short, it trains people who can make a difference in their communities.

This is the attitude we are projecting to the world. Currently, the U.Porto is the most international of Portugal's universities thanks to its active cooperation with hundreds of higher education institutions worldwide. Close to 20% of our 32,000 students are international students that came to the University of Porto from more than 90 countries of the world.

This is the University of Porto and its doors are open to the world.
Come and discover us!



PORTO

Located in the north of Portugal, between the Atlantic beaches and the famous River Douro terraces, Porto and its urban area have a population of over 1.3 million. It is Portugal's second largest city and one of the country's leading economic and industrial centres. But living in Porto is much more than statistics...

Porto's history is strongly linked to trade and love of freedom – so much so, that it is called *Cidade Invicta* (Undefeated City). Porto is known around the world for the charms of its historic centre (UNESCO World Heritage since 1996), Port wine, its generous gastronomy and the unrivalled hospitality of its inhabitants.

Whilst proud of its history, its medieval winding streets and the countless monuments scattered around the city, 21st-century Porto is also dynamic and constantly being upgraded. This vitality is clear in all the green spaces and sports grounds in the city, in its comprehensive public transport system and in its busy cultural offer and nightlife. It has everything you can expect from a city which, together with Rotterdam, was European Capital of Culture in 2001.

Over the last few years, Porto has also become a reference for visitors from all over the world, lured by the city's many delights: an early walk beside the river on a sunny day; lunch in Praça da Ribeira, alongside the cube artwork and the pigeons; a walk through the historic centre ending in climbing the iconic Clérigos Tower; dinner followed by a tour of the historic city centre. Enough arguments to convince worldwide travellers from 174 countries to elect Porto as the Best European Destination in three of the last 8 years.

If you need another reason to come to Porto, here it is: Porto stands out as a city with strong potential to become a national and international reference in the domains of innovation and entrepreneurship.

The city is becoming a tech, innovative and creative entrepreneurial hub, where people, especially young entrepreneurs, are inspired by a new risk culture and integrated into a new multicultural and international ecosystem. Porto is now attracting talent to the city, creating new jobs, developing solutions required by citizens, reducing social exclusion, and increasing security.

Come and join us.



04

THE JUDGES



Jo Perry

North Carolina State University

Director of Judging since 2010
World Finals judge since 1988.

Our aim as judges is to challenge you for 5 straight hours. We hope you will not only excel but also delight in that challenge. The best of luck and the best of times to all of you!



John Bonomo

Westminster College

World Finals Chief Judge since 2010; World Finals judge since 1992

Good luck to all the teams. Here's where all your hard work will pay off!



Per Austrin

KTH Royal Institute of Technology, Stockholm

World Finals judge since 2008

Here is a small hint about the problem set:
hvs qcbhsg h d f c p z s a g
o f s b c h o g s o g m o g
h v w g Q o s g o f q w d v s f.



Babak Behsaz

Google

World Finals judge since 2013

I hope you enjoy the contest and problem set. Also, I wish for you to realize your potential and use this experience to achieve future success. Best of luck!



Matt Fontaine

Algorithms Live!

World Finals Judge since 2019

I hope the teams find the problems engaging, unique, and beautiful.



Walter Guttman

University of Canterbury

World Finals judge since 2011

Every problem in our set has an answer, you can bet. Code it quick if you can find it, else move on and never mind it.



Greg Hamerly

**Baylor
University**

World Finals judge since 2014

Congratulations on making it to the ICPC World Finals. Continue to use your skills and discipline to do well and to do good.



Martin Kacer

**Czech Technical
University
in Prague**

World Finals judge since 2003

Do not forget to have fun and enjoy this week, as it is going to be a great one – even if you do not win. And if you win – what a nice bonus!



Derek Kisman

Apple

World Finals judge since 2004

Practice outside your comfort zone, and your comfort zone will grow...



Bruce Merry

**South African
Radio Astronomy
Observatory
(SARAO)**

World finals judge since 2016

It's better to spend the time to do it right than to debug it.



Deon Nicholas

Forethought.ai

World Finals Judge since 2018

"Every Day is Contest Day". And I mean it. Most of you have been practicing daily to be where you are today. You deserve it. Don't be nervous, and don't worry about the scoreboard. Have fun, stay focused, and do what you do best!



Dick Rinewalt

**Texas Christian
University**

World Finals judge since 1982

Meet people. Make friends. Have fun.

**Robert Roos****Allegheny
College**

World Finals judge 1996

Meet and talk to as many people as you can! Take lots of photos! Tweet, post, and blog about your experiences! Be proud – after all, you worked hard to get here. But also be humble. Lots of people helped you – your teachers, your coaches, your teammates, and many, many others. Good luck in the contest, but remember that you're already a winner!

**Matthias Ruhl****Cisco**

World Finals judge since 1997

Good luck in the contest! Don't let the code bugs bite. And the best wishes for your future careers! This is an exciting time to be in computer science – learn as much as you can, build something great and change the world!

**Michal Svagerka****Noumena
Digital**

World Finals judge since 2019

The best way of solving a hard problem is to fail to notice its difficulty.



Stanley Wileman

**University
of Nebraska
– Omaha**

World Finals judge since 1979

I've been involved with the contest in many roles since the mid 1970s. And while the machines have certainly gotten faster since the punched card days, the problems have gotten much harder. It's ALWAYS the case that judges know the fastest (to date) algorithms to solve problems, and brute force is almost NEVER the best way (although...). Compilers can optimize your code only so much. Wouldn't it be nice if they could choose better algorithms for us?



**Jakub Onufry
Wojtaszczyk**

Google

World Finals judge since 2011

I wish for every one of you that this is only a start to achieving great things. Computer science is cool, because once you write a program, it can change the lives of billions of people without any extra work. So, a software engineer can change the world similarly to great inventors – by improving the lives of people they will never meet and never know. Skill at creating software is something that should be cherished and used – and I hope you all manage to make good use of it.




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args) { JFrame frame = new JFrame(); frame.setTitle("Hi!"); frame.add(new JLabel("Hello, world!")); frame.pack(); frame.setLocationRelativeTo(null);frame.setVisible(true); } } document.write("Hello, world!"); $("body").append("Hello world!"); println("Hello world!"); print [Hello, world!] disp["Hello, world!"] int main(void) { NSLog(@"Hello, world!"); return 0;} program HelloWorld; begin WriteLn('Hello, world!'); end. print "Hello, world!"; echo "hello world"; void setup() { println("Hello, world!"); } print "Hello, world!" cat('Hello, world!') puts "Hello, world!" println("Hello, world!") MsgBox "Hello, World!" Module Module1 Sub Main() Console.WriteLine("Hello, world!") End Sub Hello World mport javax.swing.JFrame; import javax.swing.JLabel; JLabel public class HelloWorld { public static void main(String[] args) { JFrame frame = new JFrame(); frame.setTitle("Hi!"); frame.add(new JLabel("Hello, world!")); frame.pack(); frame.setLocationRelativeTo(null);frame.setVisible(true); } } document.write("Hello, world!"); $("body").append("Hello world!"); println("Hello world!") print [Hello, world!] disp["Hello, world!"] int main(void) { NSLog(@"Hello, world!"); return 0;} program HelloWorld; begin WriteLn('Hello, world!'); end. print "Hello, world!"; echo "hello world"; void setup() { println("Hello world!"); } print "Hello, world!" cat('Hello, world!') puts "Hello, world!" println("Hello, world!") MsgBox "Hello, World!" Module Module1 Sub Main() Console.WriteLine("Hello, world!") End Sub Hello World mport javax.swing.JFrame; import javax.swing.JLabel; JLabel public class HelloWorld { public static void main(String[] args) { JFrame frame = new JFrame(); frame.setTitle("Hi!"); frame.add(new JLabel("Hello, world!")); frame.pack(); frame.setLocationRelativeTo(null);frame.setVisible(true); } } document.write("Hello, world!"); $("body").append("Hello world!"); println("Hello world!") print [Hello, world!] disp["Hello, world!"] int main(void) { NSLog(@"Hello, world!"); return 0;} program HelloWorld; begin WriteLn('Hello, world!'); end. print "Hello, world!"; echo "hello world"; void setup() { println("Hello, world!"); } print "Hello, world!" cat('Hello, world!') puts "Hello, world!" println("Hello, world!") MsgBox "Hello, World!" Module Module1 Sub Main() Console.WriteLine("Hello world!") End Sub Hello World mport javax.swing.JFrame; import javax.swing.JLabel; JLabel public class HelloWorld { public static void main(String[] args) { JFrame frame = new JFrame(); frame.setTitle("Hi!"); frame.add(new JLabel("Hello, world!")); frame.pack(); frame.setLocationRelativeTo(null);frame.setVisible(true); } } document.write("Hello, world!"); $("body").append("Hello world!"); println("Hello world!") print [Hello, world!] disp["Hello, world!"] int main(void) { NSLog(@"Hello, world!"); return 0;} program HelloWorld; begin WriteLn('Hello, world!'); end. print "Hello, world!"; echo "hello world"; void setup() { println("Hello, world!"); } print "Hello, world!" cat('Hello, world!') puts "Hello, world!" println("Hello, world!") MsgBox "Hello, World!" Module Module1 Sub Main() Console.WriteLine("Hello world!") End Sub Hello World mport javax.swing.JFrame; import javax.swing.JLabel; JLabel public class HelloWorld { public static void main(String[] args) { JFrame frame = new JFrame(); frame.setTitle("Hi!"); frame.add(new JLabel("Hello, world!")); frame.pack(); frame.setLocationRelativeTo(null);frame.setVisible(true); } } document.write("Hello, world!"); $("body").append("Hello world!"); println("Hello world!") print [Hello, world!] disp["Hello, world!"] int main(void) { NSLog(@"Hello, world!"); return 0;} program HelloWorld; begin WriteLn('Hello, world!'); end. print "Hello, world!"; echo "hello world"; void setup() { println("Hello, world!"); } print "Hello, world!" cat('Hello, world!') puts "Hello, world!" println("Hello, world!") MsgBox "Hello, World!" Module Module1 Sub Main() Console.WriteLine("Hello, Console.WriteLine("Hello, i main(void) { NSLog(@"Hello, world!"); return 0;} program HelloWorld; begin WriteLn('Hello, world!'); end. print a
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05

