CPCI Activity Report 2019–2020

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This report summarizes the activities of the CPCI association over the year 2019–2020. The CPCI association is a French non-profit (RNA identifier W751238568), whose mission statement is to promote competitive programming. The focus of CPCI's activities in 2019–2020 was to organize the SWERC'19–20 programming contest.

The contest. SWERC is a 5-hour on-site programming contest for teams of three students, focused on algorithmic problem solving and practical coding. It is open to teams from France, Israel, Italy, Portugal, Spain and Switzerland. SWERC serves as the regional selection phase for the International Collegiate Programming Contest[1]: the

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[1] https://icpc.baylor.edu/

winning teams of SWERC are qualified to advance to the ICPC World Finals and compete against teams from all over the world.

In 2019, the organization of SWERC was put under the banner of the newly-created Institut polytechnique de Paris[2], and École normale supérieure was no longer formally involved in the organization. The event was hosted by Télécom Paris[3] and managed by the CPCI association. SWERC is a regional ICPC contest but is organized rather independently, although we received financial support from the ICPC Foundation thanks to the work of the ICPC Director of Development, Veronika Soboleva. The structure, rules, and regulations of SWERC also follow the ICPC regulations. Télécom Paris contributed financially to the contest but also contributed in kind, by providing the location and computer rooms, and by offering us the help of its staff (IT, logistics, communication, security, mail, electricity, etc.).

Participants. SWERC took place in Télécom Paris on January 25–26, 2020. The contest had been moved to the month of January because of Télécom's ongoing relocation to a new building in Palaiseau. The number of teams of three students who were initially at the contest was 101 (up from 89 last year), the highest number of teams ever at SWERC; this number was higher than our original planned capacity, and amounted to 303 registered participants. Of these 101 teams, 98 were physically present and complete at SWERC and were thus ranked.

These 98 teams came from 51 universities (up from 49 last year). We have published[4] a complete list of the teams, including a map, and including the name and contact information of team members and coaches who wished to share this information. We also posted online the past results of these institutions at previous SWERC contests[5].

In addition to the 303 registered contestants, we also had 69 coaches and co-coaches registered to attend the event, although not all of them were physically present; and likewise around 16 guests (not all of which attended) from our sponsors Atos and Mazars, and guests from ICPC. In terms of organizers, the team was led by the contest director, contest deputy director, and chief judge, but this time also included a deputy chief judge and a chief technical officer. In addition, we had the help of 9 judges (who also acted as problem setters), and 35 registered volunteers. The team also included 2 engineers from the Télécom IT department, and 3 volunteers from the ICPC Live organization who provided live coverage of the event. There were other participants without a badge, including Télécom security and canteen staff, and members of the Télécom student association Comète for photo and video coverage.

Activities. The registration process was handled by volunteers, and included the distribution of prepared badges to the contestant teams, the collection of their notebooks and dictionaries (for verification by the judges and installation in the labs), the distribution of contest bags to participants (including a badge holder, t-shirt, notebook, pen,

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[2]https://www.ip-paris.fr/
[3]https://www.telecom-paris.fr/
[4]https://swerc.eu/2019/teams/
[5]https://swerc.eu/2019/past-editions/

information leaflet, and promotional information from sponsors); last, Comète took a picture of most participating teams in front of the contest banner – for some teams we had to take a picture in the lab. This year, an early registration desk was staffed at the partner hotel of the contest, Jo & Joe, on Friday night, in addition to the regular registration desk on Saturday morning. Contestants had been encouraged to stay at the hotel, because we provided a bus transfer between the hotel and contest/banquet venue: this was necessary given the difficulty to reach the new site of Télécom Paris by public transportation on the week-end, compounded by an ongoing public transportation strike.

The event started with an opening ceremony, which summarized some general points and statistics, and included an opening talk by Talel Abdessalem (the Télécom director of research), Jean-François Naviner (the Télécom director of international relations), and Veronika Soboleva (ICPC Director of development). There were no sponsor talks this year, but an invited talk by Marie-Paule Cani presenting her research topics to participants. We then gave an introductory talk to the practice session, followed by lunch at the Télécom canteen.

Unlike last year, and despite the contest taking place in new and sometimes partially installed computer labs on newly installed equipment with a different setup from the previous years, there were no significant technical problems this year.

The contest banquet this year took place close to the Eiffel tower, with bus transfer from Télécom. The plan was for contestants to catch a glimpse of Parisian highlights, as the rest of the event took place in Palaiseau. The banquet was held at the New Cap Event Center.

On Sunday, we started by giving some last minute information about the contest. The contest proper then took place from 9:15 to 14:15: the team of volunteers provided snacks, supervised the rooms, and delivered balloons and printouts. The layout of the new Télécom building meant that the teams were spread across 4 different floors, in two different areas of the building, each managed by its own volunteer room with balloons, supplies, printers, and a video link connecting both rooms.

Contestant submissions were reviewed by the team of judges, who had prepared the problems and were all physically present. The contest control system (DomJudge) was managed by the chief judge and deputy chief judge, while the contest director and deputy chief judge were in charge of the contest environment; the ICPC Live capture was organized in coordination with our chief technical officer. A copy of the contest environment (virtual machine image) had been made available for download before the contest[6], and a publicly available instance of the contest control system was also made available during the contest for coaches and other interested parties: there were 65 users who made submissions using this system, including 30 coaches and 35 self-registered participants, significantly more than last year.

