

# Special Issue of Concurrency and Computation: Practice and experience “FPDAPP, Future Perspectives on Decentralized Applications”

Blockchain technologies make agreement among untrusted parties possible, without the need for certification authorities. Proposed frameworks have been put forward in sector as diverse as finance, health care, notary, intellectual property management, identity, provenance, international cooperation, social good, and security to cite but a few. Smart contracts, that is, self-enforcing agreements in terms of executable software running on blockchains, have been developed in several contexts. Such an under-definition computational model introduces innovative aspects, such as the economics and trust of the decentralized computation relying on the shared contribution of peers and their decentralized consensus.

Following the first edition of the International Workshop on Future Perspectives of Decentralized Applications, FPDAPP (held in conjunctions to EURO-PAR conference), this special issue primarily carries new results from revised and substantially extended versions of papers presented at the workshop. Moreover, this volume contains new contributions that rigorously explore and evaluate the potentiality of novel decentralized frameworks and applications.

After a thorough peer-reviewing process focused on quality, innovative contribution, applicability to real-world scenarios, we have selected six manuscripts for publication.

The paper “Analysis of multi-input multi-output transactions in the Bitcoin network” proposes an exploratory analysis on the Bitcoin network focused on mixing-like behaviors based on multi-input/output transactions.

The article “Trusted systems of records based on Blockchain technology - a prototype for mileage storing in the automotive industry” proposes a blockchain-based trusted system of records to address the problem of asymmetric information on the used car market as described by Nobel laureate Akerlof.

The paper “Blockchain applications beyond the cryptocurrency casino: The Punishment not Reward blockchain architecture” proposes an interesting punishment mechanism system as alternative to classical reward strategies for blockchain maintenance.

The paper “Implementation and evaluation of smart contracts using a hybrid on- and off-blockchain architecture” introduces a novel hybrid architecture for the implementation of smart contracts, based on a centralized monitoring smart contract on the Ethereum blockchain.

The paper “Design and practical implementation of verify-your-vote protocol” is focused on the highly debated and challenging problem of electronic voting. It proposes a verifiable blockchain-based online voting protocol that ensures security by using a variety of cryptographic primitives.

Finally, the paper “Ensuring transparency and traceability of food local products: A blockchain application to a Smart Tourism Region” proposes a blockchain-oriented platform to guarantee the origin and provenance of food items in a Smart Tourism Region context where local food and beverage can become a good combination to attract tourist and to promote the area thanks to their clearly certified provenance.

As guest editors, we would like to express our appreciation for the impressive contributions made by all authors. We would like also to thank all the reviewers that helped us to evaluate all submissions, providing valuable critics and suggestions to the authors. Finally, we would like to thank all editorial board members and all staff for allowing us to publish this Special Issue and for his great support throughout the entire publication process.

The guest editors:

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