

Master Thesis
IDSC-GZ-AC

Co-Design and Mobility Games

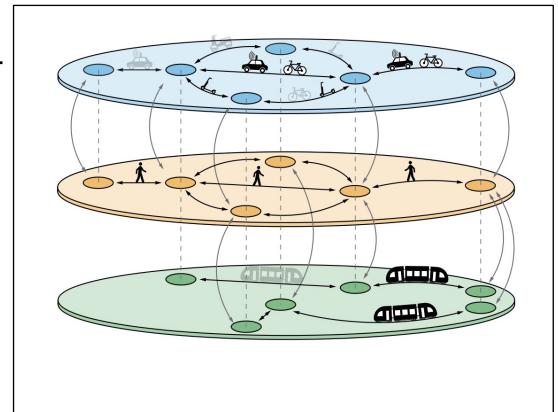
Motivation

The design of Autonomous Vehicles (AVs) and the design of AVs-enabled mobility systems are closely coupled. Which type of AV allows the best performance for an AV-based mobility system? How much will this cost to the interested stakeholders? What are the interests of the different stakeholders? How can we model them?

Task

This thesis aims to further develop the work presented in [1], by co-designing ([2]) future mobility systems from the single AV components to the AVs fleets and their interactions with other modes of transportation.

During the thesis, you will understand the current co-design framework, extend it to account for conflicting interactions in mobility games, formulate a game and analyze the arising equilibria, and perform numerical simulations providing crucial insights for mobility related policy-making.



Working Packages

- Read about literature on co-design, AMoD, and resource allocation theories.
- Extend the existing framework to account for stakeholders' interactions
- Assess the impact of the added features

Skills Required

Affinity for programming (C++ and Python), mathematics, optimization

References

- [1] G. Zardini, N. Lanzetti, M. Salazar, A. Censi, E. Frazzoli, and M. Pavone, "[On the Co-Design of AV-Enabled Mobility Systems](#)", 2020.
- [2] A. Censi, "*A Mathematical Theory of Co-Design*", 2015.

Contact: Use the link <http://bit.ly/frazzoli-apply> to apply.

IDSC: Gioele Zardini (gzardini@ethz.ch), Andrea Censi (acensi@ethz.ch)

To Apply:

