Workplace meeting 23rd of April

New employees

Aarob Bobick – Affiliated Professor, CVAP
Anders Ynnerman – Affiliated Professor, HPCViz
Martin Jonsson – Researcher, MID
Erik Widing – Research Engineer, CB
Affiliated or adjunct faculty

CB:
• Anders Holst, SICS (under review)

CVAP/CAS:
• Guest professor (Robotics): Gurvinder Virk, Högskolan i Gävle
• Affiliated professor: Aaron Bobick, Georgia Tech

HPCViz:
• Adjunct professor (Internet of Things): Christer Nordström, SICS
• Affiliated professor (Visualization): Anders Ynnerman, Linköpings universitet
• Affiliated faculty (Interaction Technologies): Alex Okot-Olwal, Google

MID:
• Adjunct professor (Human Computer Interaction and Medical Informatics): Niklas Hallberg, FOI
• Adjunct professor (Media Technology): Johan Steinberg, Bonnierkoncernen
• Affiliated faculty (Interaction Design): Lidia Oschlyanski, Google
• Guest professor (Technology Enhanced Learning): Martha Cleveland-Innes, Athabasca university
• Adjunct professor (Medical Informatics): Kristina Groth, Karolinska sjukhuset (decision on its way)

CESC:
• Adjunct professor (Sustainable Interaction Design): Cecilia Katzeff, Interactive Institute
• Affiliated professor (ICT for sustainability): Lorentz Hilty, University of Zurich

TCS:
• Guest professor (Computer Science): Rafael Pass, Cornell university

TMH:
• Adjunct professor (Language technology): Juasi Kartgren, Gavagai
• Affiliated professor (Music communication): Gerhard Eckel, University of Music and Performing Arts Graz
• Adjunct professor (Hörselektronik): Peter Nordqvist, Hörselbron (application submitted)

Ericsson Research
Software Engineering
Interaction Design

SAAB
Software Engineering
Interaction Design

KnowIT
Security

ABB, SLL, Scania, Volvo, Microsoft, Intel,…
Improving everybody’s working conditions – Employeeship

Employee survey 2013

About the survey
• Survey KTH
• School and department level
• Nov-dec 2013
• Compare with earlier surveys 2009 and 2011

How was the survey conducted?
• 80 questions, 7 index areas and 7 other areas
• Population 281 persons, 197 answered (70%), 54 women, 143 men

What has been done so far as a result?
• Information at your department
• Action plans from all departments and from PhD student council.
• Information at Samverkansgruppen, Ledningsgruppen and Working council/Arbetsplatsrådet
• Report to KTH and Dean

Index areas:
1. Goals and responsibility
2. Opportunities to influence
3. Motivation
4. Vocational competence
5. Overall assessment ✓
6. Leadership ✓
7. Physical environment ✓

Other areas:
✓ a. Development dialogue
✓ b. Meeting activities
✓ c. Managers
✓ d. Supervision
✓ e. Equal treatment
f. Discrimination, 9 areas
g. General state of health, 4 areas
Table 1: CSC: Översikt jämförbara frågor

<table>
<thead>
<tr>
<th>Frågeställning</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
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<tbody>
<tr>
<td>Diskriminering pga ålder</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Diskriminering pga sexuell läggning</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Diskriminering pga kön</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Idealisk arbetsförhållanden</td>
<td>56</td>
<td>57</td>
<td>60</td>
</tr>
<tr>
<td>KTH som arbetsgivare</td>
<td>82</td>
<td>88</td>
<td>70</td>
</tr>
<tr>
<td>Möjlighet - förväntningar</td>
<td>59</td>
<td>65</td>
<td>67</td>
</tr>
<tr>
<td>Nödetthet arbets situation</td>
<td>62</td>
<td>67</td>
<td>69</td>
</tr>
<tr>
<td>Offer till KTH som arbetsplats</td>
<td>47</td>
<td>54</td>
<td>59</td>
</tr>
<tr>
<td>Effektivt kundansvarlighet</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kompetens</td>
<td>81</td>
<td>82</td>
<td>84</td>
</tr>
<tr>
<td>Möjlighet till kompetensutveckling</td>
<td>81</td>
<td>87</td>
<td>89</td>
</tr>
<tr>
<td>Befogenhet</td>
<td>66</td>
<td>69</td>
<td>73</td>
</tr>
<tr>
<td>Bro med våra ekonomikompetens</td>
<td>77</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>Förmåga att omfångsamt arbeta</td>
<td>72</td>
<td>70</td>
<td>73</td>
</tr>
<tr>
<td>Diskriminering pga kön</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2: Total result KTH and CSC including index Employee ship/Medarbetarindexet (MI).

