

Wireless Sensing Labs for Engr5



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Why studying wireless sensing?

- An excellent platform to study **computer engineering** related topics.
- Significant impacts on public safety, health care, environment control, manufacturing, etc.
- MIT Technology Review named wireless sensor networks as one of the ten technologies that will change the world in the 21st century.

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Introduction to Engr5 Wireless Sensing Lab

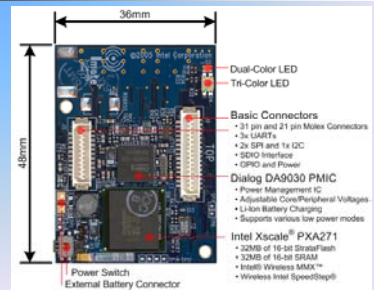
Imote2 for wireless sensing labs

- Demo
 - <http://www.cse.lehigh.edu/~cheng/Teaching/Engr5/IMote2-Engr5-demo.wmv>

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Introduction to Engr5 Wireless Sensing Lab

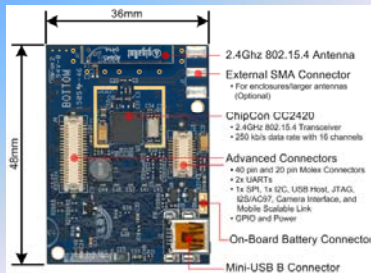
Imote2 Platform (Top View)



- University of Washington - Ubicomp Research Page, "IMote2," accessed on May 19, 2009 at <http://ubi.cs.washington.edu/wiki/index.php/IMote2>.

3b

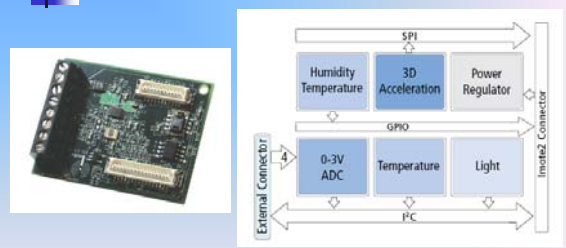
Imote2 Platform (Bottom)



- University of Washington - Ubicomp Research Page, "IMote2," accessed on May 19, 2009 at <http://ubi.cs.washington.edu/wiki/index.php/IMote2>.

3b

Imote2 Basic Sensor Board



- Crossbow Technology, Inc., "ITS400 Datasheet," accessed on May 19, 2009 via http://www.xbow.com/Products/Product_pdf_files/Wireless_pdf/ITS400_Datasheet.pdf

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Introduction to Engr5 Wireless Sensing Lab

Part I: sense the wireless network

- Working with your team members
- Goal #1
 - Generate a signal quality map for any two Imotes that would like to exchange the data between PL 331 and any point in the hallway of the 3rd floor of this building.

Part I: sense the wireless network

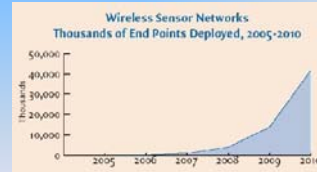
- Working with your team members
- Goal #2
 - Expand the communication range of the network so that it can cover a large area of the hallway on the 3rd floor of this building.

Part II: sense the environment

- Open-ended
 - Working with your team members, you define the problem and find ways to solve the problem using the Imote2 platform

Why studying wireless sensing?

- Wireless sensor networks market expected to skyrocket to \$5.3 billion in 2010



- <http://www.controldesign.com/industrynews/2005/04/04.html>
- <http://www.priog.org/10225881-global-market-for-embedded-systems-worth-1125-billion-in-2013.html>

- Global markets for **embedded systems** worth \$112.5 billion in 2013

Look forward to meeting you!