THE TEAMS

THE TEAMS





AFRICA AND THE MIDDLE EAST

AL-BAATH UNIVERSITYalbaath-univ.edu.sy**Team name › Spaghet!****Coach › Basheer Tleimat**

Malek Hakki

Danjar Jarrous

Mahdi Qanas

ALEPPO UNIVERSITYalepuniv.com**Team name › What The Bug!****Coach › Ahmad Jilati**

Ahmad Bashar Eter

Abdulkader Yazan Kabani

Watheq Mansour

**AMERICAN UNIVERSITY OF BEIRUT,
FACULTY OF ARTS AND SCIENCE**aub.edu.lb**Team name › AUB Lebanon****Coach › Mohamad Jaber**

Rayan Hallal

Remy El Sabeh

Antoine Zouein

CAIRO UNIVERSITY**– FACULTY OF COMPUTERS AND INFORMATION**fci.cu.edu.eg**Team name › One For All****Coach › Mohamed Abd El-Wahab**

Mohamed Ahmed

Khaled Hamed

Mohammed Saeed

Co-coach › Heba Gamal

Co-coach › Ahmed Hamed

Co-coach › Mohammed Khairy

DAMASCUS UNIVERSITYdamascusuniversity.edu.sy**Team name › Daddy's Home****Coach › Ahmad Ramadan**

Rami Al-Zebak

Rami Alssadaqa

Nour Eddin Ramadan

DAMASCUS UNIVERSITYdamascusuniversity.edu.sy**Team name › Y!****Coach › Ghassan Khazaal**

Ahmad Gafer

Mohammad Shahhoud

Said Sryheni

**FACULTY OF COMPUTER AND INFORMATION
SCIENCES, AIN SHAMS UNIVERSITY**cis.shams.edu.eg**Team name › AKA AKA****Coach › Nour Elrashidy**

Abdelrahman Akram

Mohamed Anany

Khaled Swalem

Co-coach › Ahmed Ossama

**FACULTY OF ENGINEERING,
CAIRO UNIVERSITY**eng.cu.edu.eg**Team name › One more Time****Coach › Mohamed Abd El-Wahab**

Omar Bazaraa

Omar Hashim

Mina Magdy

FACULTY OF ENGINEERING- MANSOURA UNIVERSITY

Team name › Hawksbeard

Coach › Ibrahim Gamil

Abdulla Ashraf

Omar Elawady

Sara Elkady

Co-coach › Omar Elezaby

Co-coach › Seaf Eldien Mohamed

Co-coach › Islam Taha

GERMAN UNIVERSITY IN CAIRO

met.guc.edu.eg

Team name › 3aboood

Coach › Slim Abdennadher

Omar Kharouba

Ahmed Khedr

Omar Morsi

Co-coach › Ahmad Elsaygheer

HIGHER INSTITUTE FOR APPLIED SCIENCES AND TECHNOLOGY

hiast.edu.sy

Team name › Super Saiyan Squad

Coach › Nizar Zarka

Farouk Hjabo

Nemane Jessri

Anas Kastantin

Co-coach › Ghadeer Shaaban

LEBANESE AMERICAN UNIVERSITY

lau.edu.lb

Team name › Balloons plz !

Coach › Faisal Abu Khzam

Amer Haj Ahmad

Ibrahim Heritch

Karam Al Kontar

SYRIAN VIRTUAL UNIVERSITY

svuonline.org

Team name › RadioActive

Coach › Jafar Alkheir

Hussain Kara Fallah

Hasan Jaddouh

Joud Zouzou

Co-coach › Alaa Jarad

Co-coach › Ehsan Refaee

THE AMERICAN UNIVERSITY IN CAIRO

sse.aucegypt.edu

Team name › TheTeam

Coach › Mohamed Abd El-Wahab

John Attia

Bishoy Boshra Labib Girgis

John Sourour

UNIVERSITY OF CAPE TOWN

uct.ac.za

Team name › Dysfunctional Programmers

Coach › Aslam Safia

David Broodryk

Mohammed Yaseen Mowzer

Bronson Rudner

Co-coach › Maria Keet

ASIA EAST

BEIHANG UNIVERSITY

ev.buaa.edu.cn

Team name › Nonsense Time

Coach › You Song

Yixing Deng

Junjie Wu

Zihao Zhong

Co-coach › Xin Huang

Co-coach › Ziyuan Liu

Co-coach › Min Wang

Co-coach › Xuanang Zhao

BEIJING NORMAL UNIVERSITY

bnu.edu.cn

Team name › Faraway

Coach › Su Feng

Jiayang Gao

Hechuan Guo

Ke Sun

Co-coach › Weiqiang He

EAST CHINA NORMAL UNIVERSITY

ecnu.edu.cn

Team name › FOREIGNERS

Coach › Chunyun Xiao

Fangxin Lin

Yuge Zhang

Yiran Zhou

Co-coach › Guitao Cao

Co-coach › Yugen Du

FUDAN UNIVERSITY

fudan.edu.cn

Team name › Invoker

Coach › Weiwei Sun

Minghong Gao

Xuanyu Wang

Mingjian Wu

Co-coach › Yu Guo

Co-coach › Xinyu Zhang

GUANGDONG UNIVERSITY OF TECHNOLOGY

gdut.edu.cn

Team name › Travel_Poorly

Coach › Xuandong Sun

Xuanzhu Lin

Mingkai Tang

Fuqiang Yang

Co-coach › Sun Fengquan

Co-coach › KeSi Huang

Co-coach › Duokai Huang

Co-coach › Gao Li

Co-coach › Guangqiang Xie

Co-coach › Tingting Zhao

Co-coach › Yanling Zou

HARBIN INSTITUTE OF TECHNOLOGY

hit.edu.cn

Team name › Sunset Glow

Coach › Dalie Sun

Haifeng Chen

Shun Yao

Jinlu Yu

KIMCHAEK UNIVERSITY OF TECHNOLOGY

kut.edu.kp

Team name › KUT_Team

Coach › CholRyong Jong

SongIl Kim

SoMin Mun

GukSong Ri

Co-coach › JongBom Kim

NANJING UNIVERSITY

nju.edu.cn

Team name › Coffee Chicken

Coach › Jun MA

Hongyang LIU

Hao Ling

Yangbo Zhang

Co-coach › Yanyan JIANG

NANJING UNIVERSITY OF SCIENCE AND TECHNOLOGY

njust.edu.cn

Team name › OEIS

Coach › Ligong Yu

Liwei Jin

Jinghao Ma

Xin Tian

NORTHEASTERN UNIVERSITY (CHINA)

