Wearable Computing

Holger Kenn

Universität Bremen

WS 05/06

Wearable Computing History
   Timeline

Scientific Sources
   Conferences
   Books
   Journals
   Research Groups

Wearable Computing

- ► Properties of wearable computing
  - ► Unobtrusive
    - ► mobile, small, lightweight, no wires
    - ► body-wearable (sometimes in clothing)
  - ► Supporting a primary (work) task
    - ► Don't disturb, be useful all the time
  - ► casual use, context-aware, "'smart'"

Timeline I

1268 Eyeglasses mentioned by Roger Bacon

1510 Pocket Watch invented by Peter Henlein in Nürnberg ("Nürnberger Ei")

1665 Robert Hooke calls for augmented senses

Nürnberger Ei

Timeline I

1268 Eyeglasses mentioned by Roger Bacon

1510 Pocket Watch invented by Peter Henlein in Nürnberg ("Nürnberger Ei")

1665 Robert Hooke calls for augmented senses

Timeline II

1907 Aviator Alberto Santo-Dumont commissions the creation of the first wrist watch by Louis Cartier

1945 Vannevar Bush (MIT) proposes the idea of a "memex"

1960 Manfred Clynes coins the word "Cyborg"

1966 First wearable computer: Ed Thorp and Claude Shannon: Analog computer for roulette wheel prediction.

Timeline III

- 1967 Hubert Upton invents analogue wearable computer with eyeglass-mounted display to aid lipreading
- 1972 Alan Lewis invents a digital camera-case computer to predict roulette wheels
- 1977 CC Collins develops wearable camera-to-tactile vest for the blind
- 1977 (C): HP releases the HP 01 algebraic calculator watch

HP-01

Timeline IV

1978 Eudaemonic Enterprises invents a digital wearable computer in a shoe to predict roulette wheels

1979 Sony introduces the Walkman

1981 Steve Mann designs backpack-mounted computer to control photographic equipment

1984 William Gibson writes Neuromancer

1987 The movie Terminator is released

Timeline V

1991 Doug Platt debuts his 286-based "Hip-PC"

1991 CMU team develops VuMan 1 for viewing and browsing blueprint data

1991 Mark Weiser proposes idea of Ubiquitous Computing in Scientific American

1993 Thad Starner starts constantly wearing his computer, based on Doug Platt's design and writes the first version of the Remembrance Agent

1993 BBN finishes the Pathfinder system, a wearable computer with GPS and radiation detection system

Timeline VI

1993 Feiner, MacIntyre, and Seligmann develop the KARMA augmented reality system

1994 Mik Lamming and Mike Flynn develop "Forget-Me-Not," a continuous personal recording system

1994 Edgar Matias debuts a "wrist computer" with half-QWERTY keyboard

1994 Steve Mann starts transmitting images from a head-mounted camera to the Web

1997 Creapôle Ecole de Création and Alex Pentland produce Smart Clothes Fashion Show

Wearable Computing Fashion

Image from http://www.media.mit.edu/wearables/lizzy/out-in-the-world/beauty/intro.html

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Scientific Sources

Conferences Cutting-edge research

Journals Established Research

Books "Textbook" knowledge

Research Groups Lots of information, unreviewd

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

The first conferences

1996 DARPA sponsors "Wearables in 2005" workshop
http://www.darpa.mil/MTO/Displays/Wear2005/b/index.ht

1996 Boeing hosts a small wearables conference in
seattle

1997 CMU, MIT and Georgia Tech co-host the ISWC'97

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

ISWC

- ▶ Since '97 (Cambridge,Boston,MA)
- ▶ ISWC05 (Osaka) two weeks ago

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

IFAWC

- ► Since 2004
- ► focus on applications

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Other conferences

- ▶ Pervasive
- ▶ Percom
- ▶ Ubicom

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Books

- ▶ Steve Mann: Intelligent Image Processing

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Journals

- ▶ IEEE Pervasive Computing
- ▶ Elsevier Pervasive and Mobile Computing

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

MIT

Image from http://www.media.mit.edu/wearables/history.html

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

MIT

- ▶ MIT "Borglab"
- ▶ Part of the Media Lab
- ▶ http://www.media.mit.edu/wearables/
- ▶ Home of MIThril
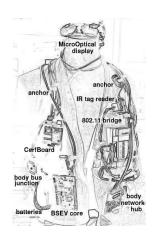 http://www.media.mit.edu/wearables/mithril/

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

MIThril

Image from http://www.media.mit.edu/wearables/mithril/photos.html

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

CMU

- http://www.wearablegroup.org/
- Home of VU-Man
- Project AURA http://www.cs.cmu.edu/ãura/

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Toronto

- ► Steve Mann
- ► Philosophy of Wearable Computing
- ► Cooperation with artists
- ► http://www.eyetap.org/

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Georgia Tech

- ▶ Thad Starner
- ▶ Focus on mobile HID

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

ETH

- ▶ Gerhard Tröster
- ▶ QBIC Wearable Computer

Recap
Wearable Computing History
Scientific Sources
Summary

Conferences
Books
Journals
Research Groups

Other places

- ▶ IBM LinuxWatch
  http://www.research.ibm.com/WearableComputing/
- ▶ UMIT: Paul Lukowicz
- ▶ Bremen: WearIT@Work Project

Summary

- ► History: Young field with old roots
- ► Science: International Research, mainly conferences