

NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S S E M I N A R

Title: Ultra-Low Power Wireless Body Sensor Networks for Smart Bio-Signals Monitoring Systems

Speaker: Dr. Srinivasan Murali
CEO and co-founder
SmartCardia

Date/Time: 29 July 2015, Wednesday, 11:00 AM to 12:00 PM

Venue: Executive Classroom, COM2-04-02

Chaired by: Dr Mitra, Tulika, Professor, School of Computing
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Abstract:

Personal health monitoring systems are emerging as promising solutions to tackle healthcare costs and delivery. There is growing interest within the healthcare community in developing ultra-low power, portable devices that can continuously monitor and process several vital body parameters. In this talk, I will present our work in developing ultra-low power, affordable hardware and software platforms for continuous health monitoring. In the first part of the talk, I will present novel Networks on Chips (NoC) and multicore platform designs for WBSN applications. Then, I will present our works on on-chip machine learning and classifier design for detecting cardiac abnormalities and user's physical and mental wellness states. I will present applications and case-studies in designing IoT and wearable devices for physical and emotional health monitoring that obtains user's key physiological signals: ECG, respiration, Impedance Cardiogram (ICG), blood pressure and skin conductance and derives the user's emotion states as well. Finally, I will present the future directions of work in adaptive on-device machine learning methods and immersive virtual/augmented reality and games that integrates user's emotions.

Biodata:

Dr. Srinivasan Murali is the CEO and co-founder of SmartCardia, a wearable medical device spin-off from EPFL. He received the MS and PhD degrees in Electrical Engineering from Stanford University in 2007. Previously, he was a Program Manager for Sensor Systems at IMEC and was a co-founder and CTO of iNoCs. His research interests include wearable devices and IoT, on-device machine learning and bio-signal analysis, interconnect design for Systems on Chips, with particular emphasis on developing CAD tools and design methods

for Networks on Chips. His interests also include thermal modeling and reliability of multi-core systems. He is a recipient of the EDAA outstanding dissertation award for 2007 for his work on interconnect architecture design. He received a best paper award at the DATE 2005 conference and a best paper nomination at the ICCAD 2006 conference. One of his papers has also been selected as one of The Most Influential Papers of 10 Years DATE . He has authored/co-authored a book, several patents, book chapters and around 60 publications in leading conferences and journals (over 3800 citations, with h-index of 26 and i10-index of 36).