neu.edu.cn

Team name › NEU_Test

Coach › Xiaofeng Liu

Jiujian Chen

Baiyu Li

Jiaxin Wu

PEKING UNIVERSITY

pku.edu.cn

Team name › La Mala Hora

Coach › Guojie Luo

Zhe Feng

Xuandi Ren

Jianing Ye

Co-coach › Ruyi Ji

SHANGHAI JIAO TONG UNIVERSITY

sjtu.edu.cn

Team name › Manual/Intelligence

Coach › Yong Yu

Zhongtang Luo

Xiaohan Mao

Enze Sun

Co-coach › YUDA FAN

Co-coach › Zhihan Jin

Co-coach › Muyang Li

Co-coach › Tianyi Liu

Co-coach › Kaiyi Zhang

Co-coach › Zihan Zhou

SOUTH CHINA UNIVERSITY OF TECHNOLOGY

scut.edu.cn

Team name › I have a classmate named Lanling

Coach › Junying Chen

Riyang Hu

Zhengying Xing

Guofu Zhu

SOUTHEAST UNIVERSITY, CHINA

seu.edu.cn

Team name › the lowest Gu

Coach › Qingjian Ni

Xinyi Gu

Zheng Tan

Guanyi Yu

THE CHINESE UNIVERSITY OF HONG KONG

cse.cuhk.edu.hk

Team name › ACellent

Coach › Siu On Chan

Ngan Hang Ho

Lik Hang Poon

Wai Pan Yik

TSINGHUA UNIVERSITY

tsinghua.edu.cn

Team name › Rondam strign

Coach › Xiaojun Wu

Leping Wang

Jiping Yu

Ruizhe Zhang

Co-coach › Shanshan Li

XI'AN JIAOTONG UNIVERSITY

xjtu.edu.cn

Team name › tfucju

Coach › Hongzhe Xu

Cong Ding

Yifan Liu

Bohang Zhang

ZHEJIANG UNIVERSITYzju.edu.cn**Team name** › Reconquista**Coach** › Can Wang

Shibiao Jiang

Zhenwei Liu

Jiangzhe Yan

Co-coach › Zejun Wu

ZHONGSHAN (SUN YAT-SEN) UNIVERSITYsysu.edu.cn**Team name** › SYSU_Balloon**Coach** › SongShan Guo

Jianhao Fan

Zhen Huang

Kaiqi Wang

Co-coach › Han Lin

Co-coach › Zizhen Zhang

ASIA PACIFIC

BINA NUSANTARA UNIVERSITYbinus.ac.id**Team name** › Ducimus**Coach** › Felix Jingga

Edward Keitaro Heru

Andreas Martin

Hansvin Tandi Sugata

Co-coach › Derwin Suhartono

KYOTO UNIVERSITYkyoto-u.ac.jp**Team name** › earlybird**Coach** › Seiji Umatani

Go Kato

Shunta Masuda

Ryoma Sato

Co-coach › Hiromasa Saito

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGYhust.edu.vn**Team name** › amazingbamboo_with_coccoc**Coach** › VIET SANG DINH

Anh Duc Le

Minh Quang Le

Thanh Tung Tran

Co-coach › Thuan Do Phan

NATIONAL CHIAO TUNG UNIVERSITYnctu.edu.tw**Team name** › NCTU_Fox**Coach** › Min-Zheng Shieh

Sheng-Huei Chen

Hsin-Chen Chuang

Tsong-Ta Wu

KAISTkaist.ac.kr**Team name** › Deobureo Minkyu Party**Coach** › Sukyoung Ryu

Minkyu Jo

Jaehyun Koo

Suchan Park

Co-coach › Taehyun Lee

NATIONAL TAIWAN UNIVERSITYntu.edu.tw**Team name** › JAW**Coach** › Pu-Jen Cheng

Pochang Chen

Wei-Jiun Kao

Yen-Jen Wang

Co-coach › Chiou-Shann Fuh

NATIONAL UNIVERSITY OF SINGAPORE

nus.edu.sg

Team name › 3body2

Coach › Steven Halim

Sidhant Bansal

Wei Heng Bay

Bernard Zhi Yi Teo

Co-coach › Suhendry Effendy

SEOUL NATIONAL UNIVERSITY

snu.ac.kr

Team name › 789

Coach › Heon Young Yeom

Hyunsoo Kim

Donghyun Kim

Seungwon Shin

Co-coach › Seunghyun Jo

Co-coach › jongmee park

THE UNIVERSITY OF AUCKLAND

cs.auckland.ac.nz

Team name › MessyUniversity

Coach › Yu-Cheng Tu

Edward Chen

Samuel Dobson

Qingchuan Zhang

THE UNIVERSITY OF NEW SOUTH WALES

cse.unsw.edu.au

Team name › FICVTZS

Coach › Aleks Ignjatovic

Adrian Goldwaser

Declan McDonnell

Austin Tankiang

Co-coach › Joshua Lau

THE UNIVERSITY OF TOKYO

u-tokyo.ac.jp/ja/index.html

Team name › Gifted Infants

Coach › Tomoyuki Kaneko

Riku Kawasaki

Kohei Morita

Takuto Shigemura

Co-coach › Shanchuan Wan

THE UNIVERSITY OF WESTERN AUSTRALIA

uwa.edu.au

Team name › Max Ward

Coach › Andrew Gozzard

Nicholas O'Callaghan

Alexander Thatcher

Theodore Vickery

Co-coach › Tim French

UNIVERSITAS INDONESIA

ui.ac.id

Team name › Supir Tayo

Coach › Denny Denny

Muhammad Ayaz Dzulfikar

Inigo Ramli

Degoldie Sonny

UNIVERSITY OF ENGINEERING AND TECHNOLOGY – VNU

e.uet.vnu.edu.vn

Team name › vector

Coach › Ho Dac Phuong

Duc Thang Nguyen

Hoang Duc Nguyen

Duc Nguyen Xuan

Co-coach › Hanh Van Pham

UNIVERSITY OF TSUKUBA

tsukuba.ac.jp

Team name › iwiwi

Coach › Claus Aranha

Yuki Koike

Akio Matsuzaki

Nozomu Nakajima

WASEDA UNIVERSITY

futamura.info.waseda.ac.jp

Team name › WAsedAC

Coach › Hiroki Sato

Ryo Ishizuka

Ko Sato

Taiki Yamada

ASIA WEST

AMIRKABIR UNIVERSITY OF TECHNOLOGY

aut.ac.ir

Team name › Temporarily Rebellion

Coach › Reza Hosseini Ashtiani

Parsa Abdollahi

Mohammad Erfan Gholamian

Amir Reza Pour Akhavan

Co-coach › Jafar Abdi

INDIAN INSTITUTE OF TECHNOLOGY

– BOMBAY

iitb.ac.in

Team name › DeathNote

Coach › Suyash Awate

Pratyush Agarwal

Jyothi Surya Prakash Bugatha

Kushagra Juneja

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

buet.ac.bd

Team name › BUET_BloodHound

Coach › Mohammad Kaykobad

H M Ashiqul Islam

Tanveer Muttaqueen

Arghya Pal

Co-coach › Madhusudan Basak

Co-coach › Shadman Saqib Eusuf

Co-coach › Md Saiful Islam

Co-coach › Amlan Saha

Co-coach › Kazi Zubaer

Co-coach › nafis irtiza tripto

INDIAN INSTITUTE OF TECHNOLOGY

– KANPUR

iitk.ac.in

Team name › bits please

Coach › Surender Baswana

Yash Chandnani

Saketh Ginuga

Siddhartha Srivastava

INDIAN INSTITUTE OF TECHNOLOGY

– KHARAGPUR

iitkgp.ac.in

Team name › Persistent Matroid

Coach › Pawan Goyal

Mayank Khetan

Pranjal Shankhdhar

Sumeet Shirgure

CHENNAI MATHEMATICAL INSTITUTE

cmi.ac.in

Team name › UniverselsDeterministic

Coach › Narayan Kumar Krishnan

Sreejata Kishor Bhattacharya

Rajat De

Debjit Paria

INDIAN INSTITUTE OF TECHNOLOGY

– MADRAS

iitm.ac.in

Team name › GeometryIsLove

Coach › Rupesh Nasre

Pranav Gavvaji

D Raja Vardhan Reddy

Dasannagari Teja Vardhan Reddy

IIT-DELHI

iiitd.ac.in

Team name › BhayanakMaut

Coach › Debajyoti Bera

Hanit Banga

Parth Mittal

Utsav Rohilla

INDIAN INSTITUTE OF TECHNOLOGY – PATNA

iitp.ac.in

Team name › ButterRoti

Coach › Arijit Mondal

Shaurya Gupta

Prateek Karnal

Bhavit Sharma

INDIAN INSTITUTE OF TECHNOLOGY – ROORKEE

iitr.ac.in

Team name › Hold right there Sparky!!

