Energy Efficient Trigger Word Detection via Accelerometer Data

Tech ID: 25949 / UC Case 2016-825-0

ABSTRACT

Researchers at the University of California, Davis have developed an energy-efficient voice monitoring technique for smart devices, such as smartphones and wearables, based on accelerometer data.

FULL DESCRIPTION

Voice control has emerged as a popular method for interacting with smart-devices. Prominent voice control applications like Siri and Cortana are currently utilized by a large number of smartphones and tablets. User spoken voice control initiation commands, or trigger words (e.g. "Okay Google" or "Hi Galaxy"), allow these applications to differentiate between user voice commands and normal conversations through the use of a microphone. However, energy consumption significantly increases due to voice control applications continuously listening for trigger words.

Researchers at the University of California, Davis have developed an energy-efficient voice monitoring technique for smart devices, such as smartphones and wearables, based on accelerometer data. This technique utilizes low-power, low-cost accelerometer sensors, commonly available in today's smart devices, for continuous monitoring of a user's spoken voice control initiation commands, or trigger words. Our research demonstrates that accelerometer sensors can accurately detect and distinguish a user's voice commands through signal mining and machine learning classification.

APPLICATIONS

▶ Voice control applications in smart devices such as smartphones, tablets and wearables

FEATURES/BENEFITS

▶ Utilizes accelerometer data to distinguish voice commands

▶ Low power usage

▶ Utilizes pre-existing, low cost accelerometer sensors

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,347,249	07/09/2019	2016-825

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OTHER INFORMATION

KEYWORDS

Voice recognition, Inertial Measurement Unit (IMU), accelerometer, digital assistants, voice command applications

CATEGORIZED AS

▶ **Communications**
  ▶ Other
▶ **Computer**
  ▶ Other
  ▶ Software
▶ **Sensors & Instrumentation**
  ▶ Analytical
  ▶ Other
  ▶ Physical Measurement
  ▶ Position sensors

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