

MYSHAKE: EARTH QUAKE EARLY WARNING SYSTEM BASED ON SMARTPHONES

Tech ID: 25525 / UC Case 2016-069-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,887,748	01/05/2021	2016-069
United States Of America	Issued Patent	5,829,131	08/06/2019	2016-069

BRIEF DESCRIPTION

Earthquakes are unpredictable disasters. Earthquake early warning (EEW) systems have the potential to mitigate this unpredictability by providing seconds to minutes of warning. This warning could enable people to move to safe zones, and machinery (such as mass transit trains) to be slowed or shutdown.

The several EEW systems operating around the world use conventional seismic and geodetic network infrastructure – that only exist in a few nations. However, the proliferation of smartphones – which contain accelerometers that could potentially detect earthquakes – offers an opportunity to create EEW systems without the need to build expensive infrastructure.

To take advantage of this smartphone opportunity, researchers at the University of California, Berkeley have developed a technology to allow earthquake alerts to be issued based on detecting earthquakes underway using the sensors in smartphones. Called MyShake, this EEW system has been shown to record magnitude 5 earthquakes at distances of 10 km or less. MyShake incorporates an on-phone detection capability to distinguish earthquakes from every-day shakes. The UC Berkeley technology also collects earthquake data at a central site where a network detection algorithm confirms that an earthquake is underway as well as estimates the location and magnitude in real-time. This information can then be used to issue an alert of forthcoming ground shaking.

Additionally, the seismic waveforms recorded by MyShake could be used to deliver rapid microseism maps, study impacts on buildings, and possibly image shallow earth structure and earthquake rupture kinematics.

SUGGESTED USES

Earthquake early warning system

ADVANTAGES

- » High cost infrastructure not required
- » Can utilize both public and private smartphones
- » Allows for both detection and characterization of shaking
- » Can quickly transmit information to a central server that can detect/confirm an earthquake, and distribute alerts via mobile devices

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » **Communications**
- » Networking
- » **Environment**
- » Other
- » Sensing
- » **Security and Defense**
- » Food and Environment
- » **Sensors & Instrumentation**
- » Analytical
- » Environmental Sensors
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