UCF DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

Spring 2016 Seminar Series

ULTRA-LOW POWER CIRCUITS AND SYSTEMS TO ENABLE ENERGY AUTONOMOUS ELECTRONICS

THURSDAY JANUARY 14, 2016

2:15 PM – HEC 356

Wearable electronics, intelligent devices, medical electronics, and more recently Internet of Things (IoTs) are dramatically changing the way we experience life by providing rich information about our activities, health, and the environment. To be truly ubiquitous, these devices must be energy autonomous. Such a system must harvest energy from ambient sources like light, vibration, temperature differentials, etc. and must also be very efficient in using the little energy available to it for computation. This talk focuses on how to enable perpetual, self-sustaining ultra-low power systems. We will discuss circuits that can harvest energy efficiently from the smallest ambient sources, and ultra-low power analog and mixed signal circuits such as voltage references, clock generators and regulators. We will also talk about the need for an ultra-low power system architecture where energy takes the center stage in defining the architecture and not performance as in traditional systems. Finally, we will discuss the use of ultra-low power systems for the development of bio-electronics and neurological systems, and power-electronics with an emphasis on the use of renewable energy.

DR. AATMESH SHRIVASTAVA

PsiKick, Charlottesville, VA

Aatmesh Shrivastava received the Ph.D. degree in Electrical Engineering from University of Virginia in 2014. Prior to his Ph.D., he worked as a senior design engineer at Texas Instruments, Bangalore from 2006 to 2010. Currently he is working at an IoT start-up PsiKick, where he heads the research and development of the energy harvesting and power management solutions. He has 18 patents and has published more than 20 peer reviewed papers in top IEEE conferences and journals. He has received the 2012 Louis T. Rader Graduate Research, 2013 Charles L. Brown Fellowship for Excellence, and the University of Virginia School of Engineering and Applied Science Teaching Fellowship. His research interests include low-power circuit design, clock and energy harvesting circuits for ultra-low power systems.