

Prof. Dejan Marković

“Closed-Loop Neuromodulation”

Join Zoom Meeting

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Abstract: Facing a growing number of patients with neurological disorders, there are only limited therapeutic pharmacological measures which provide only temporary and mild amelioration of the devastating symptoms of these disorders. The use of electrical stimulation of the brain is a treatment option for patients with severe treatment-resistant disorders. Current deep-brain stimulation (DBS) approaches are hindered by inadequate technology that is low-precision and bulky, power-inefficient, and of limited diagnostic utility. The seminar will discuss a high-precision implantable neurotechnology for closed-loop neuromodulation of functional networks of the human brain. Key features of the technology are: 1) sensing from a high number of channels, 2) sensing concurrent with stimulation for true closed-loop operation, and 3) real-time secure wireless data telemetry. The proposed neurotechnology could revolutionize brain therapies in efficacy, size and cost of medical implants.



Bio: Dejan Marković is a Professor of Electrical and Computer Engineering at the University of California, Los Angeles (UCLA). He is also affiliated with UCLA Bioengineering Department, Neuroengineering field. He completed the Ph.D. degree in 2006 at the University of California, Berkeley, for which he was awarded 2007 David J. Sakrison Memorial Prize. His current research is focused on implantable neuromodulation systems, domain-specific compute architectures, and design methodologies. Dr. Marković co-founded Flex Logix Technologies, a semiconductor IP startup, in 2014, and helped build foundational technology of Ceribell, a medical device startup. He received an NSF CAREER Award in 2009. In 2010, he was a co-recipient of ISSCC Jack Raper Award for Outstanding Technology Directions. He also received

2014 ISSCC Lewis Winner Award for Outstanding Paper.