Coach › Balasubramanian Raman

Devanshu Gopal Agarwal

Samarth Prasad Joshi

Abhishek Kanhar

SHAHID BEHESHTI UNIVERSITY

en.sbu.ac.ir

Team name › Doggy Sweat

Coach › Mehdi Kazemi

Erfan Alimohammadi

Amin Anvari

Mohammad Reza Mohseni

Co-coach › Mojtaba Vahidi-Asl

SHAHJALAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

sust.edu

Team name › SUST_Descifrador

Coach › Md Saiful Islam

Golam Azam Abbasy

Moudud Ahmed Khan

Ovishek Paul

Co-coach › Biswapriyo Chakrabarty

Co-coach › Enamul Hassan

Co-coach › Mohammed Jahirul Islam

Co-coach › Md Mahadi Hasan Nahid

Co-coach › Ayesha Tasnim

SHARIF UNIVERSITY OF TECHNOLOGY

sharif.ir

Team name › Kolompeh

Coach › Hamid Zarrabi-Zadeh

Ali Behjati

SeyedParsa Mirtaheri

Mohammad Mahdi Shokri

Co-coach › Amir Keivan Mohtashami

EUROPE

ALEXANDRU IOAN CUZA UNIVERSITY OF IAȘI

infoiasi.ro

Team name › Clown Fiesta

Coach › Paul Diac

Alexandru Ionita

Valeriu Motroi

Cristian Vintur

ETH ZÜRICH

ethz.ch

Team name › Team RacLETH

Coach › Daniel Rutschmann

Timon Knigge

Václav Rozhoň

Stefanie Zbinden

LEIDEN UNIVERSITY

universiteitleiden.nl

Team name › Q++**Coach** › Ragnar Groot Koerkamp

Onno Berrevoets

Daan van Gent

Pim Spelier

UNIVERSITY OF PORTO

up.pt

Team name › FCUP1**Coach** › Pedro Ribeiro

Alberto Pacheco

Gonçalo Paredes

Ricardo Pereira

**NATIONAL TECHNICAL UNIVERSITY
"KHARKIV POLYTECHNIC INSTITUTE"**

kpi.kharkov.ua

Team name › KhPI_Morituri::Reborn***Coach** › Leonid Lyubchik

Mykhailo Babenko

Andrii Cherevko

Vladyslav Mats

UNIVERSITAT POLITÈCNICA DE CATALUNYA

upc.edu

Team name › Unio de Programadors Convergents**Coach** › Salvador Roura

Cesc Folch Aldehuelo

Jan Olivetti

Miquel Ortega

SCUOLA NORMALE SUPERIORE

sns.it

Team name › SNS**Coach** › Igor Simunec

Filippo Baroni

Andrea Ciprietti

Francesco Milizia

UNIVERSITY OF CAMBRIDGE

cam.ac.uk

Team name › Treenity**Coach** › Hayk Saribekyan

Jeck Lim

Zoltán Molnár Sáska

David Wörn

SOFIA UNIVERSITY

uni-sofia.bg

Team name › FMI_2**Coach** › Milen Petrov

Petar Angelov

Ivan Ganev

Viktor Terziev

UNIVERSITY OF NIŠ**– FACULTY OF SCIENCES AND MATHEMATICS****Team name** › PMF Nis**Coach** › Nikola Milosavljević

