SCC-PG: Intelligent Flood Detection and Warning System to Assist Homeless Communities and Emergency Management Entities

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Torrential rain, flash flooding sweep through San Diego

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Hundreds of homeless people live by the San Diego River. Do they know about the coming storm?

This project tackles the increased flood vulnerability of homeless populations in areas like the San Diego River. These individuals lack reliable flood warnings and emergency resources, heightening their risk during flood events.

This research advances sociotechnical solutions by integrating computer vision and machine learning into flood detection systems. The impact is significant, providing early warning to vulnerable populations and enhancing emergency response strategies in flood-prone areas, particularly for homeless communities living near waterways.

To date, project activities have included interventions in multiple riverbed surveys and field trips with partners such as the San Diego River Park Foundation and PATH. These engagements have provided valuable insights into existing issues and communication methods, aligning our efforts with community needs. Additionally, we've conducted historical

flood mapping in San Diego, developed flood detection algorithms, and deployed prototype flood detection systems for real-world testing. These efforts have laid the groundwork for scalable flood monitoring solutions tailored to vulnerable populations, with outcomes including enhanced community resilience and improved emergency management capabilities.

The project aims to improve flood early warning systems, benefiting vulnerable populations, emergency responders, and local governments. By integrating advanced technologies and community input, it enhances public safety and fosters social equity in flood-prone areas.

The project's sustainable impact extends beyond immediate outcomes, ensuring lasting benefits for communities. By strengthening flood resilience, it reduces long-term risks and fosters sustainability of socio and environmental systems, empowering communities to adapt to climate change.

The next steps involve finalizing the CAG formation, expanding the study area, deploying flood detection systems, refining algorithms, and integrating the framework into community resilience efforts. Collaboration with new academic institutions and community partners to prepare S&CC IRG proposal.