

MyShake: A global smartphone seismic network to characterize urban earthquakes

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MyShake is a smartphone-based seismic network now collecting seismic data around the globe. Since its launch in 2016, over 300,000 people have downloaded the free public app. Once installed on a private phone, the phone goes into monitoring mode when it is stationary. Any subsequent motion is evaluated by an artificial neural network on the phone to determine if it is earthquake-like. If it is, then a trigger is sent to the MyShake servers immediately, and 5 minutes of 3-component acceleration data is collected and uploaded to the server (including 1 minute of data before the trigger). A real-time clustering algorithm detects earthquakes on the server and the location and magnitude is estimated. So far, MyShake has collected seismic waveforms for more than 900 global earthquakes.

In 2019 version 2.0 of MyShake will be launched. It will be available for Android and iPhones and will provide additional user functionality. The system will have an earthquake early warning capability providing rapid alerts to users when earthquakes are detected. In addition to the phones recording ground motions, users will also be able to report their experience in earthquakes and any damage observed. The resulting information about the distribution of shaking and damage will be immediately available to users as they try to understand the impact of an earthquake that has just occurred.

We will report on the use of the acceleration data to characterize earthquakes. In addition to detecting and locating earthquakes in regions that do not have traditional seismic networks, MyShake can also be used to map the distribution of ground shaking including the response of buildings.

Keywords: Machine learning, Earthquake detection, Earthquake early warning