Vuk Bibić

Lazar Stamenković

Ivan Stošić

TECHNISCHE UNIVERSITÄT MÜNCHEN

tum.de

Team name › TUMbling**Coach** › Gregor Schwarz

Florian Leimgruber

Gregor Matl

Lukas Michel

Co-coach › Christian Müller

UNIVERSITY OF OXFORD

ox.ac.uk

Team name › Los Patrons**Coach** › George Chichirim

Stefan Buliga

Costin-Andrei Oncescu

Alex Tatomir

UNIVERSITY OF TARTU

ut.ee

Team name › Double Cycle Cover

Coach › Oliver-Matis Lill

Oliver Nisumaa

Tähvend Uustalu

Martin Širokov

Co-coach › Meelis Kull

UNIVERSITY OF WARSAW

uw.edu.pl

Team name › Warsaw Eagles 2019

Coach › Jan Madey

Jakub Boguta

Konrad Paluszek

Mateusz Radecki

Co-coach › Krzysztof Diks

Co-coach › Marcin Smulewicz

UNIVERSITY OF WROCLAW

uni.wroc.pl

Team name › UWr1

Coach › Krzysztof Loryś

Anadi Agrawal

Michał Górniak

Jarosław Kwiecień

Co-coach › Bartłomiej Dudek

Co-coach › Paweł Gawrychowski

UNIVERSITY OF ZAGREB

unizg.hr

Team name › Zagreb

Coach › Krešimir Malnar

Domagoj Bradač

Ivan Lazarić

Daniel Paleka

Co-coach › Ivan Paljak

Co-coach › Marin Tomić

ÉCOLE NORMALE SUPÉRIEURE DE PARIS

ens.fr

Team name › ENS Ulm 1

Coach › Tomas Rigaux

Felix Breton

Thibaut Pérami

Théophile Wallez

LATIN AMERICA

ESCUELA SUPERIOR DE COMPUTO INSTITUTO POLITECNICO NACIONAL

escom.ipn.mx

Team name › IA_Criba de ceros y unos

Coach › Edgardo Adrian Franco Martinez

Filiberto Fuentes Hernandez

Abraham Omar Macías Márquez

Alan Enrique Ontiveros Salazar

Co-coach › Rafael Norman Saucedo Delgado

Co-coach › Luis Martin Jiménez Rodríguez

Co-coach › Juan Garcia Sales

ITESM CAMPUS MONTERREY

itesm.mx

Team name › Legendary Grandpupils

Coach › Luis Humberto González

Adán López Alatorre

Elías Arif Mera Avila

Diego García Rodríguez del Campo

Co-coach › Carlos Salvador Garza Garza

Co-coach › Diego Emilio Gutierrez Yepiz

INSTITUTO MILITAR DE ENGENHARIA

ime.eb.mil.br

Team name › Fast WA Transform**Coach** › **Claudia Justel**

Rebeca Calazans de Brito

Mateus Cândido Lima de Castro

João Pedro de Araújo Xavier

Co-coach › Naum Azeredo Fernandes Barreira

**INSTITUTO TECNOLÓGICO
AUTÓNOMO DE MÉXICO**

itam.mx

Team name › The Beat Alls**Coach** › **Freddy Román Cepeda**

Jacqueline Lira Chávez

Juan Carlos Sigler Priego

Saúl Adrián Alvarez Tapia

**INSTITUTO TECNOLÓGICO SUPERIOR
DEL SUR DE GUANAJUATO**

itsur.edu.mx

Team name › #define TriLCI(404.0) :v**Coach** › **Luis German Gutiérrez Torres**

Saul German Gutierrez Calderon

ORLANDO ISAY MENDOZA GARCIA

Tania Martínez Villagómez

Co-coach › PATRICIA VEGA FLORES

Co-coach › Gustavo Ivan Vega Olvera

Co-coach › David Morales Orozco

INSTITUTO TECNOLÓGICO DE AERONAUTICA

ita.br

Team name › CalopsITA**Coach** › **Armando Gouveia**

Lucas Ferreira

Matheus Leão

Lucas França de Oliveira

TECNOLÓGICO DE COSTA RICA

tec.ac.cr

Team name › ABC**Coach** › **Byron Alejandro Rojas Burgos**

Michael Pérez Ocampo

Luis José Badilla Ortiz

Juan Villacís

**UNIVERSIDAD NACIONAL
DE COLOMBIA – BOGOTÁ**

unal.edu.co

Team name › Make PersueychUN Great Again**Coach** › **Ivan Castellanos**

Víctor Gabriel Ramírez Caballero

Manuel Alejandro Vergara Díaz

Osman David Jiménez Gutiérrez

Co-coach › Diego Said Niquefa Velásquez

**UNIVERSIDAD NACIONAL
DE CÓRDOBA – FAMAF**

famaf.unc.edu.ar

Team name › ♡torial**Coach** › **Matías José Hunicken Berardo**

Ezequiel Carranza

Marcos Kolodny

Martin Rodríguez

Co-coach › Luis Ferroni Rivetti

**UNIVERSIDAD NACIONAL
DE INGENIERÍA – FC**

fc.uni.edu.pe

Team name › Gracias, Marco**Coach** › **Marco Cáceres Choque**

Miguel Alessandro Miní Huambachano

Víctor Racsó Galván Oyola

Sergio Gustavo Sanchez Rojas

Co-coach › Cesar Giglio Badoino

Co-coach › Elvis Rusnel Capia Quispe

UNIVERSIDAD NACIONAL DE ROSARIO

unr.edu.ar

Team name › incognito**Coach** › **Mariano Crosetti**

Ivan Diaz

Brian Morris Esquivel

Maximiliano Redigonda

Co-coach › Pablo Zimmermann

UNIVERSIDAD TECNOLÓGICA NACIONAL – FACULTAD REGIONAL SANTA FE

frsf.utn.edu.ar

Team name › new UtnTeam

Coach › Daniel Ambort

Eric Kiener

Matias Ramos

Luis Santiago Ré

UNIVERSIDAD DE BUENOS AIRES – FCEN

exactas.uba.ar

Team name › El Bueno, el Ralo y el Feo

Coach › Eugenio Borghini

Agustin Borgna

Teodoro Freund

Andrés Radunsky

UNIVERSIDAD DE LA HABANA

uh.cu

Team name › UH++

Coach › Alfredo Somoza Moreno

Yanoel Llano Boitel

Alberto González Rosales

Eloy Pérez Torres

Co-coach › Marcelo Fernet

Co-coach › Aurora Gil Pons

UNIVERSIDAD DE ORIENTE – SEDE ANTONIO MACEO

uo.edu.cu

Team name › Limitless

Coach › William Martínez Acosta

Ernesto David Peña Herrera

Yuri Alcántara Olivero

Yordan Laborde Peña

Co-coach › Eduardo Pascual Aseff

UNIVERSIDAD DE LOS ANDES, COLOMBIA

uniandes.edu.co

Team name › UNiandes

Coach › Nicolas Cardozo

Pietro Ehrlich

Jose Daniel Fandino

Juan Camilo Bages Prada

UNIVERSIDADE FEDERAL DE CAMPINA GRANDE

portal.ufcg.edu.br

Team name › Megazord da CAPES

Coach › Rohit Gheyi

Emerson Leonardo Lucena

Gustavo Bezerra Ribeiro

Arthur Vinícius Tomé Rodrigues

Co-coach › Felipe Mota dos Santos

UNIVERSIDADE FEDERAL DE PERNAMBUCO

cin.ufpe.br

Team name › try again

Coach › Nivan Ferreira

Tiago Goncalves

Diogo Rodrigues

Lucas Santana

Co-coach › Katia Guimarães

UNIVERSIDADE DE SÃO PAULO – CAMPUS DE SÃO CARLOS

icmc.usp.br

Team name › time do dia 10

Coach › Danilo Tedeschi

Cezar Guimarães

Lucas de Oliveira Pacheco

Samuel Santos

Co-coach › Joao do Espirito Santo Batista Neto

UNIVERSITY OF BRASILIA

unb.br

Team name › 100% é Pouco, Pagode Importa D+

Coach › Vinicius Borges

Rafael Chehab

José Marcos da Silva Leite

Luis Braga Gebrim Silva

Co-coach › Pedro Henrique Ferreira

Co-coach › Matheus Pimenta

Co-coach › Guilherme Ramos

NORTH AMERICA

CARNEGIE MELLON UNIVERSITY

cmu.edu

Team name › CMU1

Coach › Danny Sleator

Corwin de Boer

Matthew Savage

Yiquan Wang

Co-coach › Pedro Paredes

DUKE UNIVERSITY

cs.duke.edu

Team name › BMC

Coach › Owen Astrachan

Kangning Wang

Xiang Wang

Chenwei Wu

Co-coach › Kevin Kauffman

COLORADO SCHOOL OF MINES

mines.edu

Team name › `{+}{{{+}s)m}}`

Coach › Jeffrey Paone

Matthew Baldin

Joseph McKinsey

Samuel Reinehr

Co-coach › Christopher Painter-Wakefield

HARVARD UNIVERSITY

harvard.edu

Team name › Harvard

Coach › Robert L Walton

Daniel Chiu

Pranay Tankala

Franklyn Wang

Co-coach › Jelani Nelson

COLUMBIA UNIVERSITY

columbia.edu

Team name › Kington

Coach › Chengyu Lin

Bicheng Gao

Victor Cyril L Lecomte

Aditya Shah

Co-coach › Peilin Zhong

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

web.mit.edu

Team name › MIT NULL

Coach › Aleksandar Zlateski

Andrew He

Kevin Sun

Yinzhan Xu

DREXEL UNIVERSITY

drexel.edu

Team name › Dragons

Coach › Brian Stuart

Harun Gunaydin

Duy Nguyen

Sampriti Panda

PRINCETON UNIVERSITY

princeton.edu

Team name › Princeton 1

Coach › Lucas Fernán Salvador

Yuping Luo

Xingyuan Sun

Dingli Yu

Co-coach › Andrew Wonnacott

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY

sdsmt.edu

Team name › Hardrockers

Coach › Matthew Schallenkamp

Alexander Iverson

Michael Pfeifer

Luke Videckis

Co-coach › Paul Hinker

STANFORD UNIVERSITY

stanford.edu

Team name › Stanford Cardinal

Coach › Gerald Cain

Yang Liu

Wenli Looi

Eric Xu

Co-coach › Hubert Teo

THE UNIVERSITY OF TEXAS AT AUSTIN

utexas.edu

Team name › UT Orange

Coach › Etienne Vouga

Ethan Arnold

Supawit Chockchowwat

Ryan Rice

Co-coach › Glenn Downing

UNIVERSITY OF BRITISH COLUMBIA

ubc.ca

Team name › UBC $p_X(x)=P(X=x)$

Coach › Lucca Siazdzionis

Henry Xia

Brandon Zhang

Da Wei Zheng

Co-coach › Yuanchen Du

Co-coach › Paul Liu

Co-coach › Nasa Rouf

Co-coach › Eugene Shen

Co-coach › Gregory Zhang

UNIVERSITY OF CENTRAL FLORIDA

ucf.edu

Team name › UCF Knights

Coach › Ali Orooji

Joshua Fair

David Harmeyer

Jacob Magnuson

Co-coach › Timothy Buzzelli

Co-coach › Alexander Coleman

Co-coach › Chris Gouge

Co-coach › Arup Guha

Co-coach › Glenn Martin

UNIVERSITY OF CHICAGO

cs.uchicago.edu

Team name › Phoenix

Coach › Borja Sotomayor

Yifan Liu

Xifan Yu

Zixuan Zhao

Co-coach › Goutham Rajendran

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

illinois.edu

Team name › VIM – Help poor children!

Coach › Alan Mattox Beckman Jr

Lan Dao

Jiacheng Liu

Zexuan Zhong

Co-coach › Zhengkai Wu

UNIVERSITY OF NEBRASKA – LINCOLN

unl.edu

Team name › All Accepted

Coach › Jeff Ifland

Dannier Li

Khang Phan

Trieu Hung Tran

UNIVERSITY OF SOUTHERN CALIFORNIAusc.edu**Team name › USC Trojans****Coach › David Kempe**

Pengda Xiang

Changyu Zhu

Chenhui Zhu

Co-coach › Yeji Shen

UNIVERSITY OF WISCONSIN – MADISONwisc.edu**Team name › dauntless****Coach › Dieter van Melkebeek**

Shirui Chen

Zeyuan He

Bryan Jin

Co-coach › Ziyi Zhang

UNIVERSITY OF WATERLOOuwaterloo.ca**Team name › Waterloo Black****Coach › Troy Vasiga**

Joakim Blikstad

Sean Purcell

Jason Yuen

Co-coach › Ondrej Lhotak

NORTHERN EURASIA

BELARUSIAN STATE UNIVERSITYbsu.by**Team name › BelarusianSU 1****Coach › Vladimir Kotov**

Dzianis Kim

Ivan Lukyanov

Aliaksei Rak

INTERNATIONAL BLACK SEA UNIVERSITYibsu.edu.ge**Team name › Tbilisi IBSU 1****Coach › George Mandaria**

Mariam Ksovreli

Nika Narushvili

Nikoloz Svanidze

**BELARUSIAN STATE UNIVERSITY
OF INFORMATICS
AND RADIOELECTRONICS**bsuir.by**Team name › Belarusian SUiR #1****Coach › Aliaksei Ropan**

Uladzislau Mosko

Dzmitry Razhkov

Yury Shilyaev

INTERNATIONAL IT UNIVERSITYiitu.kz**Team name › IITU 1****Coach › Yeskendir Sultanov**

Abay Baimukanov

Aibar Kuanyshbay

Temirlan Satylkhanov

Co-coach › Abylay Kabdoldin

Co-coach › Andrey Kim

KAZAKH-BRITISH TECHNICAL UNIVERSITY

kbtu.kz

Team name › Kazakh-British TU 1

Coach › Askar Akshabayev

Zharaskhan Aman

Alan Amanov

Nurlan Zhussupov

Co-coach › Temirulan Mussayev

MOSCOW AVIATION INSTITUTE

en.mai.ru

Team name › MAI #3

Coach › Valentin Zaytsev

Serhii Horielyshev

Nikita Mikhailov

Oleg Zimakov

Co-coach › Oleg Mingalev

Co-coach › Timofey Yushchenko

MOSCOW INSTITUTE OF PHYSICS & TECHNOLOGY

mipt.ru

Team name › Moscow IPT: Shock Content

Coach › Mikhail Tikhomirov

Eugene Belykh

Andrey Sergunin

Ilia Stepanov

Co-coach › Filipp Rukhovich

MOSCOW STATE UNIVERSITY

msu.ru

Team name › Moscow SU: Red Panda

Coach › Elena Andreeva

Mikhail Ipatov

Vladislav Makeev

Grigory Reznikov

Co-coach › Gleb Evstropov

Co-coach › Andrei Shestimerov

NATIONAL RESEARCH UNIVERSITY HIGHER SCHOOL OF ECONOMICS

hse.ru

Team name › HSE: IOI is not ICM, said MS

Coach › Mikhail Gustokashin

Philipp Gribov

Daniil Nikolenko

Askhat Sakhabiev

Co-coach › Gleb Evstropov

Co-coach › Timur Iskhakov

Co-coach › Valentina Lebedeva

NORTHERN (ARCTIC) FEDERAL UNIVERSITY

narfu.ru

Team name › NArFU

Coach › Kirill Butin

Pavel Asyutchenko

Denis Diachkov

Timur Guriev

SARATOV STATE UNIVERSITY

sgu.ru

Team name › Saratov SU 2

Coach › Aleksandr Frolov

Ivan Androsov

Adilbek Dalabaev

Roman Glazov

ST. PETERSBURG CAMPUS OF HIGHER SCHOOL OF ECONOMICS

spb.hse.ru

Team name › SPb HSE: Abstract Economists

Coach › Anton Garder

Anton Ermilov

Aleksandr Fedorov

Igor Labutin

Co-coach › Anna Kopeliovich

ST. PETERSBURG ITMO UNIVERSITYen.ifmo.ru**Team name** › Spb ITMO University 2**Coach** › **Andrey Stankevich**

