**MIT-Palestine UROP project**

Project title:

**Graph-Mapping of Crowdsourced Road- and Traffic Properties for Mobility and Infrastructure Management**

Palestine Faculty

Name, Department, Institution, email

MIT Faculty: Franz-Josef Ulm, Department of Civil & Environmental Engineering, ulm@mit.edu

Overview (a brief description of the opportunity: perhaps 100 words)

Crowdsourced road- and traffic properties collected by smartphones have become an essential feature in managing the ever-increasing demand for mobility and safety. The theoretical “machinery” behind involves random vibration theory for road roughness determination and statistical moment analysis of two-point correlation and velocity autocovariance functions for traffic density and driver behavior determination. In this UROP-project, we aim at mapping this information in form of a graph composed of vertices (points) and edges, which can be used to manage mobility and infrastructure. The project consists of (1) developing a suite of statistical mapping operations that permit the analysis of GPS coordinate results of temporary and spatially varying variables from crowdsourced data (available on AWS) onto edges; (2) using graph theory to identify means of optimizing the network; and (3) implementation as cloud-computing application.

Website (if there is one for this project)

Start date, End date

Estimated hours per week

Application deadline

Required student skillset: The project is for students with strong background in statistics, probability and/or statistical physics, with interest in Civil, Mechanical Engineering and IT application. Key-interest in and knowledge of cloud computing, Matlab and/or python proficiency.

Requested budget

How can the J-WEL project help? Matlab version for student in Palestine.

Contacts: Prof. Franz-Josef Ulm (MIT);