

## **CCGRID-2021: Proposed Workshop Proposal (Draft)**

### **1. The name and acronym of the workshop: STEERS: Serverless To sErVE moRE at Scale**

### **2. An abstract (0.5-1 page) of the workshop:**

With the widespread popularity of Amazon AWS Lambda, Google Cloud Function, Microsoft Azure Functions, etc., Serverless Computing has gained significant impetus in recent times because of its simplicity. It is the next generation cloud service delivery paradigm and is also known as Function as a Service (FaaS). Almost all big players in the cloud have successfully launched commercially usable serverless computing platforms, although there are many open challenges in terms of their scalability and applicability for widespread deployments. These challenges are many-fold, starting from developing light-weight sandboxing platforms for FaaS supports, deciding optimal deployment strategies for function deployments, increasing the consolidation ratio of the functions, development of economic models for end-users as well as cloud service providers for their individual profit maximization, and so on. Given that majority of the cloud service providers now support serverless computing and direct function execution over the cloud platforms, a thorough investigation of the support systems is necessary through cutting-edge researches in this field.

This workshop aims to provide a forum for researchers and practitioners to exchange innovative ideas, latest research findings, practical experiences, lessons learned, and future directions to propel the research on serverless computing. The topics include, but are not limited to:

- (i) Cloud to serverless: Gap, Issues and Challenges,
- (ii) Serverless Infrastructure,
- (iii) Virtualization platforms for serverless sandboxing
- (iv) Serverless applications: Debugging and Deployment,
- (v) Serverless computing: Benchmarks and Use cases,
- (vi) Serverless computing: Models, Businesses, and Marketing,
- (vii) Serverless Applications,
- (viii) Benchmarks of serverless applications and services,
- (ix) Serverless for the Internet of Things (IoT),
- (x) Blockchain-based implementation for Serverless.
- (xi) Security challenges in Serverless computing,
- (xii) Economic models for serverless function deployments

### **3. A brief description of why and to whom the workshop is of interest:**

Serverless computing offers a number of advantages over traditional cloud-based or server-centric infrastructure. For many developers, it offers greater scalability, and flexibility, quicker time to release, and all at a reduced cost. With serverless architectures, developers are devoid of the headache in purchasing, provisioning, and managing backend servers. However, serverless computing is not a magic bullet for all web application developers.

Few advantages of this topic are: (i) Server management is not necessary, (ii) Developers are only charged for the server space they use, thereby reducing cost, (iii) Serverless architectures are inherently scalable, (iv) Quick deployments and updates are possible, (v) Code executes closer to the end-users, hence decreasing latency.

**Why will the workshop attract a significant number of submissions of good quality?**

Research on typical cloud-fog architectures has reached its resolution and has marked the beginning of the next-generation service delivery model called serverless. Off late research on serverless has received much attention but the number of conferences/ workshops being conducted to submit research findings is very limited. Therefore, it is expected that the workshop will have a significant number of submissions.

**Why will the workshop attract a large number of attendees, in addition to the authors?**

As this topic is recent and associated with Cloud and IoT paradigms. Further, all major service providers have introduced serverless services. Therefore it is certain to attract a large number of attendees from both industry and academia to extend their plethora of knowledge and ideas.

**How does the workshop differ from others, i.e., related workshops and conferences of similar topic?**

There are very limited numbers of venues for serverless computing. Moreover, the existing venues have a broad domain and are not focused only on serverless. As an upcoming area of research, serverless has a significant role in shaping the future of cloud computing. Therefore a workshop focused only on serverless not only assures a foot in the right direction but also motivates practitioners to conduct research on the same. To provide an enriching experience to the attendees we have one keynote and two invited speakers from industry and academia.

**4. A list of topics of interest:**

- (i) Cloud to serverless: Gap, Issues and Challenges,
- (ii) Serverless Infrastructure,
- (iii) Virtualization platforms for serverless sandboxing
- (iv) Serverless applications: Debugging and Deployment,
- (v) Serverless computing: Benchmarks and Use cases,
- (vi) Serverless computing: Models, Businesses, and Marketing,
- (vii) Serverless Applications,
- (viii) Benchmarks of serverless applications and services,
- (ix) Serverless for the Internet of Things (IoT),
- (x) Blockchain-based implementation for Serverless.
- (xi) Security challenges in Serverless computing,
- (xii) Economic models for serverless function deployments

**5. The names and affiliations of the workshop organizers, and ideally, of a significant portion of the program committee.**

### **Organizing Committee**

- Abhishek Mukherji, Accenture Lab, USA  
Email: [abhishek.mukherji@gmail.com](mailto:abhishek.mukherji@gmail.com)
- Soumya K Ghosh, Indian Institute of Technology Kharagpur, India  
Email: [skg@cse.iitkgp.ac.in](mailto:skg@cse.iitkgp.ac.in)
- Sourav Kanti Addya, National Institute of Technology Karnataka, India  
Email: [souravkaddya@nitk.edu.in](mailto:souravkaddya@nitk.edu.in)

### **Workshop Program Committee**

- Dheryta Jaisinghani, University of Northern Iowa, USA  
Email: [dheryta.jaisinghani@uni.edu](mailto:dheryta.jaisinghani@uni.edu)
- Nirupam Roy, University of Maryland College Park, USA  
Email: [niruroy@umd.edu](mailto:niruroy@umd.edu)
- Sandip Chakraborty, Indian Institute of Technology Kharagpur, India  
Email: [sandipc@cse.iitkgp.ac.in](mailto:sandipc@cse.iitkgp.ac.in)
- Sanjib Sur, University of South Carolina, USA  
Email: [sur@cse.sc.edu](mailto:sur@cse.sc.edu)

**6. A description of the expected structure of the workshop (papers, invited talks, panel discussions, etc.):**

We envision for a full-day workshop with the following details --

1. One keynote - 1 hour
2. Two invited talks - 45 mins each
3. One panel discussion - 1 hour
4. 10-12 peer-reviewed papers -- divided into three sessions

**7. Data about previous offerings of the workshop (if any), including the attendance, the numbers of papers or presentations submitted and accepted, and the links to the corresponding websites:**

Not applicable.

**8. A publicity plan for attracting submissions and attendees. Please also include the expected number of submissions, accepted papers, and attendees that you anticipate for a successful workshop:**

**Publicity plan:** Website, Newsgroup, Email circulation, targeted advertising, community forum.

**Submission:** 40

**Accepted papers:** 10-12

**Attendees:** 30