Multimodal Data Analytics and Integration for Emergency Response and Disaster Management

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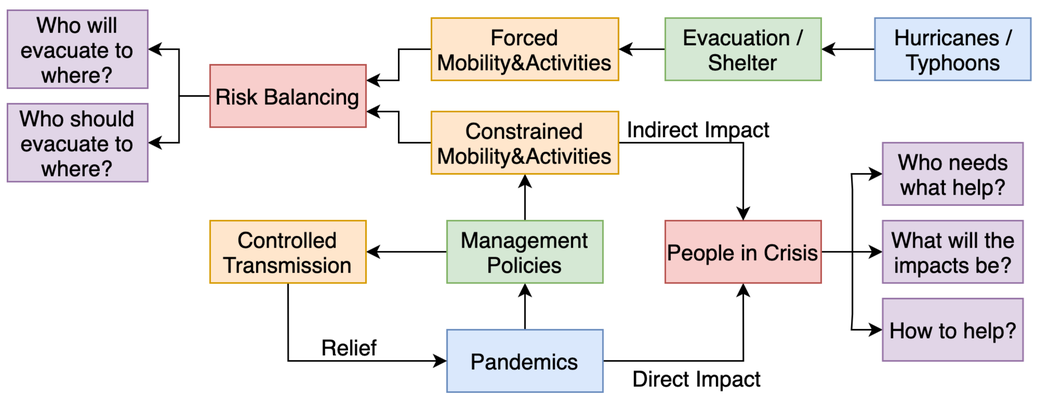
Community-Identified Problems



Project Activities

- **Multimodal Data Collection**
  - Cover social media, mobility data, etc.
  - Collect data from both Florida and Greater Tokyo Area
  - Develop data acquisition pipeline
- **Community Engagement**
  - Regular Zoom meetings between US and Japan teams
  - Regular meetings with community partners
  - Planning a workshop to involve broader communities

Intellectual Merit

- **Advance disaster information management and decision support based on multimodal data analytics**
  1. Develop techniques to identify communities in crisis
  2. Understand the pandemic transmission characteristics and its impacts
  3. Predict the effectiveness of various policies
  4. Support decision making for pandemics and compound disasters
- **Design and adapt techniques to account for cultural differences between the US and Japan**
- **Assist the preparation and recovery for a broad range of communities, including the minorities and the low-income population**
- **Data Analysis and Visualization**
  1. Mobility-based epidemic transmission simulation and impact prediction
  2. Building damage estimation on remote sensing
  3. Sentiment analysis for tweets on COVID-19 topics
  4. Crowd-flow and traffic-flow visualization

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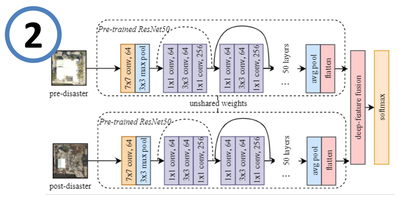

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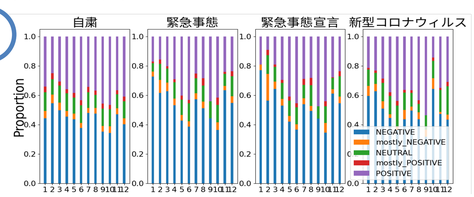

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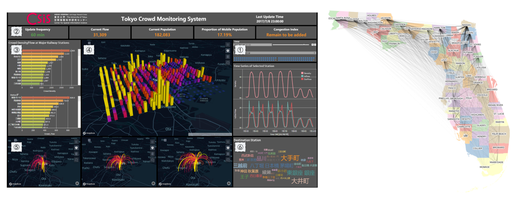

Immediate Broader Impacts

- **Florida and Greater Tokyo Area Communities**: benefiting the government agencies and the public in the regions by assisting the decision making and policy design for disaster management with the produced tools and results
- **Machine Learning (ML) Techniques:** evaluating current ML methods for disaster management and expanding its boundaries

Lasting Broader Impacts

- **Benefiting Broader Communities**: applying and transferring techniques developed in this project to other states, regions, and countries
- **Societal and Economic Impacts:** utilizing the developed techniques to prevent unexpected losses by avoiding inappropriate policies
- **International Collaboration**: fostering the collaborations between US and Japan teams

Next Steps

1. Develop techniques to identify in-crisis communities regardless of the community scale
2. Integrate multimodal data to enhance the system performance
3. Develop tools and methods for pandemic and compound disaster decision support
4. Organize the workshop to involve community partners and stakeholders from broader areas

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