wosc5-proposal.md

We would like to propose the 5th iteration of the established series of workshops under the name of *International Workshop on Serverless Computing*. Previous iterations of the workshop have been co-located with ICDCS 2017, Middleware 2017, IEEE Cloud 2018, and UCC+BDCAT 2018.

Workshop Proposal (draft)

Title

5th International Workshop on Serverless Computing (WoSC5) part of 20th ACM/IFIP International Conference (Middleware 2019) Dec 9-13, 2019 in UC Davis, CA, USA.

Brief Technical Description

Over the last four to five years, Serverless Computing (Serverless) has gained an enthusiastic following in industry as a compelling paradigm for the deployment of cloud applications, and is enabled by the recent shift of enterprise application architectures to containers and micro-services. Many of the major cloud vendors, have released serverless platforms, including Amazon Lambda, Google Cloud Functions, Microsoft Azure Functions, IBM Cloud Functions. This workshop brings together researchers and practitioners to discuss their experiences and thoughts on future directions of serverless research.

Interest to the Research Community

Serverless architectures offer different tradeoffs in terms of control, cost, and flexibility compared to distributed applications built on an Infrastructure as a Service (IaaS) substrate. For example, a serverless architecture requires developers to more carefully consider the resources used by their code (time to execute, memory used, etc.) when modularizing their applications. This is in contrast to concerns around latency, scalability, and elasticity, which is where significant development effort has traditionally been spent when building cloud services. In addition, tools and techniques to monitor and debug applications aren't applicable in serverless architectures, and new approaches are needed. As well, test and development pipelines may need to be adapted. Another decision that developers face are the appropriateness of the serverless ecosystem to their application requirements. A rich ecosystem of services built into the platform is typically easier to compose and would offer better performance. However, composing external services may be unavoidable, and in such cases, many of the benefits of serverless disappear, including performance and availability guarantees. This presents an important research challenge, and it is not clear how existing results and best practices, such as workflow composition research, can be applied to composition in a serverless environment.

This would be the second iteration of the workshop at Middleware and we want to build on our previous experience and continue to draw the attention of distributed systems researchers to this young research field and further drive the adoption and development of available technology.

Review process

We will use the HotCRP system to manage the review process. All submitted manuscripts (following Middleware conference requirements on formatting and page limits) will be peer-reviewed by at least 3 program committee members. Accepted papers with confirmed presentation will appear in the conference proceedings as well as in the ACM Digital Library.

Primary contact of the organizing committee

Aleksander Slominski, IBM Research

Estimated number of participants, length, and timetable of the workshop

We expect the workshop length and agenda to be similar to the previous iterations of the workshop, which included invited talks, paper presentations, and panel discussions. We will provide a final agenda once we know the number of invited talks and accepted papers.

Approximate attendance: 30-50 participants

Resources required

We request room for a full day workshop, which will include talks by keynote speakers, authors of accepted papers, and a panel session. In the past, we have had between 30-50 people attend the workshop. If possible, we would also like to record the talks to post on the Web, and would appreciate any A/V assistance for this.

Tentative call for papers

Over the last four to five years, Serverless Computing (Serverless) has gained an enthusiastic following in industry as a compelling paradigm for the deployment of cloud applications, and is enabled by the recent shift of enterprise application architectures to containers and micro-services. Many of the major cloud vendors, have released serverless platforms, including Amazon Lambda, Google Cloud Functions, Microsoft Azure Functions, IBM Cloud Functions. There is, however, little attention from the research community. This workshop brings together researchers and practitioners to discuss their experiences and thoughts on future directions.

Serverless architectures offer different tradeoffs in terms of control, cost, and flexibility. For example, this requires developers to more carefully consider the resources used by their code (time to execute, memory used, etc.) when modularizing their applications. This is in contrast to concerns around latency, scalability, and elasticity, which is where significant development effort has traditionally been spent when building cloud services. In addition, tools and techniques to monitor and debug applications aren't applicable in serverless architectures, and new approaches are needed. As well, test and development pipelines may need to be adapted. Another decision that developers face are the appropriateness of the serverless ecosystem to their application requirements. A rich ecosystem of services built into the platform is typically easier to compose and would offer better performance. However, composing external services may be unavoidable, and in such cases, many of the benefits of serverless disappear, including performance and availability guarantees. This presents an important research challenge, and it is not clear how existing results and best practices, such as workflow composition research, can be applied to composition in a serverless environment. Authors are invited to submit research papers, experience papers, demonstrations, or position papers.

Topics

This workshop solicits papers from both academia and industry on the state of practice and state of the art in serverless computing. Topics of interest include but are not limited to:

- Infrastructure and network optimizations for serverless applications
- Debugging serverless applications
- Programming models
- Use cases, experiences
- Benchmarks
- Cost models, pricing models, and economics of serverless
- DevOps (customer side)
- Other topics related to serverless computing

Important Dates (Tentative)

- Submission: August 30, 2019
- Notification: September 27, 2019
- Camera Ready (Hard Deadline): October 18, 2019
- Author registration deadline: TBD
- Conference: December 9-13, 2019

Papers and Submissions

Authors are invited to submit original, unpublished research/application papers that are not being considered in another forum.

