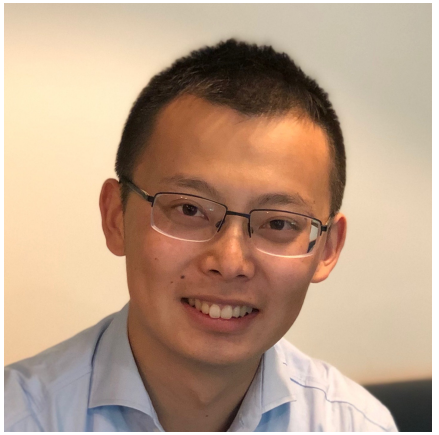
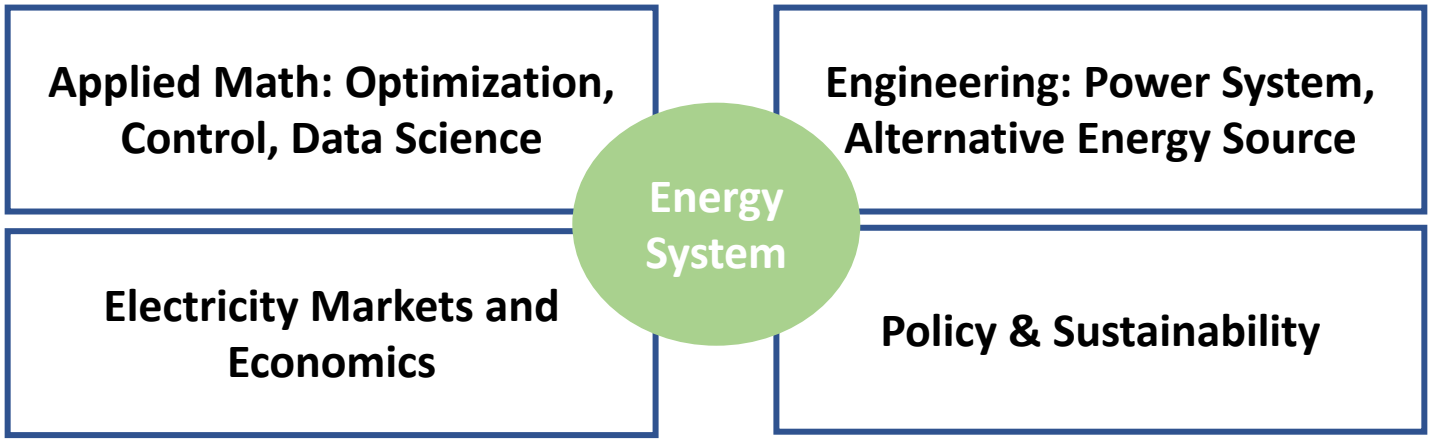
Bolun Xu



- Assistant Professor: https://bolunxu.github.io/
- Research: Sustainable Energy System



- Projects:
  - Data-driven energy system and market analysis
  - Energy analysis for transportation electrification
- Courses:
  - Energy System Economics and Optimization
  - Environmental Data Analysis and Modeling

Research Example: Determining location and size for energy storage projects US West-Coast

Engineering

WECC power system model:

- 240 nodes; 448 lines; 71 gen.; renewables.

Operation data for one year:

- Demand, renewable, fuel cost.

Economics

Cost of different storage technology

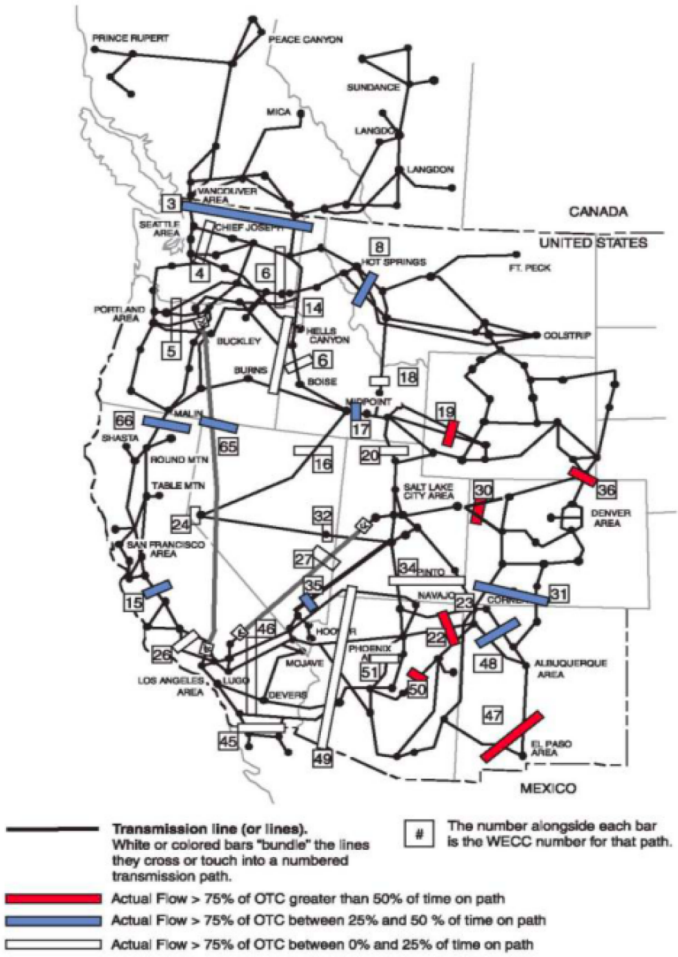
- Lithium-ion battery energy storage (Li-BES)
- Compressed air energy storage (CAES)

Objective to minimize social cost:

- Location to build storage
- Technology and configuration

Operation research

Problem size:

- ~10 million variables and constraints
- (Almost) impossible to solve directly
- Use mathematics techniques!

Results be used for policy recommendations…