Mini-annual report, Computer Science 2012

It is with great pleasure that we once again can observe that the last year has been successful, and the department has asserted itself at the very top. Therefore, I would like to extend a huge thank to all our employees. It is thanks to you and your efforts that the department is performing brilliantly within all the university’s core areas.

Academic reorganization
During the last years Aarhus University has been through an extensive change, merging nine faculties into four academic areas, 55 departments into 26. Also the administration at central and faculty level has been merged and divided in nine areas. The department has only been slightly affected by these changes. The department’s Danish name has changed to “Institut for Datalogi”, whereas the English name remains unchanged. Our staff remains the same with only few exceptions. The most substantial change has been the major uncertainty as well as lack of basic administrative service caused by the chaotic reorganization of the administration and system support. In this connection I would like to thank our administrative staff, who has succeeded in keeping a high level of service to our academic staff under very difficult conditions.

Strategic plan
The department has developed a new strategic plan for 2012-16. The plan covers a recruitment plan aiming at a much needed increase in the number of tenured academic staff to the effect that the department will have approx. 35 tenured academic staff members in 10 years compared to the current level of 28. Such an increase is strongly needed to keep and improve the high academic level and production of the department. With approx. 4% of the tenured academic staff at the faculty, we produce approx. 8% of all peer-reviewed articles, we have 8% of all PhD students and nearly 20% of all bachelor and Master’s degree students. This impressive result gives rise to much respect from the other departments and the faculty management.

Staff
In 2012, there have only been few 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.
• Mikkel Baun Kjærgaard has been appointed associated professor within Ubiquitous Computing and Interaction
• Jan Frederiksen has been permanently employed in the department’s secretariat

Appointments and awards
• Lars Arge: ACM Fellow
• Lars Arge: Member of thd Danish Academy of Technical Sciences
• Susanne Bødker: Member of the board at Aarhus University
• Susanne Bødker: Member of the Danish Council for Technology and Innovation
• Ivan Damgård: Member of expert panel within ERC
- Ivan Damgård: Member of the board of the Council of Digital Security, where several organizations and companies are gathered to ensure safe digitization and privacy in Denmark.
- Thomas Mailund: Sapere Aude grant
- Ian Zerny: the Minister of Science, Innovation and Higher Education’s “EliteForsk” travel grant
- Barbora Micenkova and Simina Branzei: Google Anita Borg Memorial Scholarship.
- Kasper Green Larsen: Best Paper Award + Best Student Paper Award at ACM Symposium on Theory of Computing (STOC).
- Anders Møller and Mathias Schwarz: Distinguished Paper Award at International Conference on Software Engineering (ICSE).
- IT students Tom Quast, Lasse Iversen and André Schmidt: Samsung App Challenge.
- IT students Jannik Lønstrup, Troels Rasmussen and Denni Pultz Gottfredsen: StartUp Weekend Aarhus.
- IT students David Andersen, Kasper Tornøe, Denni Gottfredsen and Jeppe Stougaard: StartUp weekend London.
- IT students Tobias Sonne: VentureCup MedTech category.

Research projects
At the end of the year, Aarhus University has inaugurated Participatory Information Technology Centre (PIT) which is a new interdisciplinary center with employees from the Department of Computer Science and Department of Aesthetics and Communication. The center is headed by Susanne Bødker and Kim Halskov and has a budget of five million per. years. Other major grants starting in 2012-13:

- Extension of Center for Massive Data Algorithmics, Lars Arge, Danish National Research Foundation, 36,2 DKK.
- Collective Sensing and Macroscopic Analysis Methods for Reducing Company- and Society-level Environmental Footprints, Kaj Grønbæk, Danish Council for Strategic Research, 12,7 DKK.
- Ancestral Population Genomics, Sapere Aude research grant, Thomas Mailund, FNU, 7,0 DKK.
- A position based real time hospital resource planning system – optimized for logistical processes, Kaj Grønbæk, Advanced Technology Foundation, 4,1 DKK.
- Linear programming, stochastic games, and related problems, Thomas Dueholm Hansen, FNU, 1,7 DKK
- Cryptographic Protocols For Secure Computation, Claudio Orlandi, FTP, 1,7 DKK

Conferences, workshops and summer schools
The department has hosted the following events over the year:

- CFEM/CTIC Workshop: Theory and Practice of Multiparty Computation, June 4-8 (Ivan Damgård).
- China Theory Week, August 13-17 (Peter Bro Miltersen).
- Workshop on Satisfiability (WSAT), August 20-22 (Peter Bro Miltersen).
- MADALGO Summer School on Algorithms for Modern Parallel and Distributed Models, August 20-23 (Lars Arge and Gerth Brodal).

