

Welcome and State of the IoT

Secure IoT Project

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Welcome to the SITP 2018 Retreat!

IoT: 2015 – 2018

- IoT is no longer a question; it's real
- Creation of Google Home and Amazon Echo; 40 million units in US at end of 2017
- Cloud solutions dominate
- Mobile platforms are important
- Many security and privacy concerns
- Natural synergy between IoT and advanced analytics
- Lots of middleware and infrastructure companies

IoT has become pervasive

Many examples:

- ATMs
- Kiosks and infotainment systems
- Consumer healthcare—blood glucose meters, for example
- Smart phones
- Automobiles
- Industrial, smart manufacturing
- Education
- Retail automation
- Built environment, smart buildings
- Energy infrastructure

Companies offering more IoT products and services

For example, embedded OS, application management

Capabilities

- Connect and manage devices
- Analytics
- Security
- Optional features
 - Low interrupt latency (for real-time embedded systems in industry)
 - Resource-constrained systems

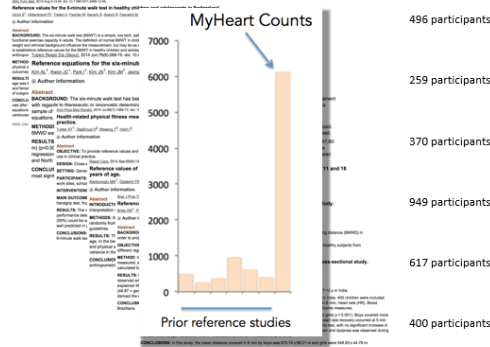
Cloud-based IoT offerings

- MS Azure IoT services
- AWS IoT
- IBM Watson IoT, Google Cloud IoT, etc.

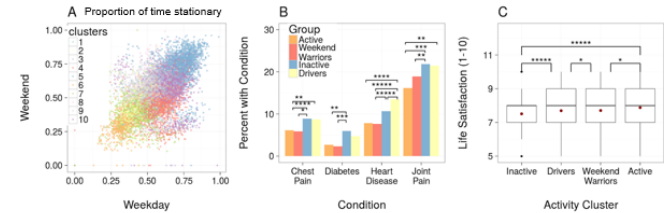
Analytics on real-time streams

Machine learning and other advanced techniques are being applied to IoT data; some examples:

- Unsupervised discovery of states and prediction (fitness trackers, automobiles) by Jure Leskovec et al.
- Anomaly detection in real time by Peter Bailis et al.
- MyHeart Counts study by Euan Ashley et al.



Machine learning approaches to large scale data



JAMA Cardiol. 2017;2(1):67-76



Anna Scherbina

Increased public and government focus on security and privacy

The implications of ubiquitous IoT combined with machine learning, AI, and data science are raising concerns

- Europe's GDPR
- US federal and state legislatures
- Growing public awareness

The New York Times

Is Alexa Listening? Amazon Echo Sent Out Recording of Couple's Conversation



SITP—today's retreat and going forward