

## NSF REU Fellowship Opportunity at Case Western Reserve University (CWRU)

NSF has funded a study (5/1/2020-4/30/2021) entitled “RAPID: AI- and Data-driven Integrated Framework for Hierarchical Community-level Risk Assessment” at CWRU (PI: [Professor Fanny Ye](#)), to develop AI and data driven methodologies for COVID-19 relief. More specifically, to slow the spread of virus infections and better respond with actionable strategies for community mitigation, leveraging the large-scale and real-time pandemic related data generated from heterogeneous sources (e.g., disease related data, demographic data, mobility data, and social media data), this project aims to design and develop an integrated framework to provide near real-time COVID-19 risk assessment in a hierarchical manner in the United States. Given a location (either user input or automatic positioning), the system will automatically provide risk indices associated with the specific location, the county that location is in and the state as a whole to enable people to select appropriate actions for protection while minimizing disruptions to daily life to the extent possible. The research team will also extend their work for collective and collaborative community resilience in the COVID-19 era and beyond.

### Student Involvement and Expectations

The complexity and range of this project provides a good opportunity for undergraduates to explore new ideas of large-scale data analysis using AI-driven techniques and receive training not only in computational theory and methodology, but also in the technical and operational aspects of conducting a research project. **During the period September 1, 2020 to April 30, 2021**, there is an opportunity for **THREE CWRU undergraduate students** (juniors/seniors in but not limited to computer and data sciences) to be involved with the project and work collaboratively with the research team on developing AI and data driven methods for COVID-19 relief.

Given the current situation, all REU students will participate remotely with the project team. Each student will be given individual tasks to be completed, will be expected to participate in weekly project meetings, and will also be engaged individually with members of the project team on a routine basis through remote meetings for education and instruction as to how computational theory can be applied and tested in the current project. Tasks will include data collection from heterogeneous open source data repositories including cleaning, organizing and preparation for computation analysis; developing and using computational algorithms for feature extraction, network modeling building, and synthetic data generation to address issues because of sparse and incomplete data; development and implementation of computational methods for quantifying community-level risk assessment. **Each student will receive an \$8,000 fellowship for their participation in the REU experience** and is expected to prepare a final report that focuses on their research experience, make a final presentation to the team, and will have the opportunity to participate in the preparation of manuscripts related to the overall project.

## Application Process

The **Application Deadline is August 24, 2020** and each applicant is asked to prepare the following:

1. A **Two-page Essay** addressing the participant's academic background, professional experiences, interest in artificial intelligence, machine learning, data analysis, career goals, and plans for graduate studies. Essays should be single-spaced with a blank line between paragraphs. Use 12 point Times New Roman or Arial font with 1-inch margins on all sides.
2. Unofficial copies of your **Academic Transcript(s)**. If selected for the REU program, participants will be required to provide an official copy before the start of the program.
3. **Two Letters of Recommendation** from an Individuals who can comment on the applicant's academic ability including faculty advisors or mentors from previous research activities.
4. All the documents must be converted to pdf files and saved as the document name\_last name.pdf (Example: Essay\_Smith.pdf).
5. All REU students to be funded will be US citizens or permanent residents. Applications will be encouraged from women and underrepresented minorities in STEM.
6. Please send all the required supporting documents via email to Professor Fanny Ye at [yanfang.ye@case.edu](mailto:yanfang.ye@case.edu).