TECHNISCHE UNIVERSITÄT
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Introducing New Sensors for Activity Recognition

Workshop on How To Do Good Research In Activity Recognition at
The Eighth International Conference on Pervasive Computing
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Pervasive Computing Systems
TecO

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DUS

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Technology for Pervasive Computing

Activity Recognition

A play in 3 acts

- **The Environment (Activity)**
  - Environment: Set of all possible **physical properties**
  - How does the activity **imprint** on the environment?
- **Sensor**
  - What subset of the environment is **represented**?
  - To what degree of **accuracy**?
- **Recognition algorithm**
  - Which representations can be **classified**?
  - Example: Linear vs. non-linear
  - **Quality** of recognition

Bottum-up Error

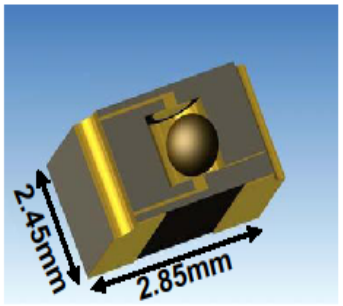
- **Each level builds on the one below it**
- **Error is passed upwards**
  1. Activity
  2. Sensor Representation
  3. Classification
- **Introducing a new sensor**
  - What do good recognition rates show?
  - What do bad recognition rates show?

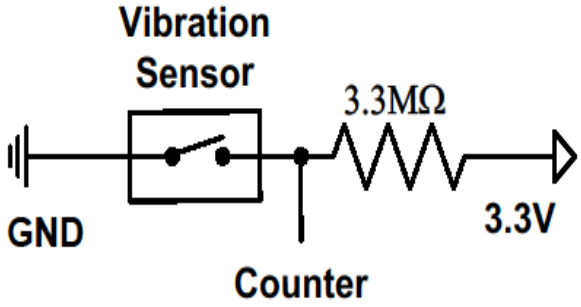
Our recommendation

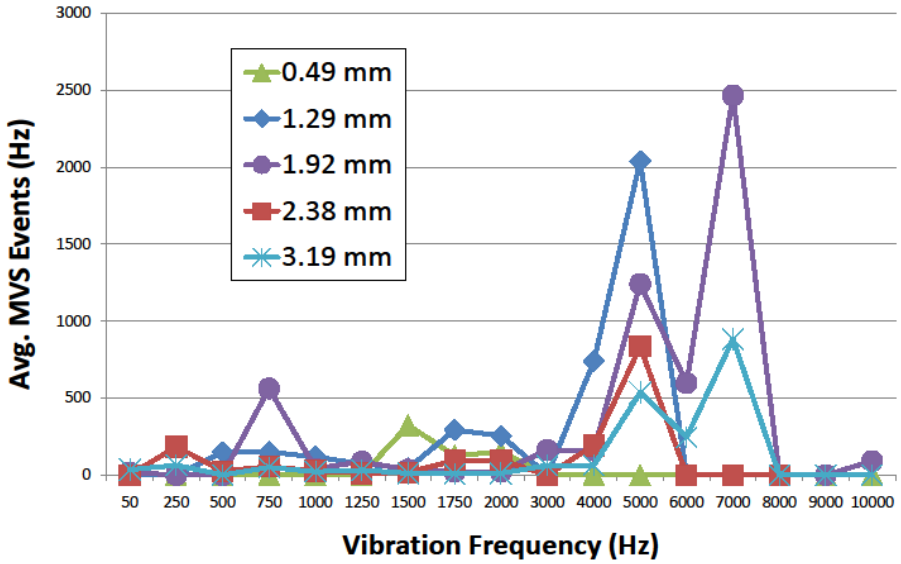
- **Activity**
  - Analyze activities in terms of **physical properties**
  - Exact definitions and thresholds
- **Sensor**
  - Analysis independent of activity
  - Clearly **defined subsets** of environmental parameters
- **Classifier**
  - **Standard classifiers**
  - Multiple complementary classifiers

Our work

- **A highly sensitive ballswitch for activity recognition**
- **Results of vibration frequency and amplitude analysis**







Thank You!

- **Questions?**
- **Comments?**