MEng Design Project Announcement – 2018-19 AY

**Project title:** Challenges and opportunities of Serverless Compute

**Brief Description of Design Project Goals:**

**Overview:** In a conventional cloud computing environment, users deploy applications on the number and type of servers they deem necessary. A new programming model has recently gained traction, called *serverless compute*, where users only need to worry about writing application code while cloud providers manage deployment across servers and charge users only for the compute power they use [1]. Instead of thinking about applications as collections of servers, developers define applications as a set of handler functions which can be triggered by various events and have access to a common datastore. Examples of this new model include Amazon Lambda and Google Cloud Functions. Serverless benefits a wide range of emerging applications, including microservices, and IoT workloads. This project examined the challenges and opportunities of serverless computing for cloud and IoT services. Students will use an open-source serverless platform, Fission, and a few representative applications and compare performance, scalability, and cost versus conventional cloud systems.

[1] Serverless Computation with OpenLambda

**Specific MEng Contribution:**
- Characterize the behavior of cloud and IoT applications on a serverless programming model
- Design a quality-of-service aware scheduler that determines how tasks should be mapped to cloud resources over a serverless framework.

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**Project Web Site:** Contact Christina for more details.

**Number of MEng Students Needed:** 2-3

**Required Skills:** Experience in C++/Python, Linux, networking, basic distributed systems principles.

**Estimated Project Time Frame:**
2017-18 Academic Year, Two (2) Semesters