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Nr. 857

Herwig Unger,
Wolfgang A. Halang (Eds.)

Autonomous Systems 2017

Proceedings of the 10th GI Conference

FernUniversität in Hagen
Schriften zur Informations- und Kommunikationstechnik

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Owing to the overwhelming amount of often sensitive data hitting contemporary users of networked devices almost everywhere, this volume's two keynote addresses deal with the security and ethical problems of the increasingly intelligent and autonomously acting devices in our environment. Then, light is shed on theoretical, algorithmic, technical and security aspects of big data analytics, data mining, information retrieval and machine learning. As no other area of computer science and engineering, autonomous systems accelerate the development of new systems' hardware and highly specialised applications with an unprecedented intensity. Thus, the corresponding topics addressed in this book range from computer architectures for embedded systems dedicated to safety-related automation applications and designed for verifiability and correct operation over approaches to suppress electromagnetic interferences and to interpret experimental data to questions related to their design and development, to building models and investigating their impact on society.

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Preface

The task is, not so much to see what no one has yet seen;
but to think what nobody has yet thought,
about that which everybody sees.

Erwin Schrödinger

Somehow, the life of a scientist may be compared with the one of a monk in a monastery: new ideas are usually born in solitude, after a longer meditation process inspired by an external event, but rarely by rational thinking. Once an idea is born, especially if it sounds whimsical, then it must be cared for (developed), it must be fought for its existence, and its correctness and feasibility must be proven in competition with others. Particularly in the very beginning, this process requires a unique atmosphere away from private troubles, jealousy, hurry, pressures and economic needs. And — differing from the practice of most other scientific conferences — it needs time and honest, non-egoistic and enduring talk among colleagues and friends. Nevertheless, like in nature or society, also in science there is competition of ideas for the best ones, and only a few will survive.

For ten years now, the former PhD seminar, workshop and today's conference on Autonomous Systems has cultivated exactly such an environment. A growing number of colleagues, in this year coming from three continents, enjoys quiet moments in the inspiring nature of beautiful Majorca Island as well as the open, censor-free, not always politically correct, but (almost) unlimited discussions with colleagues and friends. Again, the 20 contributions of these proceedings, which were intentionally not peer-reviewed, but only checked for technical soundness and plagiarism, exhibit a variety of aspects related to the conference topics.

Owing to the overwhelming amount of (sensitive) data hitting today's users of most networked devices almost everywhere in this world, we decided to commence this volume with two keynote addresses related to security and ethical problems of the more and more intelligent and autonomously acting devices in our environment. We hope that these contributions may trigger intense interdisciplinary discussions.

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A section on Big Data and Data Mining follows, touching technical and algorithmic details of data processing. Since most problems cannot be tackled anymore without proper mathematical background, the border to this book's subsequent part on Theory becomes more and more blurred. As no other area of computer science and engineering autonomous systems accelerate the development of new systems' hardware and highly specialised applications with an unprecedented intensity. This may be the reason why the concluding section Architectures and Applications turned out the most voluminous one spanning topics from processor architecture to electrical engineering, and showing the need for extended interdisciplinary cooperation between scientists.

Again, a PhD session and a tutorial are conducted to attract our youngest group of attendants, to encourage them and to provide them with hints for their further research and publication work.

Last but not least, we want to extend a sincere Thank You to Jutta Düring and Barbara Kleine, who worked hard in the background preparing these proceedings as well as setting up every, maybe not immediately perceivable detail of our event in a perfect manner. In addition, we appreciate the support of FernUniversität in Hagen given to publish this volume.

Hagen, August 2017

Herwig Unger
Wolfgang A. Halang

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