PhD Education at IT Dept

Wang Yi
Director of PhD Education at IT
Ph.D. programs at IT department

- **Computer Science**
  - Computer Sciences (general): Bengt Jonsson
  - Database Technology: Tore Risch
  - Computer Science Education Research: Michael Thune
  - Computer Communication: Per Gunninberg
  - Human-Computer Interaction: Bengt Sandblad
  - Embedded Systems: Wang Yi

- **Electrical Engineering**
  - Automatic Control: Alexander Medevedev
  - Signal Processing: Peter Stoica

- **Scientific Computing**
  - Numerical Analysis: Per Lötstedt (and Michael Thune)

- **Image Processing**
  - Computerized Image processing: Evert Bengtsson
Ph.D. programs at IT department

- **Computer Science (DoCS and CSD)**
  - Computer Sciences (general): Bengt Jonsson
  - Database Technology: Tore Risch
  - Computer Communication: Per Gunninberg
  - Embedded Systems: Wang Yi

- **Systems and Control (Systemteknik)**
  - Automatic Control: Alexander Medevedev
  - Signal Processing: Peter Stoica

- **Scientific Computing (TDB)**
  - Numerical Analysis: Per Lötstedt (and Michael Thune)

- **Visual Information and Interaction (Bildanalys & MDI)**
  - Computerized Image processing: Evert Bengtsson
  - Human-Computer Interaction: Bengt Sandblad

- **Didaktik**
  - Computer Science Education Research: Michael Thune
Ph.D. programs at IT department

1999-2014: 191 PhDs (and 128 LICs)
2014 so far: 17 PhDs (and 4 LICs)

- **Computer Science (DoCS & CSD), 67**
  - Computer Sciences (general): Bengt Jonsson
  - Database Technology: Tore Risch
  - Computer Communication: Per Gunninberg
  - Embedded Systems: Wang Yi

- **Systems and Control (Systemteknik), 32**
  - Automatic Control: Alexander Medevedev
  - Signal Processing: Peter Stoica

- **Scientific Computing (TDB), 47**
  - Numerical Analysis: Per Lötstedt (and Michael Thune)

- **Visual Information and Interaction (Bildanalys & MDI), 40**
  - Computerized Image processing: Evert Bengtsson (26)
  - Human-Computer Interaction: Bengt Sandblad (14)

- **Didaktik, 5**
  - **Computer Science Education Research**: Michael Thune
PhDs/LICs produced by IT per year
PhDs/LICs produced by IT per year

2014 so far: 2 PhDs (and 3 LICs)
Today 128 active PhD students at IT
(32 active at Mathematics)
Organization of PhD Education

• Faculty of Natural Science and Technology
  – Deans for research and education
  – Committee of Research Education (FUN)

• Department of Information Technology
  – Department Head (Michael Thune)
  – Director of Research Education (Wang Yi)
  – “FU ansvariga professor” (“courses, quality control, examination”)
  – Main supervisor and supervisor

  – Administration: Elisabeth Lindqvist
  – “Doktorandsråd” -- Marcus Björk (SysCon), responsible
PhD Education is regulated by 4 levels of “Study Plans”

   - Overall goals, regulation ...

2. General Study Plan for each faculty (TekNat)
   - Summary of HL & HF
   - Mandatory courses: 2hp ethics, Pedagogical training
   - Policy and regulation (Karin)

3. Subject Study Plan for each PhD program
   - Subject description, Requirements (e.g. course 60-90 hp)

4. Individual Study Plan for each PhD student
   - Courses, research projects, and plans etc
     (updated every year before Sept 15 at IT dept)
**Overall goals (HL & HF)**

1. **Knowledge and understanding**
   - To qualify for a doctoral degree, a doctoral student must demonstrate:
     - Broad knowledge and systematic understanding of a field of research and deep, current, specialised knowledge relating to a limited area within such field of research; and
     - Intimate familiarity with general scientific/scholarly methodology and the particular methodology of the relevant field of research.

2. **Competencies and capacities**
   - To qualify for a doctoral degree, a doctoral student must demonstrate:
     - Capacities for scientific analysis and synthesis, independent criticism and evaluation of new and complex phenomena, questions and situations;
     - Capacities, marked by a critical standpoint, independence, creativity and scientific exactitude, for identifying and formulating questions; for the design and methodologically sound pursuit of research and other advanced activities within set timeframes; and for the evaluation of such work;
     - Via completion of a thesis, an ability to significantly contribute to the advance of knowledge through independent research;
     - An ability to take part in dialogue with the national/international scientific community and society at large through authoritative verbal and written presentation and discussion of research and research findings;
     - An ability to identify needs for further knowledge; and
     - A capacity for contributing to societal development and other individuals’ intellectual progress in research, educational and other advanced professional contexts.

3. **Evaluative capacity & critical standpoint**
   - To qualify for a doctoral degree, a doctoral student must demonstrate:
     - Intellectual independence, scientific integrity and a capacity for research-ethical judgement; and
     - Deep understanding of the possibilities and limitations associated with science, the role of science within society and human responsibilities in connection with scientific application.

**Goals of UU (UFV 2007/1478)**

1. Programmes and submitted **theses** shall meet **high international standards**;

2. Programmes shall equip doctoral students with scientific/scholarly expertise and a **deep understanding of the subject** matter in question;

3. Programmes shall provide doctoral students with a grounding in university/college-level teaching methodology and practice and general **competencies and knowledge** that are **attractive on the employment market**; and

4. Programmes shall represent **attractive career options**.
UU’s Strategies for attaining the goals (UFV 2007/1478)

- Encouraging doctoral students to make use of the broad expertise and educational environments that the University provides;
- Giving notice, nationally and internationally, of programme openings and admitting doctoral students in accordance with processes characterised by open competition;
- Providing doctoral students with opportunities to participate in stimulating exchange of ideas with senior researchers and in the context of conferences, research programmes, seminars and courses at other universities in Sweden and abroad;
- Providing new doctoral students with a good introduction to the work environment and creating secure employment situations;
- Offering teacher-led, doctoral-level courses, good supervision and opportunities for supervisors to pursue additional education;
- Providing doctoral students with a grounding in research ethics;
- Providing doctoral students with a grounding in university/college-level teaching methodology and opportunities to teach at the first- and second-cycle levels; and
- Providing doctoral students with opportunities for developing presentation, communication, project management, leadership, entrepreneurial and other relevant skills and for participating in career planning programmes.
My understanding of UU’s strategies

• Attractive PhD topics/positions
• Top PhD students attracted internationally
• Stimulating environment
  – Top-class PhD courses
  – Exciting/relevant research projects
  – Competent supervisors
  – Seminars, opportunities to interact with seniors
• Quality control and improvement
  – Evaluation and feedback
Topics for the brain-storming session

• PhD Courses
  – What are the two most important courses in your area?
  – How to fund PhD courses?

• Quality Improvement
  – How to find and hire top PhD students
  – How to improve the quality e.g. qualification tests?
    50%, 80% seminars ...

• Goals and Evaluation
  – What are our goals
  – What should we do for the upcoming evaluation (2016?)

• Problematic Issues and Stress
  – How to deal with “no progress” in PhD studies?
  – How to detect problems/conflicts early?