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Research Focus

Mikkel Baun Kjærgaard conducts research within the areas of ubiquitous computing (synonymous with pervasive computing), mobile computing, Internet of Things (IoT), artificial intelligence and energy informatics. He has developed new methods for improving indoor positioning using location fingerprinting, designed systems for sensor fusion for improved indoor positioning, developed methods for addressing power consumption issues for mobile sensing and positioning. He has researched new applications within sensing of crowd behaviors and position-based logistics for large building complexes. Furthermore, he has developed systems for occupant sensing, designed building operating system services and developed applications of these within energy informatics for improving the energy efficiency and flexibility of buildings. His research results have been published at premier venues such as ACM MobiSys, ACM BuildSys, Pervasive, ACM Ubicomp, IEEE Percom, IEEE Pervasive Computing and Elsevier Pervasive and Mobile Computing. The results of his research have also enabled several industrial strength research prototypes that have been commercialized.

Positions Held

Professor Mærsk Mc-Kinney Møller Institute, University of Southern Denmark, 01.07.2018-
Associate Prof. Mærsk Mc-Kinney Møller Institute, University of Southern Denmark, 01.08.2013-31.06.2018.
Associate Prof. Department of Computer Science, Aarhus University, 01.12.2012-31.03.2016 (part time from 01.08.2013).
Assistant Prof. Department of Computer Science, Aarhus University, 01.02.2012- 30.11.2012.
Postdoc ETH - Swiss Federal Institute of Technology Zurich, Postdoc, 01.08.2011-31.01.2012.
Postdoc Department of Computer Science, Aarhus University, Postdoc, 01.07.2008- 31.07.2011.
Visiting Ph.D. Institute for Informatics, Ludwig-Maximilian University Munich, 01.08.2006- 30.11.2006.
Leaves Paternity leave, 4 months, 2008.

Education

PhD, Department of Computer Science, Aarhus University,
Thesis Title: Indoor Positioning with Radio Location Fingerprinting, Supervisor: Klaus Marius Hansen (10 Dec. 2008).

Pedagogical Practice - Philosophy of Teaching ("Grundsyn")

University-level teaching is for me to inspire and help students learn the scientific methods and topics of software engineering. I follow an active learning method and design teaching activities so students take an active part in their learning through pair discussions, group exercises, mini projects and larger projects with industry involvement.

Pedagogical Activities

Course in PhD supervision organised by University of Southern Denmark October 2013.

Seminar Day on PhD supervision organised by Department of Computer Science, Aarhus University. March 2012.

Participation in the project ESTEEM: Excellence and Scholarship in Teaching by Effective and Efficient Means organised by Department of Computer Science, Aarhus University. 2010-2011.

Course on university-level teaching for assistant professors organised by the Aarhus University. May, 2010.

Courses Taught

Software Engineering of Mobile Systems. Fall – 2016,2017,2018. Graduate course of 10 ECTS, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark. Course duration: 12 weeks. The course covers the fundamentals of software engineering of mobile systems including mobile sensing, energy efficiency, resource adaptability and software architecture. The project part of the course is organized in collaboration with industry and public

organisations.

Ubiquitous Computing (+ Internet of Things). Spring – 2016, 2017, 2018, 2019.
Graduate course of 5 (+5) ECTS, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark. Course duration: 12 weeks. The course covers the fundamentals of ubiquitous computing, context-awareness, pervasive positioning, augmented reality and Internet of Things.

Coordination of Bachelor Projects. Spring - 2015, 2016, 2017
Undergraduate course of 15 ECTS, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark. Course duration: 12 weeks. The task covers organizing the selection of projects by students, project inspiration from industry and academics and fair at the software engineering day.

Software System Design and Technologies. Fall - 2014, 2015. Graduate course of 7.5 ECTS, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark. Course duration: 12 weeks. The course covers software engineering methods in regards to the design of software and the technologies used.

Ubiquitous Computing. Spring - 2014, 2015. Graduate course of 7.5 ECTS, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark. Course duration: 12 weeks. The course covers the fundamentals of ubiquitous computing, context-awareness, pervasive positioning and augmented reality.

Software System Design and Technologies. Fall - 2013. Graduate course of 10 ECTS, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark. Course duration: 7 weeks. The course covers software engineering methods in regards to the design of software and the technologies used.

Augmented Reality. Spring 2013 – Spring. Graduate course of 5 ECTS, Department of Computer Science, Aarhus University. Course duration: 7 weeks.

Pervasive Positioning. Spring - 2010, Fall - 2010, 2012. Graduate course of 5 ECTS, Department of Computer Science, Aarhus University. Course duration: 7 weeks.

Object-Oriented Software Systems Project Activity. 2009, 2010, 2011.
Graduate course of 5 ECTS, Department of Computer Science, Aarhus University. Course duration: 7 weeks. The course covers pervasive positioning in the context of a substantial concrete project. The content of the project is defined in cooperation between students and teacher within the domain of software architecture and/or pervasive positioning.

Positioning: Systems and Sensors. 2009. Graduate course of 5 ECTS, Department of Computer Science, Aarhus University. Course duration: 7 weeks. The course is a predecessor of the Pervasive Positioning course. 15-minute oral exam with no advance preparation with four questions. Grading according to the 7-scale.

Software Architecture. 2008, 2009. 2nd year undergraduate course of 5 ECTS, Department of Computer Science, Aarhus University. Course duration: 7 weeks. The course covers software architecture, design patterns and frameworks in particular and insight into software testing and test-driven development. I have been an auxiliary teacher for Henrik Bærbak Christensen for the course for both lecturing and examination. 20-minutes oral exam with 20 minute advance preparation time.

Pervasive Positioning Study Group. 2008. PhD course of 10 ECTS, Department of Computer Science, Aarhus University. Course duration: 7 weeks. The course covered pervasive positioning, location models, seamfull design, pattern recognition, and software architecture. The lectures were given both by the teachers and by the participants on a topic of their own choice within pervasive positioning. In connection with their chosen topic the participants had to complete a project and handed-in a scientific paper describing their work.

Theses Supervision

I have been supervising students both at the bachelor, master and PhD level as supervisor/cosupervisor. As a supervisor I try to form an open discussion with students to settle expectations, stimulate and inspire their work, and help with literature and scientific methods. Many of the projects have been in collaboration with industry and also externally recognized as successful (E.g., a project won the Danfoss Engineers of Tomorrow Award). I have been examining and censoring students for both their thesis exams and defences of PhD students. I have so far supervised 10+ PhD, 25+ Master and 10+ Bachelor projects.