

# Third International Computer Programming Education Conference

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Ave (IPCA), Barcelos, Portugal

Edited by

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## ■ Preface

This book includes the articles that were accepted for the Third Edition of the International Computer Programming Education Conference (ICPEC). Born in the COVID era, this is the first edition of the conference that was held physically. The event took place in Barcelos, Portugal, at Instituto Politécnico do Cávado e do Ave, from June, 2<sup>nd</sup> to June, 3<sup>rd</sup>.

Teaching computer science is a challenging task: from the traditional education, with paper and a blackboard, to more computational training, where students are able to test their solutions in a computer, or even with sophisticated approaches, using interactive learning tools, there is still no perfect solution. Computer science, and specifically learning how to program and how to develop algorithms and data structures, are still the subjects with less success in Computer Science Bachelor Degrees.

While a lot of lecturers have their own research interests, apart from their teaching duties, there are some lecturers that continue to debate, study and analyse different teaching approaches, and developing solutions to help in the learning process. ICPEC was created by such a group of lecturers, enthusiastic with teaching computer science and, specifically, programming languages and algorithms. During the last three years, ICPEC has grown in a larger (but still small) community of researchers interested in these topics.

This edition includes fourteen contributions in the area of education of computer science subjects. While most works still focus on the challenge that is the teaching of programming languages and algorithms, there are also contributions for the awareness of cloud and internet security, user-interface testing and even mathematics.

We are sure that the possibility to discuss these subjects in a community, and live without digital means of communication, that we are all tired of, has been productive and that synergies will be created for further study of this conference topics.

Hopefully, with the probable control of COVID and the return to face-to-face conferences, we will be able to increase this community and share experiences in order to be better teachers and researchers in this challenging area of computer programming.

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