MADALGO
CENTER FOR MASSIVE DATA ALGORITHMICS

AARHUS UNIVERSITY

Danmarks Grundforskningsfond
Danish National Research Foundation
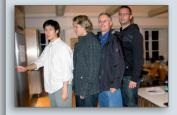
2011 Highlights

Research team

At the end of 2011 the center research team consisted of six senior researchers (2 at AU), ten Postdocs (7 at AU) and sixteen PhD students (10 at AU). Additionally, one further Postdoc and four PhD students (3 of which obtained PhD degrees during the year) were part of the center in 2011. All center Postdocs are internationals and so are a good deal of the PhD students.

Research collaboration and results

In 2011 MADALGO researchers published 72 peer reviewed research paper within the center research areas. Several of these papers have appeared in highly ranked journals and conference proceedings. Some of the results in the papers have been obtained with the many international researchers that have visited MADALGO in 2011. The center also has extensive multidisciplinary and industry collaboration.

A *priority queue* is a fundamental data structure used in many efficient algorithms. The structure maintains a set of object under updates, such that the highest priority element can be reported at all times.

In 2011 MADALGO researchers closed a longstanding and fundamental open problem by developing a comparison based meldable priority queue supporting all but deletion of an object in constant time.

Center events

Apart from a large number of smaller research seminars and workshops, as well as a retreat for center employees, MADALGO organized a four day international summer school on High-Dimensional Geometric Computing in 2011, where five international experts lectured for around 60 participants (mostly PhD students) from 29 institutions in 14 nations. The school was organized in collaboration with the Sino-Danish Center for the Theory of Interactive Computation (CTIC), with which the center also organized an

international workshop on Synergies in Lower Bounds. Together with eco- and bio- informatics researchers, the center also organized a Royal Danish Academy of Science and Letters symposium entitled "Biodiversity in The Silicon Age". Finally, the center organized the Third Workshop on Massive Data Algorithmics, in connection with Symposium on Computational Geometry in Paris, France.

In 2011 center researchers also gave numerous presentations at international research conferences, as well as more than 35 invited presentations at research conferences, workshops and seminars.

Awards and acknowledgments

Center researchers received a number of awards and acknowledgments in 2011.

Center Director Arge was elected member of the Danish Academy of Technical Sciences, and center senior researchers Demaine and Indyk were promoted to MIT full professors. Center senior researcher Mehlhorn won the ACM Paris Kanellakis theory and practice award, and senior researcher Meyer won the German innovation price along with center PhD student Beckmann. Center PhD student Larsen received an elite travel scholarship from the Danish minister of research. Larsen also won the best paper award at the top theoretical computer science conference *IEEE Symposium on Foundations of Computer Science.*

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