ICPE2020

11th ACM / SPEC International Conference on Performance Engineering

EDMONTON CANADA
APRIL 20 - 24 2020

SIGSOFT · spec · spec Research · ACM SIGMETRICS special interest group on performance evaluation

https://icpe2020.spec.org

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CALL FOR CONTRIBUTIONS

ACM/SPEC ICPE brings together researchers and practitioners to report state-of-the-art and in-progress research on the performance engineering of software and systems. The main theme this year is "**Performance Engineering under Uncertainty**". Modern systems are subject to multiple sources of uncertainty due to openness, heterogeneity, versatility, and variability. The complexity of managing performance-related concerns under uncertainty is starting to overwhelm even the capabilities of large engineering teams. We are looking for contributions that use techniques to enhance the performance modeling, estimation, and optimization of complex systems while considering their intrinsic uncertainties. At the same time, we are looking for all the contributions that improve the state-of-the-art while analyzing the performance uncertainty of software systems.

TOPICS OF INTEREST - SUMMARY

- Performance modeling of software
- Performance and software development processes/ paradigms
- Performance measurement, monitoring, and analysis
- Benchmarking
- Run-time performance management and adaptation
- Power and performance, energy efficiency
- Performance modeling and evaluation in different environments and application domains
- All other topics related to the performance engineering of software and systems

IMPORTANT DATES

Research Papers - Abstract submission	Oct 4, 2019	**Workshop Proposals** - Proposal submission	Oct 11, 2019
Research Papers - Paper submission	Oct 11, 2019	**Workshop Proposals** - Notification	Oct 25, 2019
Research Papers - Notification	Dec 10, 2019	**Workshop Proposals** - Camera-ready	Feb 24, 2020
Research Papers - Camera-ready paper submission	Jan 31, 2020	**Poster & Demo Papers** - Submission	Jan 20, 2020
Accepted Full Papers - Artifacts - Artifact registration	Dec 13, 2019	**Poster & Demo Papers** - Notification	Feb 04, 2020
Accepted Full Papers - Artifacts - Artifact submission	Dec 20, 2019	**Poster & Demo Papers** - Camera-ready	Feb 24, 2020
Accepted Full Papers - Artifacts - Artifact notification	Feb 7, 2020	**Tutorials** - Proposal submission	Jan 20, 2020
Industrial/Experience Papers - Abstract submission	Oct 4, 2019	**Tutorials** - Notification	Feb 04, 2020
Industrial/Experience Papers - Paper submission	Oct 11, 2019	**Tutorials** - Camera-ready	Feb 24, 2020
Industrial/Experience Papers - Notification	Dec 11, 2019	**Work-in-Progress** - Paper submission	Jan 20, 2020
Industrial/Experience Papers - Camera-ready	Jan 31, 2020	**Work-in-Progress** - Notification	Feb 04, 2020
		Work-in-Progress - Camera-ready	Feb 24, 2020

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TOPICS OF INTEREST - DETAILED

Performance modeling of software
* Languages and ontologies
* Methods and tools
* Relationship/integration/tradeoffs with other QoS attributes
* Analytical, simulation, and statistical modeling methodologies
* Machine learning and neural networks
* Model validation and calibration techniques
* Automatic model extraction
* Performance modeling and analysis tools
* Traceability of software and performance artifacts
* Control of software performance evolution

Performance and software development processes/paradigms
* Software performance patterns and anti-patterns
* Software/performance tool interoperability (models and data interchange formats)
* Performance-oriented design, implementation and configuration management
* Software Performance Engineering and Model-Driven Development
* Gathering, interpreting and exploiting software performance annotations and data
* System sizing and capacity planning techniques
* (Model-driven) Performance requirements engineering
* Relationship between performance and architecture
* Collaboration of development and operation (DevOps) for performance
* Performance and agile methods
* Performance in Service-Oriented Architectures (SOA) and serverless computing
* Performance of microservice architectures and containers
* DevOps and performance

Performance measurement, monitoring, and analysis
* Performance measurement and monitoring techniques
* Analysis of measured application performance data
* Application tracing and profiling
* Workload characterization and modeling techniques
* Experiment design
* Tools for performance testing, measurement, profiling, and tuning

Benchmarking
* Performance metrics and benchmark suites
* Benchmarking methodologies
* Development of parameterizable, flexible benchmarks
* Benchmark workloads and scenarios
* Use of benchmarks in industry and academia

Run-time performance management and adaptation
* Machine learning and runtime performance decisions
* Context modeling and analysis
* Runtime model estimation
* Use of models at run-time
* Online performance prediction
* Autonomic resource management
* Utility-based optimization
* Capacity management

Power and performance, energy efficiency
* Power consumption models and management techniques
* Tradeoffs between performance and energy efficiency
* Performance-driven resource and power management

Performance modeling and evaluation in different environments and application domains, including but not limited to:
* Cyber-physical systems
* Internet of Things and Industrial Internet (Industry 4.0)
* Communication networks, and embedded, mobile, and wireless systems
* Web-based systems, e-business, Web services
* Big data systems and data analytics
* Machine Learning and Deep-learning systems
* Social networks
* Peer-to-peer systems, including emerging areas such as Blockchain
* Autonomous/adaptive systems
* Transaction-oriented and database systems
* Parallel and distributed systems
* Multi-core, HPC, and other parallel systems
* Cluster, cloud/edge/fog, and grid computing environments
* Control and event-based systems
* Real-time and multimedia systems

PROGRAM COMMITTEE (RESEARCH)

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