

Mini-annual report, Computer Science 2013

It is with great pleasure and pride that I once again can observe that the last year has been successful. A huge thank to all employees. It is thanks to you and your efforts that the department is performing brilliantly – both compared to other departments at Science and Technology and compared to other Danish IT departments.

The department's greatest problem is the relatively small number of tenured academic staff (professors and associate professors). The strategic plan from February 2012 therefore aims towards an increase of approx. 25% over the next 10 years. This is why it is very positive that the department's notice of a number of positions as associate professor in autumn 2013 received as many as 83 candidates, of which approx. 30 were qualified and five are invited to an interview and test lectures. We hope to recruit 3-4 of these, so that the three departures we have had during 2013 can be compensated.

Staff

In 2013 there have been the following changes in the permanent staff :

- On January 1, 2013 Lars Birkedal took up a position as professor within the area of Logic and Semantics. Lars comes from the IT University of Copenhagen and despite of his young age, he has already achieved impressive results.
- Mogens Nielsen has been hired as vice dean of research and therefore resigns as professor at the Department of Computer Science.
- Christian S. Jensen has chosen to move back to Aalborg University and therefore resigns as professor at Department of Computer Science.
- Mikkel Baun Kjærgaard has chosen to move to University of Southern Denmark and has therefore resigned as associate professor at Department of Computer Science.
- Else Magård has resigned as center manager at MADALGO..

Mogens Nielsen is the perfect choice for the post as vice dean for research, and I am sure that his work in this job will be invaluable to the faculty and the department. I would like to thank Mogens for an outstanding and dedicated effort in the short time he managed to be Deputy Head of Department with responsibility for research and external funding. This job is now taken over by Lars Birkedal.

Appointments and awards

- Pankaj K. Agarwal, Duke University USA: Honory doctor at Aarhus University
- Lars Arge: Member of the executive committee for the Danish Council for Independent Research, Natural Sciences.
- Lars Birkedal: Sapere Aude: The Danish Council for Independent Research – top researcher.
- Lars Birkedal: ACM SIGPLAN Robin Milner Young Researcher Award.
- Michael E. Caspersen: ACM Distinguished Educator.
- Simina Branzei: IBM PhD Fellowship.
- Thomas Dueholm Hansen: Aarhus University Research Foundation PhD scholarship
- Ivan Damgaard: Best Paper Award at the Symposium on Research in Computer Security (ESORICS).

- Christian S. Jensen: Best Paper Award at the IEEE International Conference on Mobile Data Management.
- Liam Bannon: EUSSET and IISI biennial lifetime achievement award.
- Surrayya Urazimbetova and Mathilde Boisen: Google Anita Borg Memorial Scholarship.
- Peter Møller Petersen, Tobias Fjelsted Alrøe, Jesper Lysgaard Rasmussen, Jonas Degn Langdahl Grann and Nils Kähler: Final at the competition to achieve the prize of innovation.

Research projects

The department receives approx. 40 million dollars a year from external research grants. The interdisciplinary "Participatory Information Technology Centre (PIT)" has just been extended for another three years. Other major funding starting in 2013-14:

- Modular Reasoning about Higher-Order Imperative Programs, Lars Birkedal, Sapere Aude: The Danish Council for Independent Research – top researcher., 11,9 million DKK
- Extension of the Center for Theory of Interactive Computation, Peter Bro Miltersen, Danish National Research Foundation, 10,0 million DKK
- Ancestral Population Genomics, Sapere Aude research grant, Thomas Mailund (BiRC), FNU, 7,0 million DKK.
- Creativity in Blended Interaction Spaces, Susanne Bødker, The Danish Council for Strategic Research, 3,9 million DKK
- Privacy-Preserving Computation in the Cloud, Ivan Bjerre Damgård, EU, 2,3 million DKK
- Adaptive Data Correlation, Lars Arge, Advanced Technology Foundation, 1,8 million DKK
- Realistic large-area flood risk Screening, Lars Arge, Advanced Technology Foundation, 1,3 million DKK.
- Virtual Power Plant 4 Smart Grid Ready, Kaj Grønbæk, Energinet DK, 0,9 million DKK
- Relational Reasoning for Programs using Higher-Order Store, Lars Birkedal, Microsoft, 0,5 million DKK
- Cryptography for secure Digital Interaction, Claudio Orlandi, EU network.

Conferences, workshops and summer schools

The department has hosted the following events over the year:

- CFEM Workshop: Markets, Pricing and Smart Grids, 31 January (Ivan Bjerre Damgård).
- CTIC Workshop: Algebraic Complexity Theory, 18–22 March (Peter Bro Miltersen).
- CTIC/CFEM Workshop: New Trends in Mechanism Design, 25–28 June (Peter Bro Miltersen).
- China Theory Week, 28 July–2 August (Peter Bro Miltersen).
- SummerPIT: Participatory IT, 12–23 August (Susanne Bødker).
- MADALGO Summer School: 19–22 August (Lars Arge).
- SIDeR'13 Student Interaction Design Research Conference: 9–10 April (Marianne Graves Petersen i samarbejde med studerende fra CS og DAC).

In addition, the employees of the department have as usual attended lot of conferences, workshops, summer schools and meetings all over the world.

Research dissemination

Each year the department participates in a number of research activities. In 2013 we have, among others, participated in "Forsknings Døgn", and we have hosted our own Computer Science Day, where our research groups present their present research activities. Furthermore, we are working on a new COMPUTER SCIENCE magazine, which will be published autumn 2014.

