RAPID: Collaborative Research: Data Mining and Fusion between Unmanned Aerial Systems and Social Media Technologies to Improve Emergency Operations

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- Emergency operation centers (EOCs) are tasked to **rapidly** and **accurately** collect and process data in order to make informed decisions to concerned agencies and stakeholders during natural hazards.
- A fusion of innovative technologies is envisioned to help EOCs **efficiently** conduct tasks during natural disasters.

- Our overarching goal it is to identify roadmaps on how to mine, integrate, and disseminate information from UAVs, social media, and other technological platforms for EOCs to make informed decisions and quickly bring communities and cities back to normalcy.

- Current progress with Twitter data mining has focused on Hurricane Harvey (2017), where 45.5M Tweets were reduced to 22.7k using infrastructure keywords, geolocation, and multimedia data sets as filters (see images A-C).

- The Latent Dirichlet Allocation (LDA) topic modeling highlighted community response to social and physical infrastructure, such as gas, power, water, food, and health.

- The data collection and technological outcomes are transferable to other EOCs beyond current partners (City of Beaumont, Texas, Louisiana Governor's Office of Homeland Security and Emergency Preparedness (LA GOHSEP), and U.S. Coast Guard).

- The LSU research team is conducting joint field training exercises with the U.S. Coast Guard in New Orleans to improve search and rescue (SAR) operations (see images D-F).

- Disseminate information to save lives during hurricanes and limit misinformation.
- Facilitate community resilience by allowing quick damage assessments and recovery claims of physical and social infrastructure.

- Improve efficiency and effectiveness of search and rescue through UAVs.
- Real-time dynamic monitoring and damage estimation of infrastructure.

- Continue Twitter analyses for Hurricane Barry (2019) and Hurricane Laura (2020). For Hurricane Laura, we collected 150M Tweets.
- Assist U.S. Coast Guard for upcoming 2021 hurricane season.
- Participate in the Louisiana Governor's Office of Homeland Security and Emergency Preparedness operations during 2021 hurricane season.