Poduremennykh Ilya

Stanislav Naumov

Korobkov Roman

Co-coach › Demid Kucherenko

URAL FEDERAL UNIVERSITYurfu.ru**Team name** › Ural FU: Strong Statement**Coach** › **Vladimir Leskov**

Aleksandr Mullabaev

Nikolay Permyakov

Valentin Zuev

Co-coach › Oleg Merkurev

ST. PETERSBURG STATE UNIVERSITYenglish.spbu.ru**Team name** › SPb SU 8**Coach** › **Andrei Lopatin**

Ekaterina Fadeeva

Alexander Grebennikov

Andrei Zavarin

Co-coach › Alina Filimokhina

Co-coach › Ivan Kazmenko

Co-coach › Anna Lopatina

Co-coach › Natalia Smirnova

UNIVERSITY OF LATVIAlu.lv**Team name** › LU 2**Coach** › **Guntis Arnicans**

Vladislavs Klevickis

Peteris Pakalns

Ingus Janis Pretkalnins

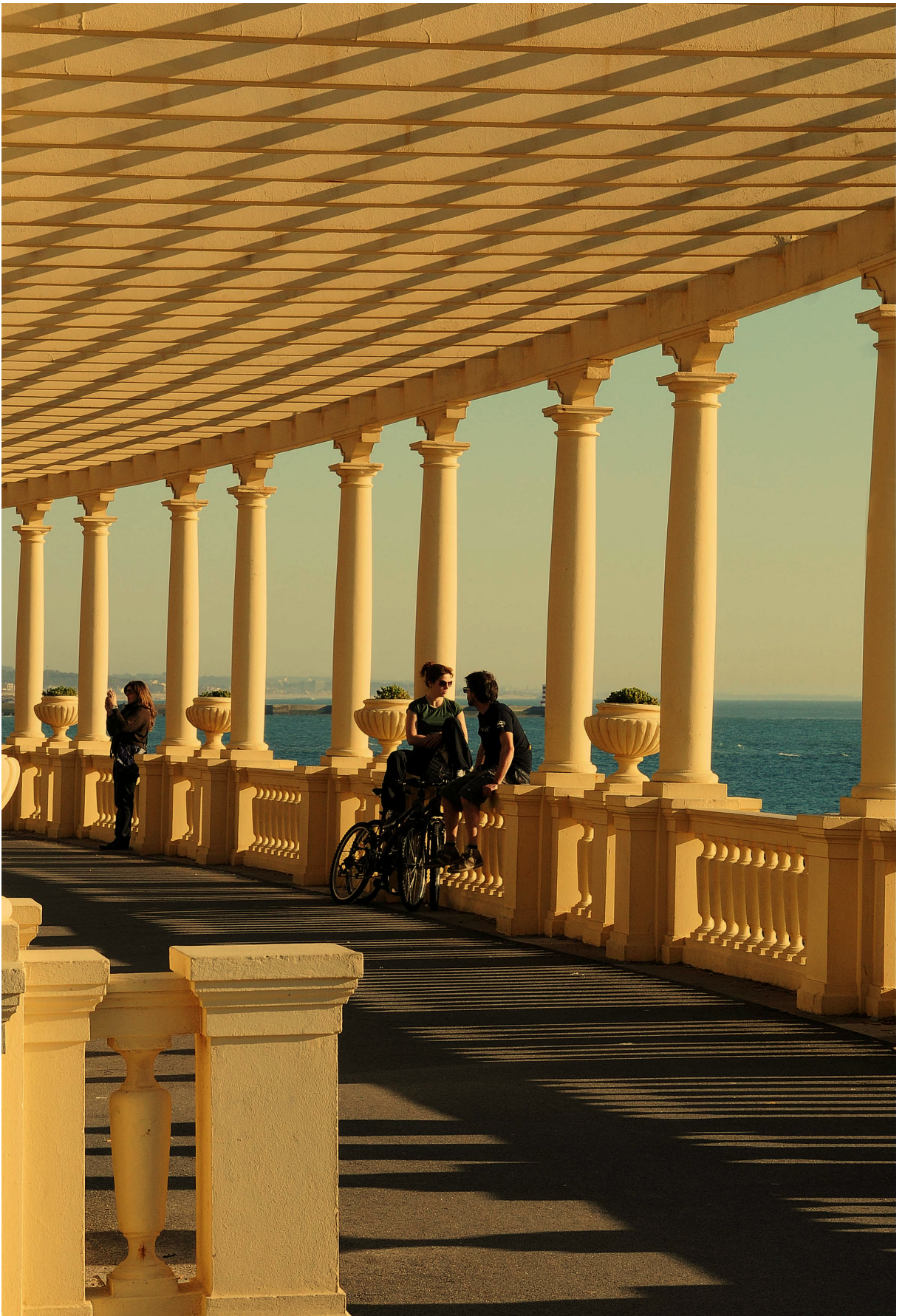
Co-coach › Jevgenijs Vihrovs

LET THEM SEE YOU SOLVE



April 4 , UTC 10:00

ICPCLIVE.COM



06

AWARDS

THE 2019 ICPC FOUNDATION
MARK MEASURES
DISTINGUISHED SERVICE AWARD
PRESENTED TO



FERNANDO SILVA
UNIVERSITY OF PORTO

For ICPC leadership in Europe since 1999: championing the art and science of competitive programming among universities in Europe; organizing regional competitions; engaging community leadership in support of ICPC programs; and championing the 2019 ICPC World Finals.

In service and spirit, Fernando Silva embodies the ideals of the ICPC.

The Mark Measures Distinguished Service Award is presented annually to a person or group who has played an instrumental role in the success of the ICPC for fifteen or more years.

THE 2019 ICPC FOUNDATION
 JOSEPH S. DEBLASI
 OUTSTANDING CONTRIBUTION AWARD
 PRESENTED TO



Fernando Silva



José Paulo Leal



Ana Paula Tomás



Pedro Ribeiro



André Restivo



Alexandra Ferreira



Hugo Ribeiro



Fernando Correia



Hugo Pinto Abreu



Mariana Barros



Miguel Araújo



Miguel Oliveira



Pedro Vasconcelos

For advancing the art and science of computing, in the classroom and lab, and through providing gifted students in Europe and around the globe opportunities to pursue excellence through competitive programming. For over two decades, ICPC Porto volunteers have provided training and ICPC competitions culminating in hosting the 2019 ICPC World Finals in Porto.

The Joseph S. DeBlasi Outstanding Contribution Award is presented annually to a person or group who has played an instrumental role in the success of the ICPC for five or more years.

THE 2019 ICPC FOUNDATION
**OUTSTANDING
GLOBAL SERVICE AWARD**
PRESENTED TO



JETBRAINS
2019 ICPC GLOBAL SPONSOR
ICPC GOLD MEDAL PATRON OF THE ICPC FOUNDATION

For serving as ICPC global programming tools sponsor; for providing outstanding programming tools for the ICPC global community; for sponsoring the 2018 regional contests; for their generous support for the 2019 World Finals; and for their generosity to the ICPC community.

The ICPC Foundation Global Sponsor Award is presented for global contributions to the success of the International Collegiate Programming Contest global community in keeping with the mission of the ICPC Foundation to advance the art and sport of competitive programming.

THE 2019 ICPC FOUNDATION
**OUTSTANDING INTERNATIONAL
 CONTRIBUTION AWARD**
 PRESENTED TO



António de Sousa Pereira



Fernando Silva



José Paulo Leal



João Carlos Ribeiro



Andreia Magalhães



Fernando Correia



Hugo Pinto Abreu



Luis Valente



Mariana Barros



Raul Santos



Sónia Pereira



Susana Barros



Teresa Medeiros

For serving as a principal partner and ICPC global leading academic institution; for drawing together community, industry, and academia to secure and assure the global success of the 2019 ICPC World Finals.

