Workshop on High Performance Computing for Smart Cities – WHPCSC 2019

Abstract

The interaction between humans have shaped our world, giving birth to modern societies, and cities. Machines are now a fundamental part of this development, sharing space with citizens in our cities, consuming and producing information. This new paradigm is being called the Smart Cities. The building blocks of a smart city are technological devices capable of communicating, processing information and becoming part of the decision-making, but this requires high-performance computing capabilities. Besides promoting a decentralization of the current system, the new cities open doors for different autonomous agents to optimize their own interests. In this context, combinatorial optimization plays a fundamental role for more precise, efficient and balanced decision making. In addition, interaction with citizens is not overlooked, new tools contribute to a more transparent society by promoting a participatory and developed economy. Transparency is also being explored through peer-to-peer technologies and distributed ledgers such as blockchain, where scalability currently poses big challenges to evolution of the systems. It is required that such advances take place in a sustainable manner, due to limited existing resources being harnessed, boosting the adoption of energy-efficient devices. This universe of possibilities opens doors for researchers to devise distinct environments of complex and multicriteria decisions.

Previous editions:
This workshop is strongly connected to four others on Smart City topic, organized since 2017 by the Creating.City group (see https://creating.city/proceedings). The HPC topic has always been a subject on past workshops, together with computational intelligence, so a more directed name was chosen this time to attract more of the HPC community.

Topics of interest include, but are not limited to:
• Applications of HPC to Smart Cities
• Citizens and HPC Solutions on Smart Cities
• Computational Intelligence on HPC devices
• HPC for Autonomous and Unmanned Aerial Vehicles (UAV)
• HPC for Consensus and Byzantine Fault Tolerance (BFT)
• HPC for Decentralized Systems on Smart Cities
• HPC for Decision-making on Green Logistics
• HPC for Digital Signatures and Cryptography
• HPC for Internet-of-Things (IoT) and Internet-of-Value (IoV)
• HPC Systems and Analysis on Smart City scenarios
• Scalability on Decentralized Ledgers
• Smart Grid optimization using HPC

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