

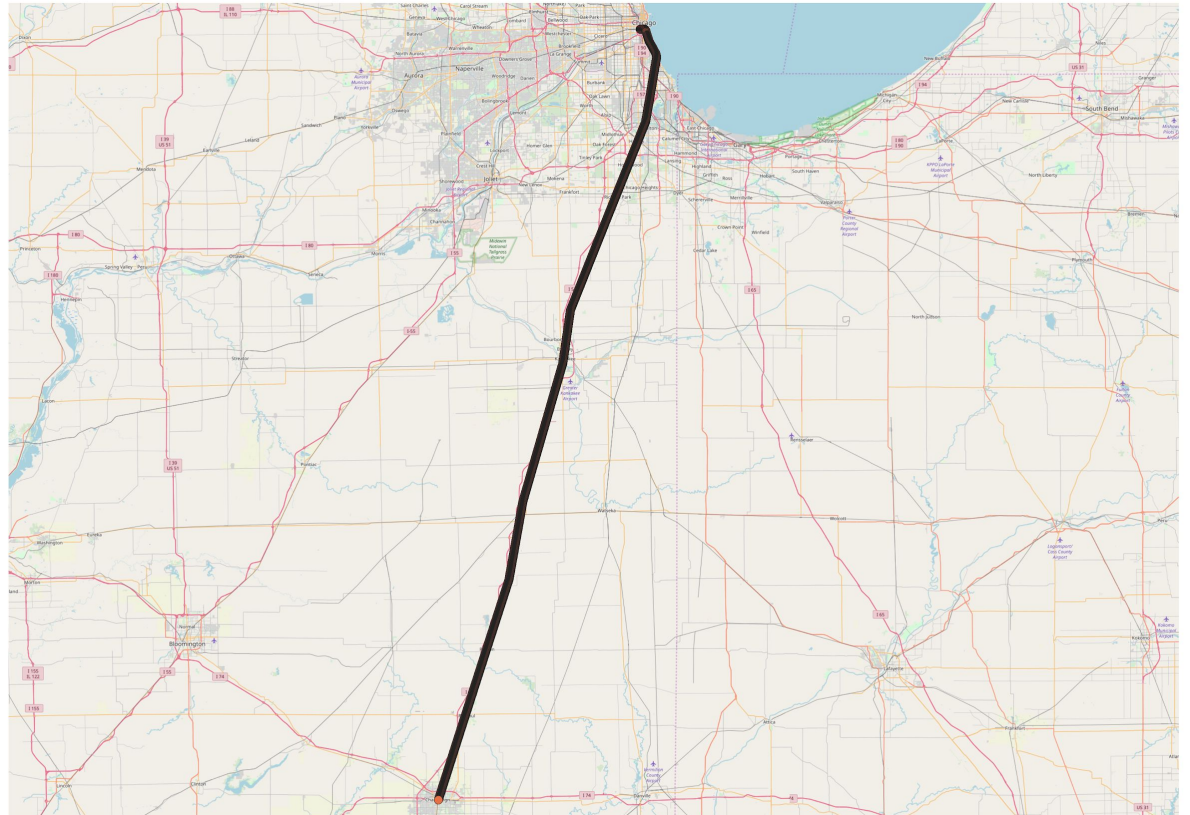
The Amtrakers



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Department of Physics: University of Illinois Urbana Champaign
Physics 398 DLP, December 2018

