Community on Multimodality: Participatory Action, Service, and Support (COMPASS)

Daphney-Stavroula Zois (PI)[1], Wonhyung Lee (Co-PI)[2], Charalampos Chelmis (Co-PI)[3]
[1]Electrical and Computer Engineering Department, [2]School of Social Welfare, [3]Computer Science Department
University at Albany, SUNY

Award Type: IRG 1737443

Vision

Discover and **receive** human services with click of a button

City of Albany
NY State Capital

Partnerships

United Way of the Greater Capital Region; The Food Pantries; Albany Police; Catholic Charities; Welcome; Central Avenue; cares; 2-1-1; Serve Albany

Community-identified Problem

Simplify discovery and use of services
Enable two–way communication between service seekers and service providers
Deploy resources more efficiently

Broader Impact

- **Technology** to streamline human services discovery/delivery
- **Insights** on service coordination and service seekers needs
- Prepare communities to **withstand emergencies**

Who will care/benefit from project outcomes?

- Service providers, service seekers
- Federal/local government(s)

Intellectual Merit

Sociotechnical Advancements

- **Uncover** organizations' coordination patterns
- **Identify** factors that affect service seekers pathways
- **Instance–wise** machine learning (ML)
- **Online hierarchical** ML
- **Network topology inference** based on administrative data
- Algorithmic decision-making via **untrustworthy training data**

Impacted Application Domains

- Community Planning & Design, Health & Wellbeing, Financial Stability, *etc*
- **Streamline** access to services
- Enhance **service coordination** and **communication** between service providers and service seekers

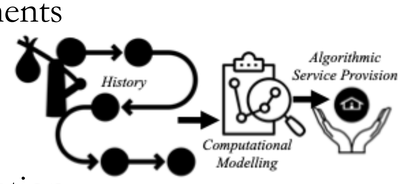
Major Outcomes/Progress

(Computational) Social Science Research

- **Interviews** w/ service providers: problematic service coordination
- **Interactive surveys & shadowing** w/ public: multiple channels needed to reach targeted populations
- **Homelessness pathways analysis**: factors contributing to positive outcomes, stability upon exiting system, metrics for algorithmic homelessness services allocation evaluation, *etc*

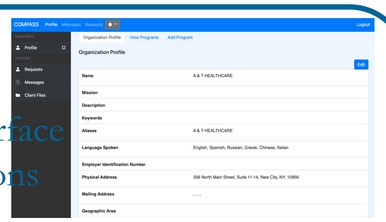
Machine Learning Research

- **Dynamic instance-wise ML** w/ single/multiple feature views & classifiers in simple and structured environments
- **Interpretability** of dynamic instance-wise process
- **Online** multi-class **hierarchical classification**
- Learning based on **mislabeled training data**
- **Counterfactual learning** for improved service allocation

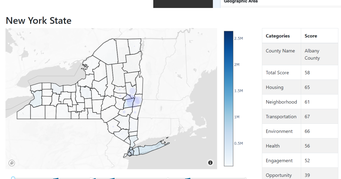


Technological Solution

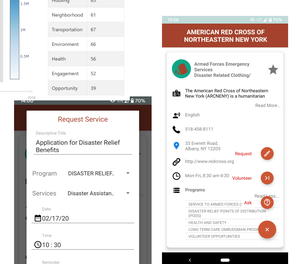
- Proof-of-concept **mobile app** & **Web-based interface**
- **Web-based dashboard** for visualization
- Proof-of-concept software for **up-to-date service organizations database**
- **Decentralized transactional platform** for oversight

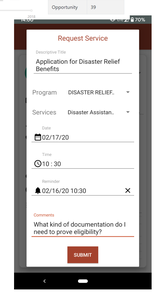


Web-based interface for organizations



dashboard





mobile app

Future Goals

- Continue **machine learning research**
- **Strengthen mobile app** for real-world testing
- **Deploy** COMPASS with Catholic Charities
- **Enhance** app based on Catholic Charities feedback
- Create **transferability roadmap**