



Data Fusion and Feature Extraction of Explosions Recorded on Smartphones

Samuel Kei Takazawa¹, Milton Garces¹, Luis Ocampo Giraldo²,

Jay Hix², Scott Watson², David Chichester²

Advisor: Milton Garces

¹University of Hawaii at Manoa

²Idaho National Laboratory

takazaw4@hawaii.edu

Abstract:

The prompt detection of explosions is a key element of the nuclear non-proliferation mission. With traditional sensors being limited in number and scale, smartphones as compact and economical multi-modal sensors are gaining traction and are being deployed. To address the flood of heterogeneous smartphone data, our team proposes a feature extraction using standardized constant-Q frequency bands across acoustic, barometric, and accelerometer data. The work presented in this poster utilizes three explosions collected on smartphones with Idaho National Lab. More explosions are planned in the near future at INL and NNSS. These extracted features will be used in machine learning methods in future iterations.