Explosion Source Localization using Smartphones

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Abstract:

Explosion source localization is a vital part of nuclear non-proliferation monitoring. Knowing where an explosion originates allows for prompt response and for obtaining key explosion features. We applied multilateration techniques using a set of explosions collected on smartphones using the RedVox application. The Time Difference of Arrival (TDoA) between smartphone sensors were calculated using the phones' internal GNSS coordinates and timing correction methods. The explosions consisted of a Fuel Air Explosive (FAE) and two other detonation materials. We were able to estimate the source of the explosions within ~120 meters.