During the contest, members of the organization team had a meeting with coaches to discuss about the future of SWERC. After the contest, we had a lunch break. We then had a problem analysis session, where the judges briefly presented their problems and

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[6]https://swerc.eu/2019/environment/

possible solutions, and an award ceremony where we announced the results, congratu-lated the winning teams, handed out prizes, and said a few words of thanks. This year, team certificates were sent by postal mail to the teams, to ensure that the event could finish on time for all teams to leave on the same day from the school.

Winning team: EP Chopper

Results and communication.   The rankings of the contest are available online[7]. The contest was won by team "EP Chopper" from École polytechnique (Paris), with 11 prob-lems solved; a close runner-up was "UPC-1" from Universitat Politècnica de Catalunya, with 11 problems solved, then "mETH" from ETH Zürich, with 10 problems solved; followed by "EP Rouje", another team from École polytechnique, then "ENS Ulm 1" (the winning institution from the previous year).

We gave out 2 gold medals, 4 silver medals, and 8 bronze medals, and gave prizes to participants. The SWERC trophy was handed over by École normale supérieure and given to École polytechnique.

The problem set for the SWERC 2019 contest and for the practice contest have been published online[8].

Assessment.   Overall, we believe that CPCI has successfully ran the 2019–2020 edition of SWERC in the new facilities of Télécom Paris. The number of 98 ranked teams is a 10% increase relative to last year, a two-fold increase relative to 2014. One point which is less encouraging is that the number of participating institutions has only increased by two (from 49 to 51 institutions). Like last year, we have made extensive efforts to reach out to institutions and encourage them to participate: we used our existing professional

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[7]https://swerc.eu/2019/scoreboard
[8]https://swerc.eu/2019/problems/

contacts, the contact information of former participants, and we also cold-emailed some institutions.

One point of concern, which we report this year but has existed also in previous years, is the high gender imbalance of the contest. Of the 294 contestants of the 98 ranked teams, only 19 are female compared to 275 males, according to the ICPC platform[9]. This is a 6% ratio of females among contestants. We hope to improve this gap by encouraging female participation to upcoming SWERC editions.

We are not aware of any serious problem with the contest environment, hardware, contest control system, or judging infrastructure, that would have jeopardized the fairness of the contest. There are no incidents with participant behavior that need to be reported. Overall, we believe that SWERC has adequately performed its core task of identifying the best teams to promote to the ICPC world finals.

We evaluated participant satisfaction by running a satisfaction survey after the event. Depending on questions, it was answered by around 55 participants, which is comparable to the previous year. The answers are comparable to that of previous years. Only around 20 people evaluated the partner hostel (as not all respondents stayed there), but they were satisfied overall. In terms of food, the lunches were somewhat less well received than the Saturday warm lunch of last year (we do not know if this concerns the food or the waiting lines), but better received than the cold meal tray from the previous year. The banquet was judged as somewhat less satisfying compared to the previous year. The guest talk of this year was better received than the sponsor talks of last year.

The question of rotating the organization of the event remains open, although the COVID-19 pandemic, which started in Europe shortly after the event, made the organization of future SWERC editions an entirely different challenge.

Environmental footprint. We have, for the first time, tried to estimate the carbon footprint of the travel by participants to attend SWERC. The estimate amounts to 95 tCO_2e, i.e., the equivalent of emitting a bit less than 100 tons of carbon dioxide.

This estimates were computed from the answers to our form asking participants about travel details, which concerned only participants who were supposed to attend, and excluded 106 Paris-based participants, so it concerned 260 participants in total. The estimates may be somewhat inaccurate because some of these people may not have eventually traveled, and some trips (e.g., ICPC Live members) are not accounted.

These 260 participants were assumed to travel in a straight line from the GPS coordinates of their institution to the travel venue, and back. This gave a total of 488581 km traveled, i.e., 940 kilometers per participant per way on average. Some participants indicated the transportation means used, otherwise we assumed that trips of 400 km and above were done by plane and others by train.

We followed the estimates of `https://github.com/milankl/CarbonFootprintAGU` to estimate the carbon footprint of these trips, following their transportation means (we acknowledge that there is considerable disagreement between estimates of the carbon

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[9]The platform requires contestants to specify a gender identity, for which only Female and Male are valid options.

footprint of air travel, as the accounting of indirect effects varies across sources), yielding the indicated total. Unsurprisingly, train trips pollute less: train represented 26% of trips, 11% of the total distance traveled, but only 3% of emissions.

The carbon footprint of the buses that we hired for participant trips during the contest is negligible in comparison, totalling less than 100 kg. We did not try to estimate other indirect emissions related to the event (food, machines, supplies, electricity consumption, etc.).

Another step we took this year to support sustainable environmental practices is to buy contest t-shirts in GOTS-certified organic cotton, from a brand affiliated to the Fair Wear Foundation (Stanley/Stella); and buy contest tote bags in Fairtrade-certified cotton.