Faculty Name:

Gil Zussman

Faculty Email:

gil.zussman@columbia.edu

Lab:

Wireless and Mobile Networking Lab

Project Title:

Opportunistic Weather Sensing via ML and data analysis, using Link Measurements from a NYC-Wide Wireless Network

Description:

5G-and-beyond networks will use high-frequency millimeter-wave (mmWave) links to transmit and receive information with high throughput. A particularity of mmWave links is that they can be severely affected by diverse weather conditions such as rain, snow, fog, and even humidity. In this project, our goal is to leverage measurements of weather-induced link attenuation to infer the current weather conditions and to predict link attenuation in the near future. Students working on this project will have access to a unique set of measurements of link attenuation from a city-wide wireless network in NYC. The project entails: (i) developing a pipeline that continuously collects the relevant data from our partner's database, (ii) ensuring the quality of the dataset and maintaining an easy-to-access dataset, (iii) correlating the link attenuation data with weather monitoring (and perhaps pollution) information, (iv) developing a machine learning architecture that infers the current weather and its impact on links based on the sequence of past attenuation values, and (v) validating the accuracy of the proposed architecture. The student will have the opportunity to work with a team of experienced researchers from Columbia and Tel Aviv Universities and gain valuable experience in machine learning, data science, and weather analysis.

Location of Research:

On-Site

# of hrs/week:

40

Department/Program:

Electrical Engineering

Eligibility:

BS, Second Year, BS, Third Year, BS, Fourth Year, MS

To apply, please contact:

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