Challenges for Ubiquitous computing

Introduction

- Shift towards a world of ubiquitous computing
- From device centered to invisible computing
- Medical scenario
- Ubiquitous Computing as a challenge

Challenges

- UbiComp strikes the roots of the currently perceived vision of computer science
- Calls for a holistic view
- Challenges broadly classified from 3 perspectives:
  - Experience
  - Engineering
  - Theory

Experience challenge

- how UbiComp creates an environment for people?
- how people makes sense of the new technology in place?
- how people interact?
- socio-technical implication?

- Human Interaction in UbiComp
  - Interaction with environments
  - Interaction through environments
  - Interaction techniques
- Design environments
  - Design approaches for diverse needs
  - Rich usability principles and evaluation techniques
- Social, business and ethical issues
  - Privacy, trust and accountability
  - Sustainability and environmental impact

Engineering perspective

- what are mechanisms and techniques used to design and construct UCS?
- what are the limitation through technology
- what security measures are employed
- what assurance can be provided

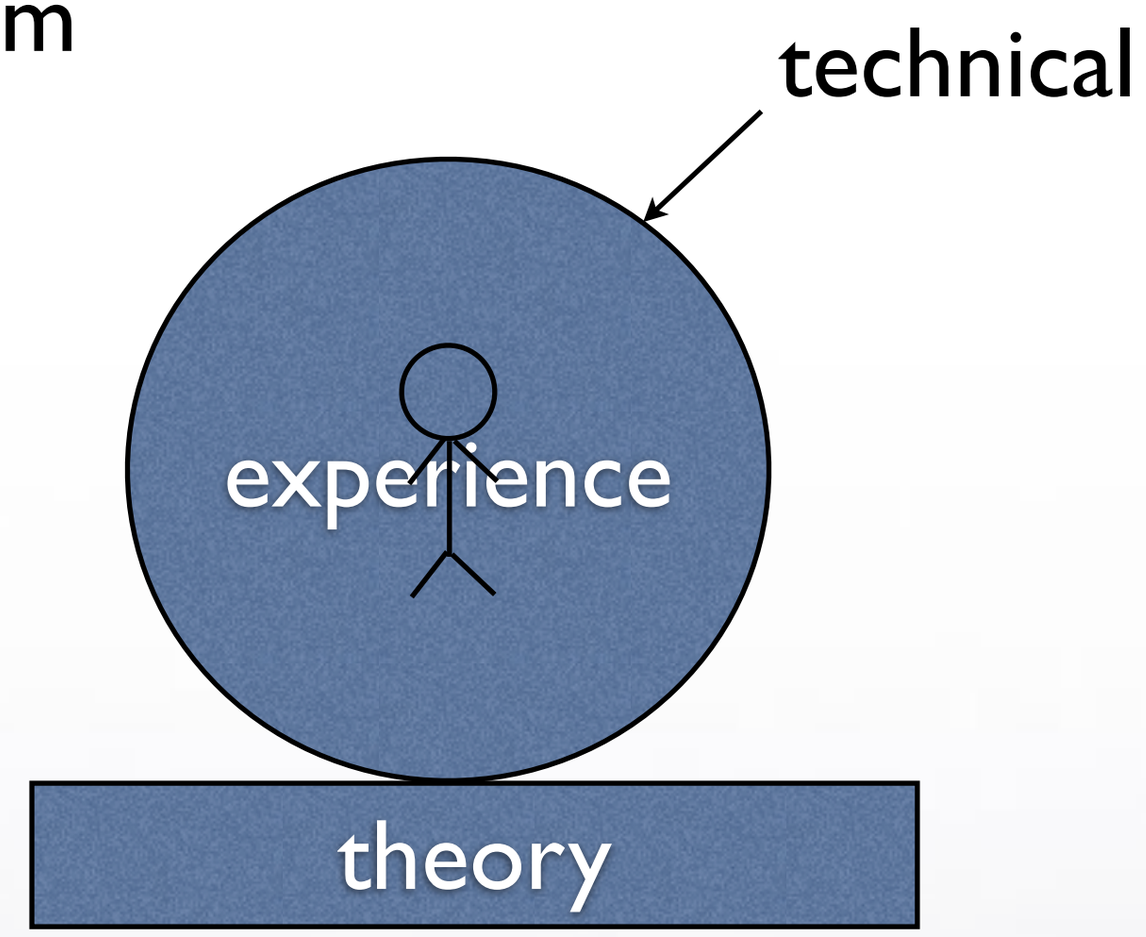
- Physical constraints and system structure
  - Size and Power
  - Wireless communications
  - Context
  - Self configuration
  - Hierarchy and composition
- Security and dependability
  - Security and trust
  - Dependability
  - Exceptions
- Information flow
  - Network design
  - Information overload and relevance

Theory perspective

- foundation for design and engineering
- multi disciplinary

- Structure and interaction
  - Hybrid models
- Configuration
- Dependability
  - Trust and security(experimental assessment)
  - Multilevel modeling
  - Languages

Ubiquitous Computing System (UCS)



Ubiquitous health care

- Development of new bio sensors to accurately measure medical state
- Power management- including micro power electronic circuitry and wireless communications, power generation from body movement
- Fusion of multiple sensor information to determine human activity and medical state
- Detecting abnormal conditions by inferencing abnormal conditions
- Infrastructure for large scale monitoring and analysis of information and automatic warning
- Socio-ethical, security, safety and privacy issues

Grand challenge

- ???


This inspired thinking shared with you by:
Let's build a smarter planet.

start small..

- diversify approach
- move away from device centered view
- give emphasis to reachability and ease of use
- focus should not be on invention

small activity.. great vision

Thank you

References:

Ubiquitous Computing: Experience, Design and Science
Grand challenge- Dan Chalmer
www.ted.com
www.youtube.com