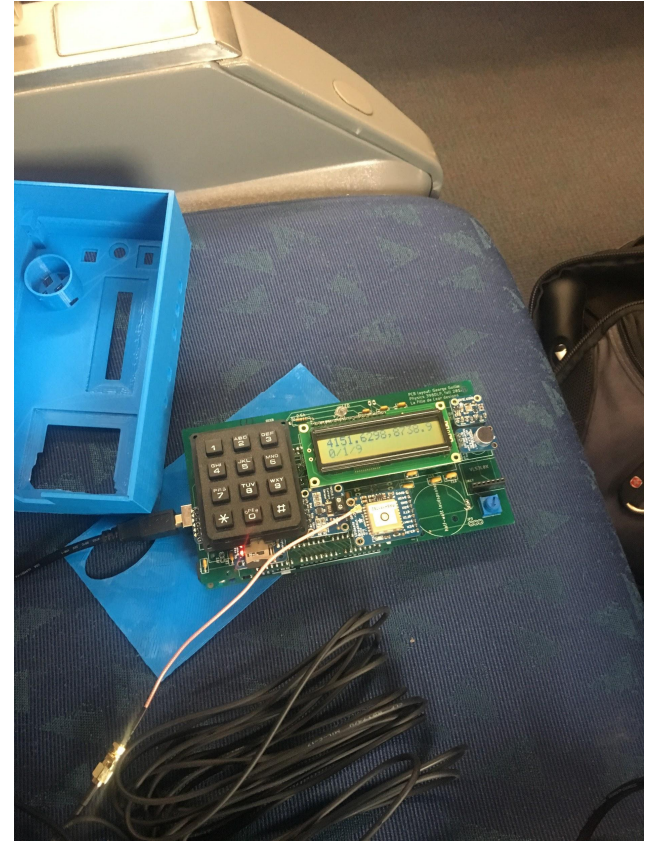
Our Journey

- Chicago's Union Station to Champaign-Urbana
- United States has a poor track record of infrastructure



