### VLSI Workshop Day 5

**Today’s Topic: Research Topics**

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<th>Time</th>
<th>Common Session</th>
<th>DAY 1</th>
<th>DAY 2</th>
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<td>9:30</td>
<td>Introduction: VLSI Curriculum; Course Content Overview</td>
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**Notes:**
- DIS: Research in Education
- DIS: Engaging in Research
- DIS: Challenges to Teaching VLSI
- DIS: Break Out Groups & Lectures
- DIS: Summary & Action Items

**Course Content:**
- VLSI Implementations of DSP
- Research: MEMS & Sensors
- Research: Bio-medical Electronics
- Research: MEMS & Sensors
- Research: Bio-medical Electronics

**Components of VLSI Course Content:**
- Introduction
- Course content: CMOS logic, layout, sequential logic
- Teaching resources; effective homework, exams, labs
- VLSI Implementations of DSP
- Research: MEMS & Sensors
- Research: Bio-medical Electronics

**Course Content Overview:**
- Technology & device models
- Advanced/grad topics & courses
- DIS: Break Out Groups & Lectures
- BOG: Session A
- BOG: Session B
- New Tech Lecture
Day 5 Agenda

Morning
• Reminder: Present “new technology” this afternoon
• Questions from Day 4?
• Research: MEMS and Sensors
• Research: Bioelectrochemical System on Chip

Afternoon
• Break-out Group: Present new technology lectures
• Discussion: Summary & Take Home Lessons
Discussion: Engaging in Research

• What type of research can you engage in?
  • 
  • 

• What are your challenges to engaging in research?
  • 
  • 

• Solutions?
  • 
  •
Research Topics

Time permitting, we can discuss my research in these areas:

• Low Power Design Techniques
• Analog/Mixed-Signal Design: Sensor readout circuits
• Micro-Electro-Mechanical Systems (MEMS) and Sensors
• Bioelectrochemical System on a Chip

Slides for all topics posted on workshop website
BOG: Present New Technology Lectures

• Form break-out groups now
• Present papers to your group
  • ~10 min presentation (someone keep track of time)
  • ~5 min discussion
    • discuss paper; don’t evaluate presenter
• Meet back here for final Day 4 discussion
  • set time to meet __________
• Questions?
Workshop Summary

- **VLSI Design course**
  - curriculum
  - course components
  - sample course content

- **Effective Teaching**
  - how to speak; how to engage students
  - practice preparing examples/homework & presenting lectures

- **Research**
  - role in education; resources for information
  - several current research topics

- **Your job now**
  - transfer what you have learned into your lives
Discussion: Take Home Lessons

• What will you do to integrate the things you learned?
  • integrate new technology into education
  • involve students in research
  • more focus on effective student learning
  • develop new UG projects based on research interests
  • adapt US curriculum to India
  • integrate relevant objectives into lectures
  • provide course resources to students
  • expand lecture notes to suitable study material for students
  • explore teamwork in homework
  • link course topics to state-of-the-art developments

• How can you sustain your growth as a teacher?
  • keep informed of new technology
  • developing and attending workshops like this one
  • adapt effective teaching techniques to Indian culture
  • .