1145-K5-2215 **Jeffrey Yeh*** (jeffreyyeh@cpp.edu), **Skyler Seto**, **Takahiro Noguchi**, **Sakura Hoshi** and **Yuya Ota**. *Optimal Vehicle Fleet Size and Fleet Management Control.*

In this talk, we discuss economic and operational policies for controlling Autonomous Mobility-on-Demand (AMOD) systems, wherein fleets of self-driving vehicles transport passengers in an environment. We start by describing the Model Predictive Control-Perfect (MPC-Perfect) model introduced in "Data-Driven Model Predictive Control of Autonomous Mobility-on-Demand Systems" by R. Iglesias et al. which proposes a time-expanded network, preemptive re-balancing strategy, and minimum feasible fleet size to satisfy all travel demand immediately. We then propose extensions to the model incorporating charging station visits, multiple passenger pickups, and other self-driving, electric vehicle attributes. The model is evaluated on New York city taxi demand data, and Sendai city person-trip data. In both cases, we demonstrate substantial profit over traditional services, while maintaining similar fleet sizes and guaranteeing immediate (or near immediate) passenger service.

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