<table>
<thead>
<tr>
<th>KTH</th>
<th>CSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
<td>MI</td>
</tr>
<tr>
<td>Motivation</td>
<td>Opportunities to influence</td>
</tr>
<tr>
<td>MI</td>
<td>MI</td>
</tr>
<tr>
<td>Opportunities to influence</td>
<td>Physical environment</td>
</tr>
<tr>
<td>MI</td>
<td>MI</td>
</tr>
<tr>
<td>Overall assessment</td>
<td>Leadership</td>
</tr>
<tr>
<td>MI</td>
<td>MI</td>
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<td>Goals and responsibility</td>
<td>Competence</td>
</tr>
<tr>
<td>MI</td>
<td>MI</td>
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<td>MI</td>
</tr>
<tr>
<td>Goals and responsibility</td>
<td>Competence</td>
</tr>
</tbody>
</table>

Legend:
- To low result
- Possible to improve
- Good result
Process after we got the result

Focus areas:
- Overall assessment
- Development dialogue
- Leadership/Managers
- Supervision
- Equal treatment
- Physical environment

Action plans from dept., PhD, etc.

Workshop:
Working council and info in Mgmt team, Samverkan etc.

Examples of Overall Activities

Overall assessment:
- Introduction, Employee Day, etc
- Intranet, “How to”, KTH for me, etc
- Employed at KTH/CSC, values and benefits
- Healthcheck for all employees

Development dialogue
- Education for managers and employees (?)
- Develop form and method for improving quality
Examples of Overall Activities

Leadership/ Managers and supervisors
- Education in Intercultural environment, etc
- Education in feedback for managers
- Toolbox for managers

Equal treatment
- Communicate policies and improve routines concerning discrimination and equal treatment
- Seminars in Intercultural environment for all

Physical environment
- Systematic environment (more often)
- Communicate routines concerning injuries, crises and fire

Department/group specific activities

To be handled at your department/group.
CSC supporting Technology Enhanced Learning (TEL)

An opportunity to start using advanced Media Technology for the education

CSC local diversity projects

An opportunity to conduct diversity and equality projects
CSC teachers’ day April 25

Rector visit to CSC

June 5, 13.00-17.00
Rector, prorector, vice rector for research and dekanus visits CSC
Mark your calendar – prepare to demo the research
Prepare to Nominate to the school’s awards

- Teacher of the year
- Teaching Assistant of the year
- Leader of the year
- Co-worker of the year

Nominate before June 2nd 2014 to mailto:priskommitte@csc.kth.se

Will be handed out at the next APT June 18

CSCs Summer Party
Where: Tvålpalatset
When: June 18th, 5 pm
Advertised shortly on http://intra.csc.kth.se
so stay tuned!
High Performance Computing and Visualization (HPCViz)

Johan Hoffman

Vision

“Address current and emerging challenges for efficient use of large-scale computational resources, efficient and varied manipulations of massive data sets, and method and model development taking advantage of the new possibilities offered by modern computational infrastructure and the access to large data sets.”

HPCViz combines three research areas: the research on high performance and distributed computing at PDC, the Computational Technology Laboratory (CTL) and its research on modeling and simulation, and visualization at VIC (Visualization, Interaction and Collaboration), the KTH visualization studio.
Faculty

Professor Erwin Laure, head of department
Professor Johan Hoffman, deputy head of department
Director of VIC Studio, Björn Thuresson
Affiliated professor Anders Ynnerman
Associate professor Mario Romero
Associate professor Christopher Peters
Assistant professor Stefano Markidis
3 researchers, 9 PhD students, 2 postdocs, 2 research engineers

“It is crucial to reach a critical mass of talented researchers fairly quickly to benefit from the clear momentum the combination of resources. The majority of the faculty has been recruited from outside Sweden, and the goal is to continue to promote an international environment.”

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Recruiting (in negotiations)
Professor in Visualization
Assistant prof. in high performance scientific computing
Infrastructure

• The department has close ties with PDC, which delivers supercomputing capabilities nationally (SNIC) and internationally (PRACE).
• HPCViz also runs the Visualization Studio VIC, an important KTH resource for research, education and outreach.
• The FEniCS open source simulation software project is developed at HPCViz, with an estimated 50,000 downloads per year.

One goal is to exploit the advantages of the combination of expertise and infrastructure in the formulation of new research projects (e.g. H2020).

Industrial liaisons and society at large

HPCViz has collaboration with industry and public sector which will be further strengthen, e.g. with Scania, Microsoft, SAAB, Volvo Cars, Vattenfall, Philips Research, and Stockholms Läns Landsting.