The ICPC Foundation Outstanding International Service Award is presented to an individual or group that has played an instrumental role in the success of advancing the art and science of competitive programming through support of the International Collegiate Programming Contest.

THE 2019 ICPC FOUNDATION
**OUTSTANDING INTERNATIONAL
CONTRIBUTION AWARD**
PRESENTED TO



MUNICIPALITY OF PORTO

For serving as a principal partner and advocate for the 2019 ICPC World Finals by drawing together community, industry, and academia to secure the resources and support that will open doors of opportunity for students in science, mathematics and technology, in Portugal and globally.

The ICPC Foundation Outstanding International Contribution Award is presented to an individual or group that has played an instrumental role in the success in advancing the art and science of competitive programming through support of the International Collegiate Programming Contest.

THE 2019 ICPC FOUNDATION
OUTSTANDING JUDGE AWARD
PRESENTED TO



JAKUB ONUFRY WOJTASZCZYK

For outstanding service to the ICPC as a World Finals Judge.

The ICPC Foundation Outstanding Judge Award is presented to an individual that has played an instrumental role in the success of the International Collegiate Programming Contest by being a regular contributor to the contest problem set and by bringing innovations to the judging process.

THE 2019 ICPC FOUNDATION
GLOBAL IMPACT AWARD
PRESENTED TO



BAYLOR
UNIVERSITY
ICPC HEADQUARTERS

BAYLOR UNIVERSITY

For leadership in uniting the leading academic institutions of the world to empower the next generation of problem solvers in computing sciences and engineering. Over thirty-five years, Baylor has hosted regional contests, hosted the 2006 World Finals, been a champion of developing global enterprise technology in support of the ICPC, and hosted the ICPC Global Headquarters, providing continuity and encouragement for the next generation to pursue excellence so that they may be equipped to meet the challenges that face the world today and the world to come.

The ICPC Global Impact Award is presented to an individual or group that has played an instrumental role in the growth of the International Collegiate Programming Contest World Finals.

THE 2019 ICPC FOUNDATION
GLOBAL IMPACT AWARD
PRESENTED TO



UPSILON PI EPSILON

For leadership bringing together the leading academic institutions of the world in recognizing excellence among students of computing. The UPE has served ICPC competitions for fifty years. As the leading Honor Society of computing and information disciplines, UPE UPE has encouraged and inspired countless students worldwide to reach for a brighter future.

The ICPC Global Impact Award is presented to an individual or group that has played an instrumental role in the growth of the International Collegiate Programming Contest World Finals.

THE 2019 ICPC FOUNDATION
JAMES COMER
DISTINGUISHED REGIONAL CONTEST DIRECTOR AWARD
PRESENTED TO



NICOLAE TAPUS

For inspiring students of the ICPC since 1992 and advancing excellence in the software arts by serving as Director of Southeastern Europe Contests since 1994, and for growing team participation in his region by over 8,000 percent over the past twenty-four years of continuous service.

The James Comer Distinguished Regional Contest Director Award is presented annually to an ICPC regional leader who has played instrumental roles in the success of the International Collegiate Programming Contest for twenty or more years.

THE 2019 ICPC FOUNDATION
EUROPE
DISTINGUISHED LEADERSHIP AWARD
 PRESENTED TO



Boba Mannova



Antoine Amarilli



James Davenport



Ante Derek



Fredrik Heintz



Vaclav Herman



Jan Kubr



Kresimir Malnar



Volodymyr Mesyura



Bertrand Meyer



Martin Mudra



Mart Pluijmaekers



Fredrik Niemela



Kevin Verbeek

For advancing excellence in the software arts by organizing and leading ICPC regional contests in Europe.

The Europe Distinguished Leadership Award is presented to an individual, group, or institution who has played an instrumental role in advancing international educational programs that open doors of opportunity for future creators, and doing so within the open, encouraging ICPC spirit and problem-solving ideals of the ICPC Community.

THE 2019 ICPC FOUNDATION
LIFETIME COACH AWARD (20+ YEARS)



MOHAMMAD KAYKOBAD
BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

We have been involved in ICPC in Bangladesh since 1997. I firmly believe that healthy competitions are key to achieving excellence in a cost effective way, and it is more so for developing countries. ICPC has been always very inspiring for me and for my students who could qualify for the world finals for 20 years in all, and 17 years in a row!!! I have seen the way the ICPC family has grown at exponential rate under the charismatic leadership of Professor Poucher. In the same spirit in Bangladesh we organize 7/8 interuniversity and national programming contests every year with participation of hundreds of teams. It is very inspiring to note that at least 7 Bangladeshi universities have already participated in the ICPC world finals. Participation in ICPC has given praiseworthy confidence to my students who have gone to become finest academicians, researchers and employees of world famous universities, research and other organizations. It was very thrilling to see that my team occupied 11th position in 2000 at Orlando, Florida, USA, and became runner up in Java Challenge in 2009 in Stockholm, Sweden.

THE 2019 ICPC FOUNDATION SENIOR COACH AWARD (15+ YEARS)



ARUP GUHA
UNIVERSITY OF CENTRAL FLORIDA

“What is a memorable achievement or moment from your ICPC history?”

To date, as a coach, our team’s most memorable achievement was earning a Bronze medal in the 2018 ICPC World Finals. Most of the top high school students in competitive programming in our country don’t come to our school. Instead they go to more prestigious schools. Our team that earned the Bronze medal consisted of three students who never competed in programming competitions until getting to college. Two of those students competed in their first programming competition in September of 2015, and less than three years later, they earned a Bronze medal. I was extremely proud of their rate of learning and dedication, and it was nice to see our team beat many teams who had students with experience prior to college.”

THE 2019 ICPC FOUNDATION SENIOR COACH AWARD (15+ YEARS)



XIAOJUN WU
TSINGHUA UNIVERSITY

By continuously coaching ICPC teams, I can always meet the best students in computer science. It is my pleasure to help them better balance their engagement in programming competitions and study of their majors. I can guide them to learn and exercise non-intellectual qualities through ICPC related activities and happily see them become more comprehensive talents. These excellent students’ enthusiasm and devotion to study also inspires me to keep a clear goal and work hard without being afraid of hardship.

THE 2019 ICPC FOUNDATION COACH AWARD (5+ YEARS)



GUNTIS ARNICANS
UNIVERSITY OF LATVIA

The University of Latvia started taking part in the ICPC contests from 1996. In the semi-finals of the first 13 times, we have failed to get into the Finals. Several times our teams remained like a first or second team that doesn't go on. Finals seemed to be an almost unattainable goal while a brilliant programmer comes to our university. However, we advanced to the Finals in 2012 without the wunderkind. At that point, it was a miracle we had long expected, and at the same time, it was a great turning point. A community of students and supporters formed, facilitating going to the Finals 5 times over the past 8 years.

THE 2019 ICPC FOUNDATION COACH AWARD (5+ YEARS)



SU FENG
BEIJING NORMAL UNIVERSITY

“Why do you continue coaching ICPC teams?”

Coaching our ICPC team is by far the most enjoyable part of my job. Working with these bright young minds keeps me motivated to always learn new things. My students are genuinely enthusiastic and showed great perseverance when faced with challenges, and coaching them is the best teaching experience I can think of. I keep in touch with many graduated members of our ICPC team, and it is remarkable to see how they take the lessons learned from ICPC to many other aspects of their life and keep thriving professionally. It has been great fun and I wish to continue coaching for many more years.”

THE 2019 ICPC FOUNDATION
COACH AWARD
(5+ YEARS)



JEFF IFLAND
 UNIVERSITY OF NEBRASKA – LINCOLN

“Why do you continue coaching ICPC teams?”

I coach teams because I care about the students. I enjoy seeing them overcome and grow in reference to problem solving as well as individually. I want to encourage them to see the world as a bigger and yet less different place than they may imagine.”

THE 2019 ICPC FOUNDATION
COACH AWARD
(5+ YEARS)



MD SAIFUL ISLAM
 SHAHJALAL UNIVERSITY OF
 SCIENCE AND TECHNOLOGY

“The best moments for me as a coach was in 2015 when we [SUST] became Champion and second runner-up in ACM ICPC Dhaka regional by beating all the teams including Taiwan teams. We solve 6 problems and secure 54th position in ICPC World Final 2016. It was SUST best performance in ICPC Dhaka regional and also in ICPC World Final.”

THE 2019 ICPC FOUNDATION
COACH AWARD
(5+ YEARS)



ALAA JRAD
 TISHREEN UNIVERSITY & SYRIAN
 VIRTUAL UNIVERSITY

“How have you seen ICPC affect your life and/or your students' lives?”