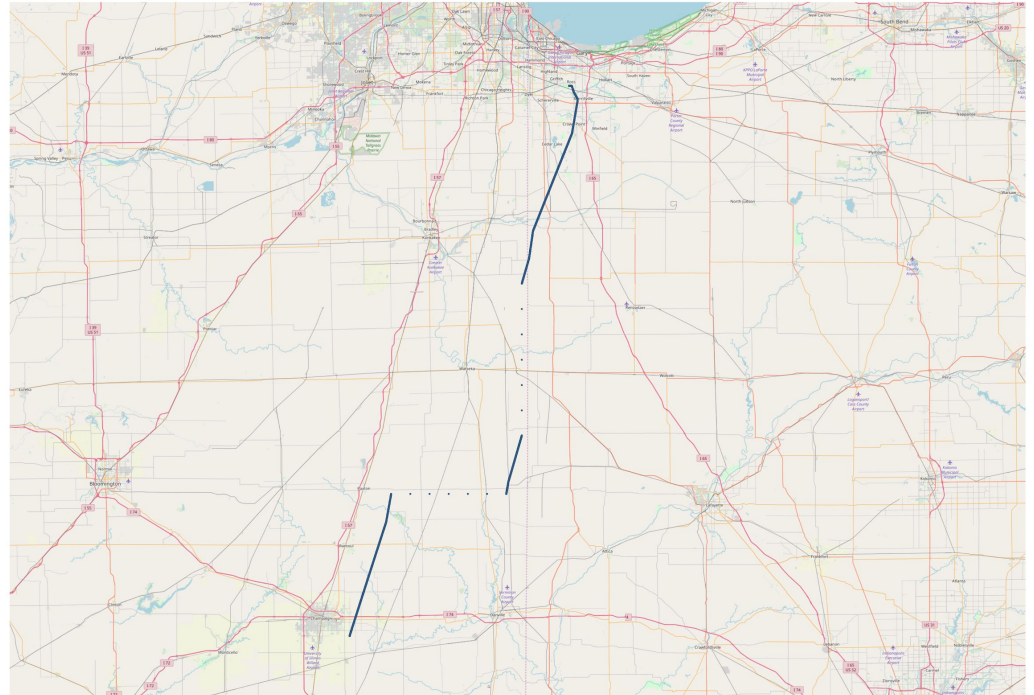
Data Acquisition

- Prompt Calibration of each axis
- Interpolation
- Parsing the GPS

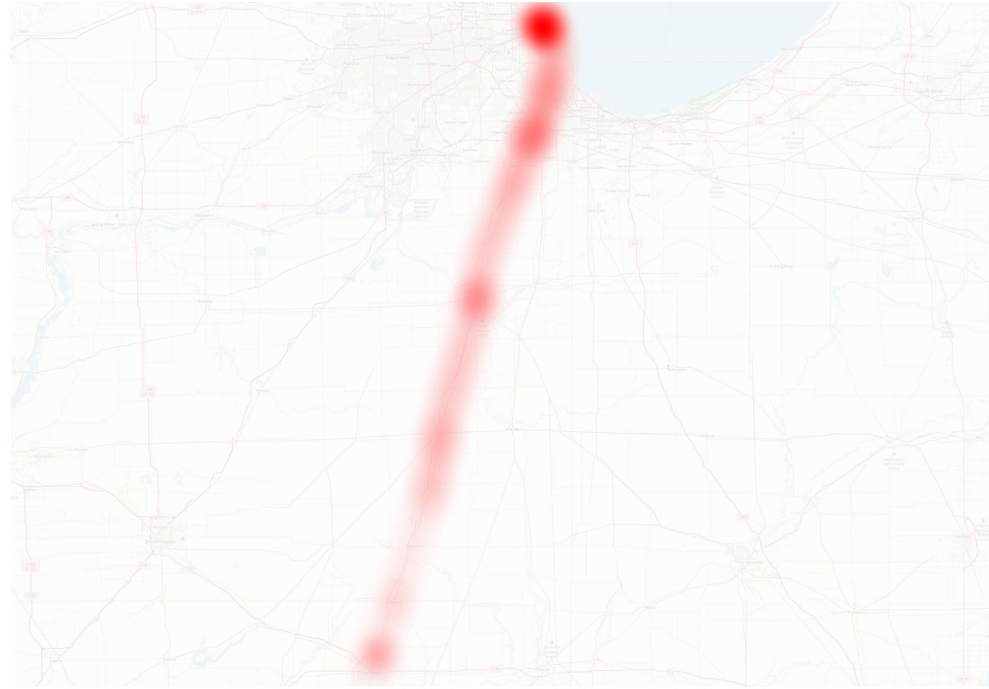
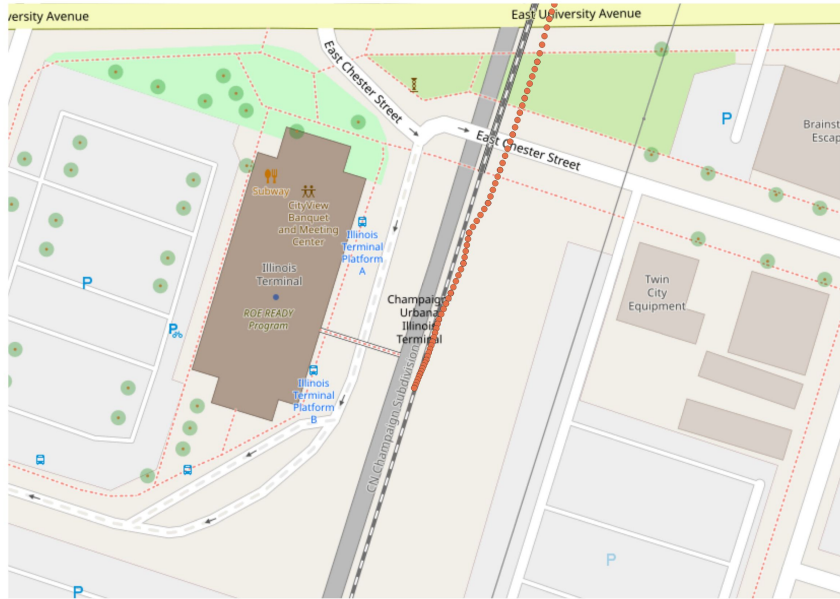