Submitted manuscripts should be structured as technical papers and may not exceed six (6) single-spaced double-column pages using ACM SIGPLAN style, which can found on the ACM template page. Please note that it is preferable, although not mandatory, to use a 10pt font instead of 9pt one..

Authors should submit the manuscript in PDF format. All manuscripts will be reviewed and will be judged on correctness, originality, technical strength, rigour in analysis, quality of results, quality of presentation, and interest and relevance to the conference attendees. Papers conforming to the above guidelines can be submitted through the paper submission system powered by HotCRP (URL TBD).

All submitted manuscripts (following MIDDLEWARE conference requirements on formatting and page limits) will be peer-reviewed by at least 3 program committee members. Accepted papers with confirmed presentation will appear in the conference proceedings as well as in the ACM Digital Library.

Workshop co-chairs

- Paul Castro, IBM Research
- Vatche Ishakian, IBM Research
- Vinod Muthusamy, IBM Research
- Aleksander Slominski, IBM Research

Technical Program Committee (tentative)

- Gul Agha, University of Illinois at Urbana-Champaign
- Azer Bestavros, Boston University
- Flavio Esposito, Saint Louis University
- Rodrigo Fonseca, Brown University
- Ian Foster, University of Chicago and Argonne National Laboratory
- Geoffrey Fox, Indiana University
- Dennis Gannon, Indiana University & Formerly Microsoft Research
- Arno Jacobsen, MSRG (Middleware Systems Research Group)
- Tyler Harter, GSL, Microsoft
- Maciej Malawski, AGH University of Science and Technology, Poland
- Pietro Michiardi, Eurecom
- Per Persson, Ericsson Research
- Peter Pietzuch, Imperial College
- Rodric Rabbah, Apache OpenWhisk
- Josef Spillner, Zurich University of Applied Sciences
- Rich Wolski, University of California, Santa Barbara

Information about the previous editions of the workshop

There have been four previous editions of this workshop:

- WoSC4: 11th IEEE/ACM UCC / 5th IEEE/ACM BDCAT 2018, Zurich, Switzerland
- WoSC3: IEEE CLOUD 2018, San Francisco, CA, USA
- WoSC2: Middleware 2017, Las Vegas, NV, USA
- WoSC1: ICDCS 2017, Atlanta, GA, USA

These are linked on the series' permanent web presence at: https://www.serverlesscomputing.org/workshops/

The organizers of this proposed workshop are the founding members of this workshop and have co-chaired all previous iterations.

Similar Workshops

Since WoSC has been the first and to our knowledge and thus far only academic workshop dedicated to Serverless Computing, there is nothing to list here.

Workshop co-chairs

The co-chairing will be done jointly by a number of researchers from IBM.

Paul Castro, IBM Research

Paul Castro, Ph.D. is a Research Staff Member at the IBM Watson Research Center. He has been active in research on mobile and pervasive computing, cloud infrastructure, wireless location systems, location databases, stream processing, and enterprise web applications and has been awarded several patents in these areas. He has worked on cloud services for supporting mobile applications running on various smart phone platforms. Work from his research in the area of multi-device application support was recently released as part of the IBM Bluemix Mobile Backend as a Service. He has earned two IBM Technical Achievement Awards for the IBM SmartCloud Web Meetings for mobile clients and the Intelligent Notification System. Most recently, he worked on IBM OpenWhisk for Bluemix, with a focus on mobile solutions.

Vatche Ishakian, IBM Research

Vatche Ishakian is a Research Staff Member in the AI Engineering group at the IBM Thomas J. Watson Research Center. He earned his PhD in Computer Science from Boston University under the supervision of Professor Azer Bestavros. His research interests interests include developing platforms and tools in support of AI cloud applications.

Vinod Muthusamy, IBM Research

Vinod Muthusamy is a Research Staff Member in the AI Lifecycle Acceleration group at the IBM Thomas J. Watson Research Center. His current research interests include cloud platforms that support a variety of workloads, programming models and technologies to compose services, and tools to support the development and maintenance of AI applications.

Aleksander Slominski, IBM Research

Aleksander Slominski is Research Staff Member in the Serverless Group at the IBM T.J. Watson Research Center. He is interested in development of applications for next generation Internet, Web Services, Orchestration, Components, AI, Workflows, and Clouds.

Steering Committee (tentative)

- Geoffrey Fox, Indiana University
- Dennis Gannon, Indiana University & Formerly Microsoft Research
- Arno Jacobsen, MSRG (Middleware Systems Research Group)