Faculty Name:

Markus Schläpfer

Faculty Email:

m.schlaepfer@columbia.edu

Lab:

Urban Systems Engineering Lab

Project Title:

Data analytics for smart and sustainable cities

Description:

"In this project, the students will analyze large-scale human activity data (e.g., anonymized mobile phone traces) to visualize and characterize the population-wide mobility patterns in New York City and other urban areas worldwide. The resulting 'dynamic population map' will then be used to derive the dynamic demand for various infrastructure services such as transportation and energy. Finally, the project will make recommendations on how to design urban infrastructure systems (e.g., transport, energy) to meet the demand patterns efficiently while reducing CO_2 emissions. At the beginning of the project, we will further refine the specific case study (selection of the urban area and infrastructure system) based on the student's interest.

Required skills are:

1.   Familiar with coding in Matlab, Python, or R (or similar).

2.   Ability to handle and analyze large data sets.

3.   Basic knowledge of statistics and mathematical modeling of engineering systems.

4.   Basic knowledge of Geographic Information Systems (e.g., ArcGIS, QGIS).

5.   Basic understanding of urban infrastructure systems (e.g., transportation, energy, water).

6.   Ability to perform independent research.

"

Location of Research:

Hybrid (both remote and on-site)

# of hrs/week:

30

Department/Program:

Civil Engineering and Engineering Mechanics

Eligibility:

BS, First Year, BS, Second Year

To apply, please contact:

Markus Schläpfer, m.schlaepfer@columbia.edu