Initial Problems

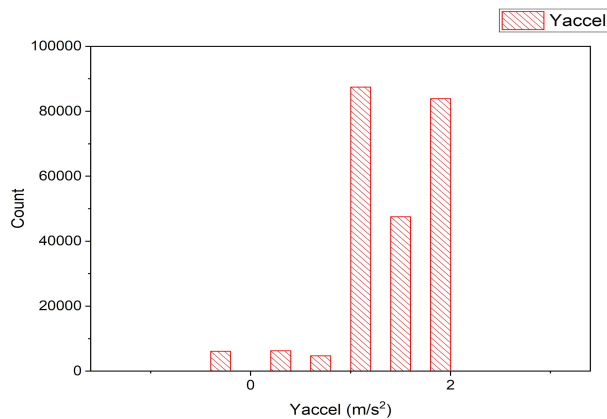
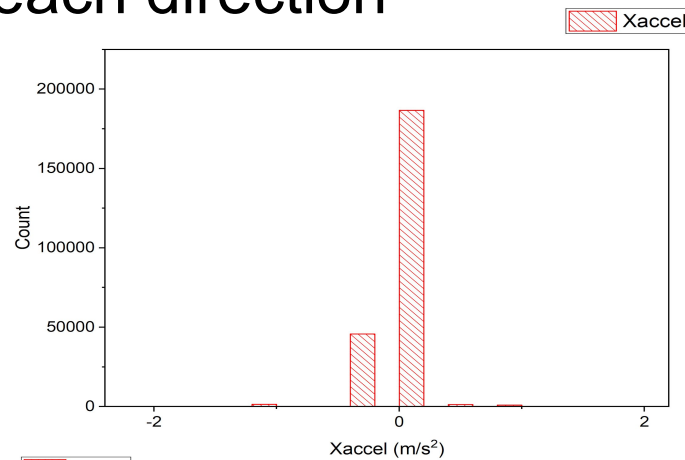
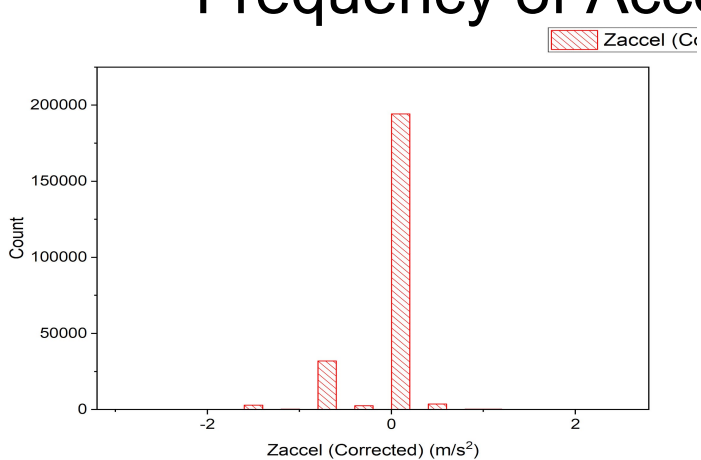
- Acquiring Signal
- Calibration
- GPS format



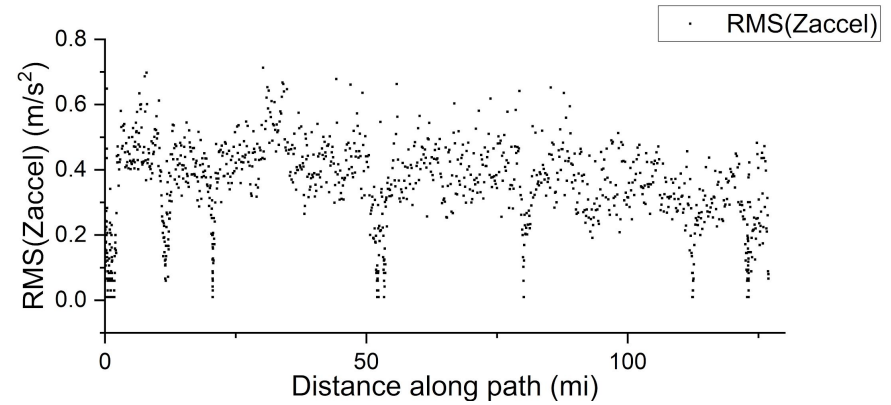
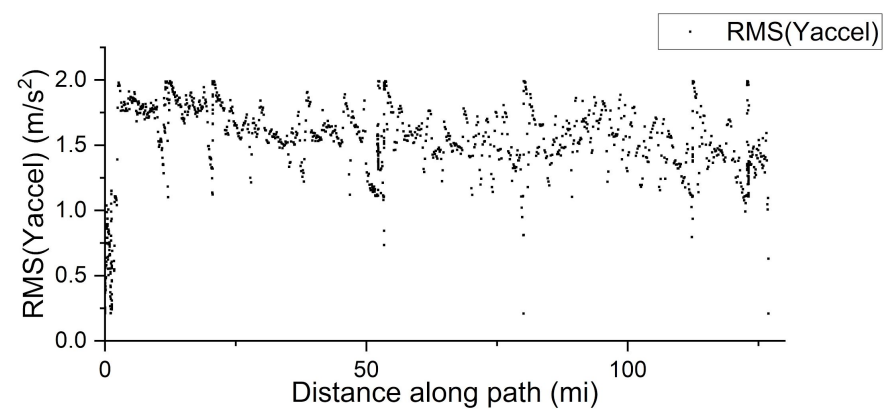
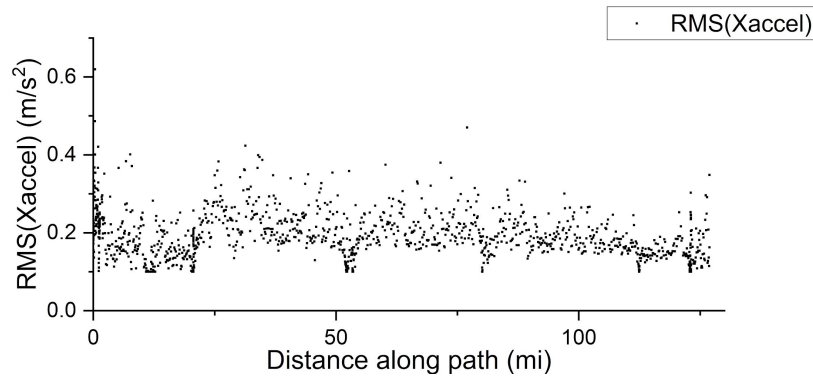
Along the way