In addition, the employees of the department have as usual attended lot of conferences, workshops, summer schools and meetings all over the world.
Seminars
During 2012 the department has arranged the following "Friday Lecturers":

- Selecting Stars: Representative Skylines for Finding Interesting Records under Multiple Criteria (Matteo Magnani).
- Old Wine in New Skins (Dominik Scheder).
- Beyond Software Engineering (Peter Gorm Larsen, Aarhus School of Engineering).
- Physarum Computations (Kurt Mehlhorn, Max-Planck-Institut für Informatik).
- Let's Talk about Computational Geometry (Peyman Afshani).
- C++11 Style - A Touch of Class (Bjarne Stroustrup, Texas A&M University).
- Data Structures and Lower Bounds (Kasper Green Larsen).
- Communication Complexity and Lower Bounds in Computer Science (Joshua Brody).
- Meet PIT (Susanne Bødker).
- Highlights of the (primarily early) History of Computing (Erik Meineche Schmidt).

Research dissemination
Each year the department participates in a number of research activities. In 2012 we have, among others, participated in “Forskningens Døgn”, we have hosted our own Computer Science Day, where our research groups present their present research activities.

Dissemination for future students
Besides the ordinary visitor activities, “Det Rullende Universitet”, study placement and U-days, the department arranges a number of events addressing young future students such as:

- Visits from primary and upper secondary school classes from all over the country
- Student guidance for upper secondary school students in connection with study area projects
- Courses in robotics for upper secondary school classes in East Jutland
- Participation in E-Skills week (eskills-week.ec.europa.eu).
- Cryptology seminar for upper secondary school students from Masterclass, Science talents, Sorø Academy.
- The Danish qualification tournament in World Robot Olympiad for more than 100 upper secondary school students from all over the country (in cooperation with DU-ITEK). At the final in Kuala Lumpur the Danish team took 2nd place in the “Open Category” and they won the “Technical Award” category
- IT Camp for girls between the age of 15 and 19, where the girls experience some of the challenges which a career within the IT area has to offer through presentations and exercises in programming and algorithmics
- Together with IT-vest and other Danish IT departments from all over the country, the department participated in the annual Education without Borders fair, which is held in five locations in Denmark. With more than 50,000 visitors, the education fair is the largest of its kind in Denmark.

A huge thank to the PR committee and to others who participate in recruiting new students. During a period of only eight days at the end of October nearly 400 young people visited our department. It looks good for the future uptake of 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 environments for IT students in Denmark:

- Students from the department participated in this year’s Danish championship in programming. One of our team, consisting of Jana Kunert, Tobias Madsen and Mathias Amber, ran away with the victory, and the subsequent attended by 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 students' Association DSAU is behind a number of social and academic activities for our students, including a "crash course" in C and a certification course in DB2.
- The student associations organize in collaboration with UNITY this year's Random Hacks of Kindness (www.rhok.org).

Teaching
During the year 2012 the first Master’s degree students from our new Master’s degree programme in IT product development graduated. This means that the department now has seven programmes: two bachelor programmes, two Master’s degree programmes, one diploma and one master programme (within continuing education) and a PhD programme. As part of a new tradition the department named the Teacher of the Year. There were five nominated for the title:

- Gudmund Frandsen
- Ivan Bjerré Damgård
- Gerth Stølting Brodal
- Olivier Danvy
- Jesper Buus Nielsen.

It was Gerth, who won, for the following reasons:

- Professionally, he is absolutely superb. He can answer any questions within his field and you can feel that he is sincerely interested in whether you have understood the substance right, and he manages to explain things without you feeling stupid.

- You can feel that he is not teaching, because he has to, but because he is eager to teach students something new. He is very attentive to feedback, and also good to use clickers to find out what the students understand and adapts his teaching according to the result.

As shown in the graph below, it has been possible to maintain the very high uptake of the department's two bachelor degrees. We admit almost 20% of all new students starting on a bachelor of science/technology programme at Aarhus University. The challenge now will be to ensure that all these new students complete their bachelor degree.
Over the year the department has produced the following number of degrees (brackets indicate production in 2011, 2010, 1009 and 2008):

- **PhD**
  12 (12, 15, 13, 9)

- **Graduates**
  - Computer science: 32 (40, 55, 60, 40)
  - IT product development: 2 (−, −, −, −)

- **Bachelor**
  - Computer science: 67 (55, 67, 54, 60)
  - IT: 30 (24, 22, −, −)

- **Continuing education**
  - Master: 11 (11, 10, 0, 3)
  - Diploma: 1 (3, 26, 0, 2)

The lower number of computer science graduates is due to an accumulation of students around the Master’s thesis. To remedy this, the department will in the coming years focus on guidance and support to this group,
including offering coaching by Stina Tylén who has just joined the department as a new employee within Study Management.
The large number of diploma degrees in 2010 is due to the systematic effort this year to help the large number of students who has almost completed their degree.

Through “Datalogisk Uddannelsesforum” (DUF), we have 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