During 2013 the department has arranged the following Friday lectures:

- Modular Reasoning about Software (Lars Birkedal, inaugural lecture).
- Advancing Collective Sensing to Provide Novel Solutions for Societal Problems (Mikkel Baun Kjærgaard, inaugural lecture).
- Computing the Evolutionary History of Humans and Great Apes (Thomas Mailund, Bioinformatics, Research Centre, AU).
- Programming Next Generation Processors in HPC – with Applications from Industry, Finance and Science (Brian Vinter, Niels Bohr Institute, University of Copenhagen).
- Concepts and Demos that changed the World (Kaj Grønbaek).
- Computing Without Seeing the Whole Input - New Techniques in Sublinear Time Algorithms (Kevin Matulef).

Dissemination for future students

The department's Public Relations Committee works throughout the year with numerous offers to pupils from primary and upper secondary schools across the country. In 2013, we therefore had over 1000 visitors, mostly upper secondary school students, for our own and faculty events. They range widely and include among others:

- Student-oriented events such as e.g.:
 - U-days.
 - Student guidance for upper secondary school students
 - Internships
 - Visits from after school classes, upper secondary school classes and primary school classes
 - The "rullende universitet"
- Competitions and camps such as e.g.:
 - World Robot Olympiad.
 - Summer university for primary school students
 - IT-Camp for girls.
- Focus on talent development such as e.g.:
 - Guidance for upper secondary school students in connection with their final project.
 - Theme selected for Masterclass in mathematics
 - Theme selected for Academy for talented young people.

A huge thank to the PR committee and to others who participate in recruiting new students.

Student activities

The department has approx. 1000 students and two well-functioning student associations (DSAU and SOFA). They all help create one of the best study environment for IT students in Denmark:

- Students from the department participated in this year's Danish championship in programming, and subsequently in the Northwest European Championship in Delft..
- "Regnecentralen" located in Bush-2 is a kitchen/common area for all students at the department. The room is run by students and can be booked for all kinds of student activities.
- The student association DSAU organizes a number of social and academic activities for our students, including a certification course in DB2.

Teaching

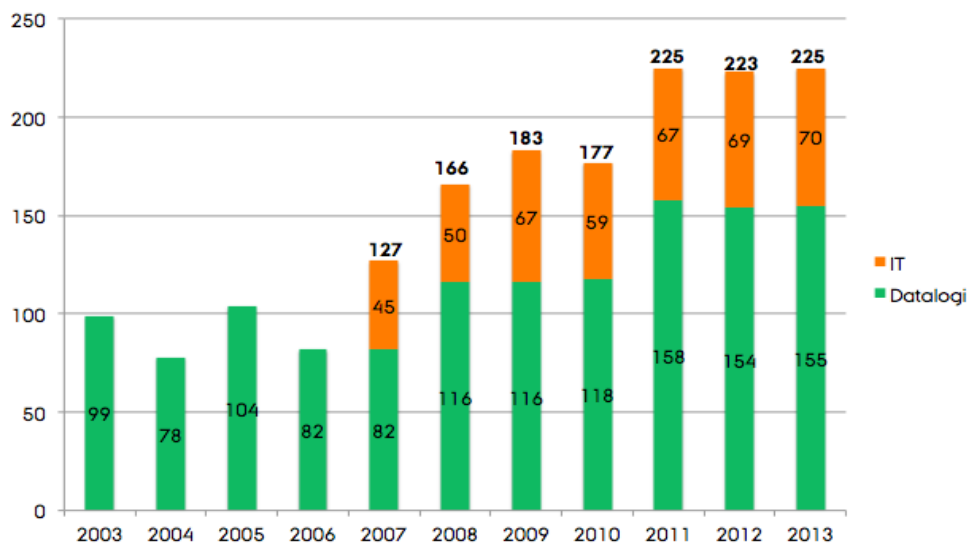
The department has in 2013 seven programmes: two bachelor degree programmes, two Master's degree programmes, one diploma and one master programmen (within continuing education) and a PhD programme, and during the year graduate no 1500 in computer science completed his study at Aarhus university. It was Casper Schmidt Wandal, with a Master's thesis entitled: "Indicering af spatio-tekstuelle data – et empirisk studie".

Following up on last year's tradition, the department has named the teacher of the year. The five nominated for the title were:

- Henrik Bærbak Christensen
- Ivan Bjerre Damgård
- Mikkel Baun Kjærgaard
- Mogens Nielsen
- Niels Olof Bouvin

"Henrik gets the prize because of his enormous dedication and personal approach to the course Software Architecture. The students have said about the course: The curriculum is something that will sit in the back of my mind for years to come and in the practical exercise classes and especially lectures have led to countless great debates among students".

As shown in the graph below, it has been possible to maintain the very high uptake of the department's two bachelor degrees. The department admits approx. 20 % of all new students, who start on a bachelor of science and technology at Aarhus University. The challenge now will be to ensure that these students complete their bachelor degree.



Over the year the department has produced the following number of degrees (brackets indicate production in 2012, 2011, 2010 and 2009):

- PhD
15 (12, 12, 15, 13)
- Graduates
Computer Science: 35 (32, 40, 55, 60)
IT product development: 5 (2, -, -, -)
- Bachelors
Computer Science: 55 (44, 55, 67, 54)
IT: 28 (27, 25, 22, -)
- Continuing education
Master: 10 (11, 11, 10, 0)
Diploma: 0 (1, 3, 26, 0)

Through "Datalogisk Uddannelsesforum" (DUF) the department has expanded contacts and cooperation with student organizations for computer science and IT and these associations will take further initiatives as to study environment and teaching.

Kurt Jensen

Head of Department