



SPECKLED COMPUTING

(Short Course)

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Description:

A specknet is a collection of autonomous specks which provides distributed services: each speck is capable of sensing and processing the data under program control; the specks are connected as a mobile wireless network which processes information in a distributed manner. Specknets link the physical world of sensory data to the digital world of computers. A network of Orient specks on the person, for example, is capable of tracking the orientation of the body parts, or the position of the person in the environment, and this information can be stored, manipulated and accessed remotely over the internet. The short course will give an overview of the science underpinning Speckled Computing and its application, in the form of case studies, in areas such as healthcare, sports, environmental monitoring and digital media.

Brief Bio:

Professor DK Arvind holds a Chair in Distributed Wireless Computation in the School of Informatics at the University of Edinburgh, Scotland, United Kingdom, is the Director of the Centre for Speckled Computing, and is a CITRIS Visiting Professor at the University of California, at Berkeley (2007-15). He was previously for four years a Research Scientist in the School of Computer Science, Carnegie-Mellon University, Pittsburgh, USA. He was the founder Director and Principal Investigator of the Research Consortium in Speckled Computing (www.specknet.org), a multidisciplinary grouping of computer scientists, electronic engineers, electrochemists and physicists drawn from five universities, to research the next generation of miniature wireless sensor networks. The Centre has attracted research funding in excess of £6.2 Million from the Scottish Funding Council, and the UK Engineering and Physical Sciences Research Council (equivalent of the National Science Foundation in the US), and the European Union's FP7 Research Programme. In the past his research has been funded by EPSRC, US Office of Naval Research, EU FP7, Scottish Enterprise/Cadence Design Systems, Sharp, Hitachi, Panasonic/Mastushita, Agilent, ARM, Selex Galileo, SAS, RedKite Animations and Oracle/SUN Research Labs. His research interests include the design, analysis and integration of miniature networked embedded systems which combine sensing, processing and wireless networking capabilities.

Course Contents:

Day	Topics	Classes (45 min)
1.	1. Introduction to Specks, Specknets and Speckled Computing (8:30-10:00)	2
	2. Issues in the design of resource-constrained platforms (10:15-11.00 and 12:00-12:45)	2
	3. Wireless networking and programming issues for specknets (13:00-14:30)	2
2.	4. Case-studies in Healthcare and Sports (8:30-9:40)	1.5
	5. Case-studies in Environmental Monitoring (9:50-11:00)	1.5
	6. Case-studies in Digital Media (12:00-13:10)	1.5
	7. Wrap-up and Q/A session (13:20-14:30)	1.5
3.	Exam (9:00-12:00)	3

Conduction: Mandatory Lectures and Written Exam (with material)
Students need to attend the course, to be eligible for the exam.



The amount of credits is yet to be confirmed.

Literature: Will be listed in the beginning of lectures.