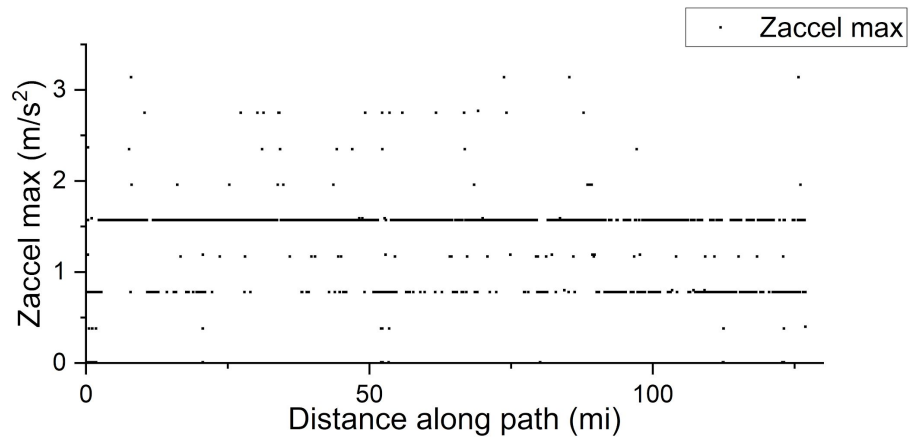
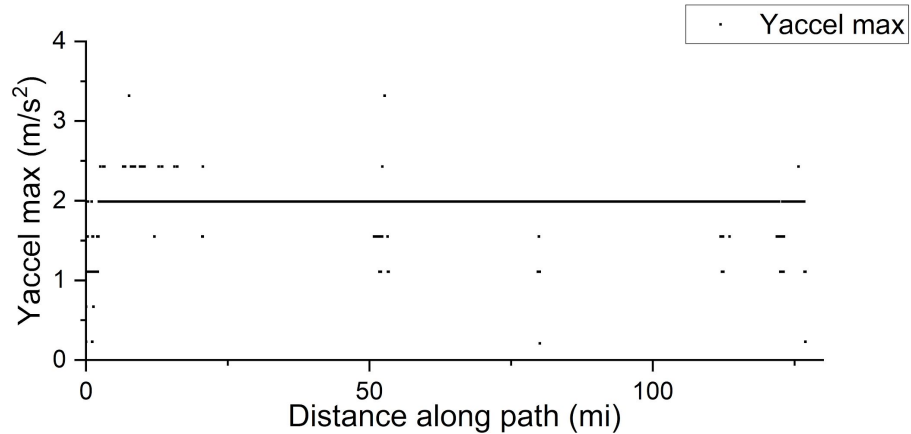
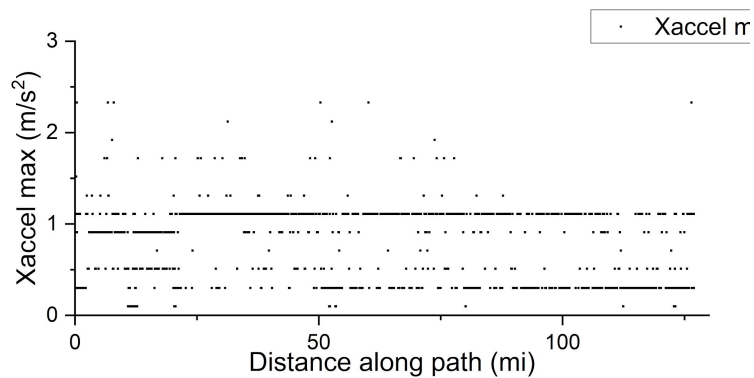
Frequency of Acceleration in each direction



RMS Values



Max values



Sources of error

- Data taken from second level
- Possible misalignment of axis
- Limitations of data acquisition equipment