Even if we disregard such nice things as a chance to travel and meet like-minded people, even if we put aside such factors as passion for programming and competitive spirit, participation in such contests returns some important dividends. ICPC participants learn to find optimal solutions for relatively difficult problems, also competitions stimulate and motivate people to code quickly and flawlessly which is very useful for future professional work. For me personally I have learned a lot while coaching those brilliant minds and i will do my best to continue doing that.”

THE 2019 ICPC FOUNDATION
COACH AWARD
(5+ YEARS)



**EDGARDO ADRIAN
 FRANCO MARTÍNEZ**
 ESCUELA SUPERIOR DE CÓMPUTO
 DEL INSTITUTO POLITÉCNICO NACIONAL

“What advice would you give other coaches and contestants?”

I can advise the ICPC participants that in order to achieve any goal it is necessary to draw up a good plan and work hard in it, it is important to make an effort despite feeling at times wanting to abandon training or competition. But remember that those are unique moments in life that can not be repeated, do not stop enjoying the competition despite the results. As a coach there is always a lot of stress and work, but the reward will be very great in the lives of students who live ICPC. If our passion is computing or mathematics, this is the best way to always enjoy this area of knowledge. Enjoy every situation at ICPC.”

THE 2019 ICPC FOUNDATION
COACH AWARD
(5+ YEARS)



HO DAC PHUONG
 UNIVERSITY OF ENGINEERING
 AND TECHNOLOGY – VNU

“Why do you continue coaching ICPC teams?”

I love the bright students. I would like to encourage them hard working, brain storming and cooperating closely with friends. And I see ICPC is good environment to do such a thing.”

THE 2019 ICPC FOUNDATION
COACH AWARD
(5+ YEARS)



TROY VASIGA
 UNIVERSITY OF WATERLOO

“Why do you continue coaching ICPC teams?”

It is a pleasure to see the development of competitors over time. I have been involved with the Canadian Computing Competition for over 15 years, so I often see students in secondary school come through the ranks to UWaterloo. Even though very few students will be end up on the team that will attend the World Finals, it is the large number of students who compete in the Local and Regional contests, who number in the hundreds, that I get to see grow both in maturity and in algorithmic contest techniques. Students also bring new ideas and techniques that they share within the UWaterloo ICPC community, which helps me grow as a coach. It is a pleasure to help organize the Local contests, to travel with the team to the Regionals and to be privileged to have such strong students who consistently attain an invitation to the World Finals.”

THE 2019 ICPC FOUNDATION COACH AWARD (5+ YEARS)



SONG YOU BEIHANG UNIVERSITY

“How have you seen ICPC affect your life and/or your students' lives?”






ICPC is like the Olympic Games. It is a great game and very interesting. ICPC has taught me and my students a lot. I have been taking students to the ICPC Asian Regionals for 15 years since 2005. At first, only one team of our University was promoted to the ICPC Asian Regional 2005 in which we won only one bronze medal. Since then, our performance has improved year by year. We won 10 gold medals in the Asian Regional 2018. Since 2013, we have been promoted to the ICPC World finals six times. ICPC let me and my students know that as long as we persevere, we can make progress and achieve success. In ICPC, my students not only improve their ability of programming, but also learn the spirit of cooperation, communication with others, and have made deep friendships with many college students all over the world.

As a professor, I teach two courses “program design” and “algorithm analysis”. I introduce the ICPC model into my teaching. The teaching method is very popular with students, and teaching effect has been achieved very well. ICPC also has an important impact on my research work. Thinking about the interesting problems of ICPC often inspires me in my research.”



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-  Updates from ICPCNews
-  Team and Coach Information
-  Interactive World Map

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07

LOCAL INFORMATION

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4100-325 Porto**

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General
infoboavista@bessahotel.com

Group Reservations
groups@bessahotel.com

Phone
+351 226 050 000

HOTEL
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booking.ipanemapark@hfhotels.com

Reception
hfiipanemapark@hfhotels.com

Phone
+351 225 322 121

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**Rua do Campo Alegre, 156/172
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Reservations
booking.ipanemaporto@hfhotels.com

Reception
hftuanemaporto@hfhotels.com

Phone
+351 226 075 059

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4150-483 Porto**

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Reservations
booking.tuela@hfhotels.com

Reception
hftuelaporto@hfhotels.com

Phone
+351 226 004 747

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Reservations
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Phone
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ICPC Live Archive

Emilio Revilla

CLI Symposium

Miguel Revilla Rodríguez

ICPC Live Archive

ICPC CONTEST CONTROL SYSTEM, ANALYTICS & GRAPHICS

Jacob Eldering

World Finals Contest Control System Co-director

Iakov Dlugach

ICPC Analytics

Michal Forišek

ICPC Analytics

Nicky Gerritsen

World Finals Contest Control System

Mikael Goldmann

World Finals Contest Control System

Bjarki Ágúst Guðmundsson

ICPC CCS

Keith Johnson

World Finals Contest Control System

Thijs Kinkhorst

World Finals Contest Control System

Pavel Kunyavskiy

ICPC Analytics

Simon Lindholm

ICPC CCS

Fredrik Niemelä

World Finals Contest Control System

Stein Norheim

ICPC Analytics Director

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World Finals Contest Control System

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David Sturgill

ICPC Graphics

Tobias Werth

World Finals Contest Control System Director

Mattias de Zalenski

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UPE – ICPC Registration

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Bob Roggio

UPE Executive Council

Carolyn Roggio

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Huawei Delegation

Moon Jee Yoo

UPE – ICPC Registration

Liqian ZHAI

Huawei Delegation

Yuwei Zhang

Huawei Delegation

Jiancheng ZENG

Huawei Delegation

Hong ZHOU

Huawei Delegation

Wei ZHAO

Huawei Delegation

ICPC STAFF**Roy Andersson**

ICPC Director of Regional Contests

Helén Augustini

ICPC Regional Contest Symposium Assistant

Erich Baker

Baylor University Computer Science Department Chair

Lori Baker

Baylor University Vice Provost for Strategic Initiatives, Collaboration and Leadership Development

Garrett Beach

ICPC Volunteer

James Bennighof

Baylor University Vice Provost for Academic Affairs and Policy

Stephen Bourne

ICPC Director of Ceremonies & ICPC Foundation

David Brickhouse

ICPC Volunteer

Nancy Brickhouse

Baylor University Provost

Edward Chrzanowski

ICPC Volunteer

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ICPC Ceremonies Coordinator

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ICPC Manager Assistant

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ICPC Volunteer

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ICPC Volunteer

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ICPC Registrar

Anna Kazakova

ICPC Volunteer

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ICPC Volunteer

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ICPC Volunteer

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ICPC Guest Services

Mikael Renström

ICPC Director of Guest Services

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ICPC Volunteer

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ICPC Volunteer

Mary Ross

ICPC Global Contest Manager Assistant

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ICPC Foundation Director of Development

Cheryl Tucker

ICPC Registrar Assistant

Holly Tucker

ICPC Volunteer

Ria van Ouwerkerk

ICPC Volunteer

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ICPC SysOps

Samir Ashoo

ICPC SysOps

Tim deBoer

ICPC SysOps & Graphics

John Clevenger

ICPC Technical Director

Douglas Lane

ICPC SysOps

Patrick Sweitzer

ICPC SysOps

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Daniel Beard

ICPC Video

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Mohamed Fouad
Arab & Africa Collegiate Programming
Contest Executive Director

Ahmed Abdelrazek
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Imane Abou Said
ACPC Media

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ACPC Levant Area Chair

Mohamed Ahmed
ACPC Volunteer

Mohammed Al-Badawi
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ACPC ERCD Assistant in Lebanon

Francisco Augusto
Angolan Headquarters
Director of Administrative Area Badge role

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Director for Administrative Area
of the Angolan headquarters of the ICPC

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ACPC RCD Representative in Syria

Amina BELANES
ACPC Media

Maha Ben Abdallah
ERCD Deputy in Magreb Area

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ACPC Media Director

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Asia Associate Director

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Alfia Antonova

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Southeastern Europe Contest Director

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CERC System Administrator

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Dmitry Aksenov

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Moscow Delegation

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Moscow Delegation

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Moscow Delegation

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Alina Ulanova

Moscow Delegation

Sergey Videnin

East Siberian Subregion Contest Director

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Moscow Delegation

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Trans-Caucasian Site Director

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Lisa Donahoo
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 Veronika Soboleva
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 Patrick Hynan

TEXTS AND EDITING

ICPC Headquarters
 University of Porto

DESIGN AND LAYOUT

Diana Vila Pouca

COVER DESIGN

University of Porto

DESIGN HOST LOGO

Carla Amaral

POCKET GUIDE DESIGN

Carla Ferreira

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