# Yunshun Zhong

Research Update

09/15/2020

# Summary of progress

- Damage analysis and recovery prediction for Beirut explosion
  - Fixed python environment and configuration issue
  - Did linear regression for wealth index and nightlight intensity
  - Analyzed reasons for a negative R^2
  - Still trying the get the change of two images in May and September

- Building damage and influence analysis for Beirut explosion

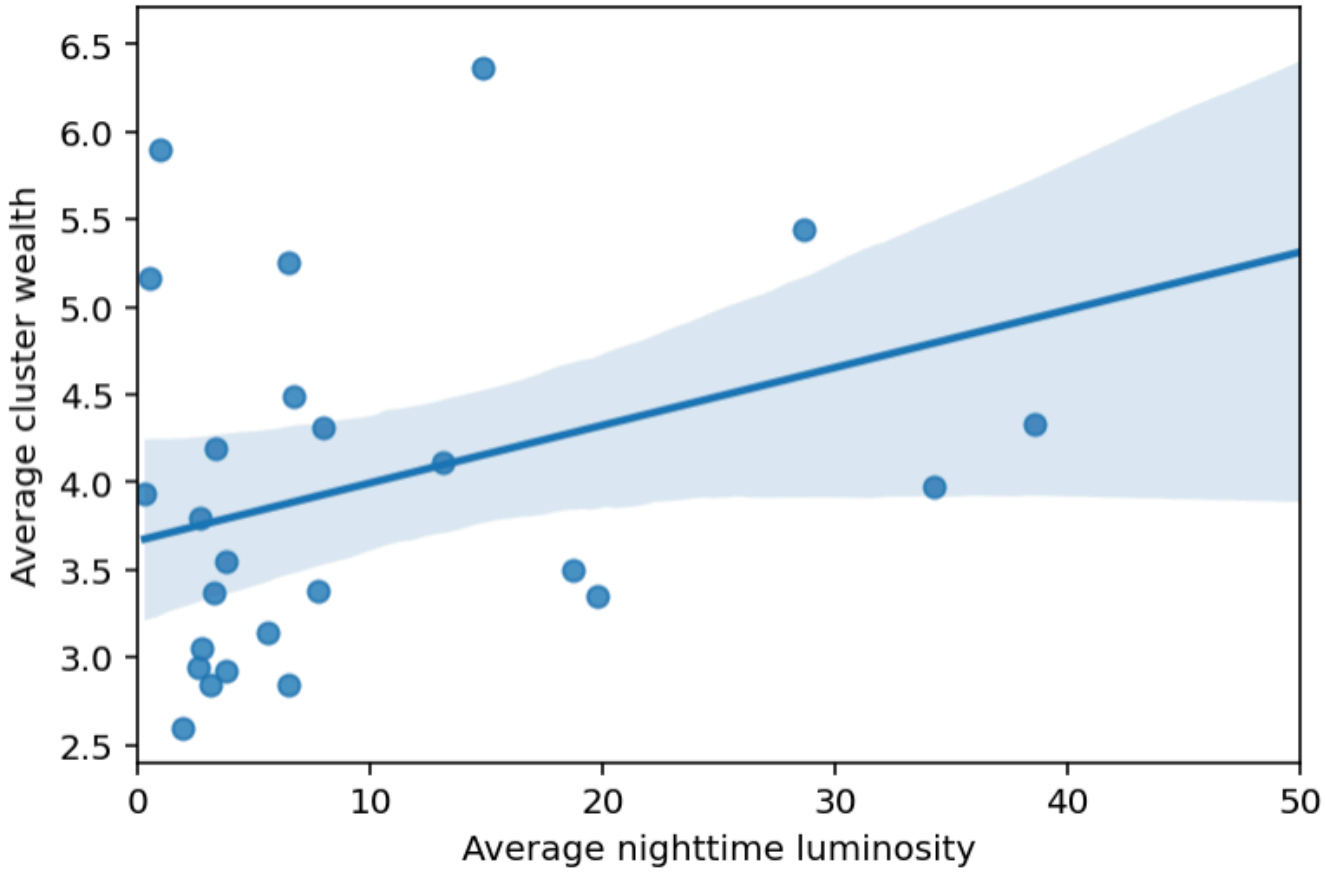
Objectives

- Predict damage of each building according to available survey data.
- Predict the damage of buildings to local communities.
- Observe and predict how to recovery develops and the interaction between communities and infrastructure.

# Progress1 Fixed python environment and configuration issue

- Reinstalled everything
- Python package install issue caused by Chinese fire wall
- Couldn’t import gdal
- Python3.9 Collide with pandas

# Progress2 Did linear regression for wealth index and nightlight intensity




```
R^2 of the best model:
-0.9105893313255798
```

# Progress3 Analyzed reasons for a negative R^2

- Simple take a weighted average for the average wage and the percentage in each income interval cannot accurately represent wealth index
- The method to calculate nightlight intensity is hard-coded and may not be appropriate for our problem
- Don't have enough data points especially in high nightlight intensity part
- Wealth index and nightlight intensity are not in linear relationship for these two graphs

# Progress4 Still trying the get the change of two images in May and September

- Two images are different in size
- When I reduced size of the September’s image and did deduction with May’s image in array slicing, hard to convert it back