The department has currently one adjunct professor (Christer Norström, CEO SICS), and the goal is to attract additional industry affiliations (in process).

The department will strengthen its existing collaboration with Open Lab and the House of Science (Vetenskapens Hus), and continue to participate in events such as “Forskarfredag” to promote research and education at the department.
Education

The department has the goal to strengthen education in high performance computing and visualization at KTH where now new courses are being developed on basic and advanced level.

The VIC studio will continue to be a key resource in education, today used in ca. 15 courses and in a number of thesis projects.

Modeling and Simulation

Mathematical models, numerical methods and high performance computing software: aerodynamics, ocean-atmosphere, biomedicine

Funding: ERC, FP7, VR, SSF, Vinnova, PRACE, SNIC
Modeling and Simulation

Mathematical models, numerical methods and high performance computing software: aerodynamics, ocean-atmosphere, biomedicine

Funding: ERC, FP7, VR, SSF, Vinnova, PRACE, SNIC

Milo: Embodied Sculpting  
Romero, Thuresson, Peters, Sällnas, Ek

See, hear, and touch the model.
Exascale Programming Models

Address the challenge of how to program an Exaflop ($10^{18}$ operations per second) supercomputer.

Focus on scalability on $>10^9$ processes:

- Message Passing Programming Model:
  - Collective operations
  - Partitioned Global Address Space Programming model:
    - Interoperability with Message Passing
    - Adaptive runtime systems
    - Scalable Performance Analysis

Sun-Earth Connection

Large-scale massively parallel simulations of the interaction of solar wind with Earth magnetosphere to unveil the physical mechanisms that regulate the exchange of energy and mass between Sun and Earth.

Work done with Swedish Institute of Space Physics (IRF) at Uppsala University with VR funding.
Multi-level urban simulation, visualization and interaction

Collaboration with GAPS labs, Division of Traffic and Logistics, KTH

Micro- and macro-level pedestrian models, virtual reality & HPC for real-time, large-scale crowd simulation & visualization

Interactive procedural city models
Gaze tracking for control & measurement
From big data & HPC to mobile devices

Data-Intensive Computing at PDC

HPCViz Data-Intensive Computing Group (started 2012) is a research group building on the long experience of PDC.

- 9 group members (7 researchers, 2 developers)
- Collaborating mainly with Uppsala University (bioinformatics), KI (SciLifeLab) on applying, and further expand, emerging novel techniques for iterative and interactive in-memory data analytics stacks (Spark, Stratosphere, H2O, ...)
- Other areas of interest include anomaly detection in streaming data, with applications in performance improvement of distributed systems, and security (intrusion detection).
- Expanding towards:
  - collecting and analyzing sensor data
  - Data analysis over federated and distributed clouds
  - high-performance data-analytics (on HPC)
Computational Biology (CB)
Örjan Ekeberg

Common Theme:
Using Computational Techniques to Analyse and Model Biological Systems
**Lindstedtsvägen 24**
Modelling functions of the brain, from sensory processing and motor control to memory and cognitive functions

**SciLife lab**
Methods for the analysis of biological sequence data (DNA, RNA, proteins)

**AlbaNova**
Applying advanced methods from physics to biological data

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**Advanced level Education**
- Machine Learning, Neural Networks, Biological Modelling and Bioinformatics.
- Erasmus Mundus masters program euSYSBIO, on Systems Biology with Aalto University and IST in Portugal.

**PhD level Education**
- Computer Science and Physics PhD programs.
- Erasmus Mundus programme EuroSPIN; collaboration with universities in Germany, Great Britain and India.
Strategic Research
- Modelling of Brain Function; a strategically important research field
- Human Brain Project (HBP) EU Flagship initiative
- KTH Brain-IT research network
- Strategic alliances with SU and KI

Faculty
- Seven Professors and one Assoc. Professor
- New Assistant Professor in Neuroinformatics
- New Assistant Professor in Bioinformatics
We need to recruit more young researchers into tenure tracks.
TEORETISK DATALOGI (TCS)
Mads Dam
Privacy-Preserving Decentralized Systems
Approximation Resistance

How trustworthy is F-kassans automated decision making?
Autonomous vehicles: How safe are trucks without human drivers?

Hardware emulation based testing
Low-cost multicore computers
Very large automatically generated test suites assuring high software quality
TCS Development Plan - Highlights

Teaching, undergraduate:
• Teaching – research – advanced courses
• Distribution of tasks among faculty

Teaching, postgraduate:
• New summer school
• New masterpieces course

Software area prioritized
Recruitments at assistant professor level, mainly
Industry collaborations