



ESE Seminar Announcement

Guangyu Xu

MIT Media Lab



Monday, May 11, 2015
Green Hall, Room L0159
10:10AM

BUILDING INTEGRATED MOLECULE DETECTION AND MULTIPLEXED CELL IMAGING TOOLS FOR PERSONAL HEALTH

Abstract: Next-generation personal health needs access of data at molecular and cellular levels. This can be achieved by molecule detection and cell imaging, two widely used technologies residing in today's diagnostic and analytical medical devices. Great success has been made in marketing these devices with reliable performance. However, there remains practical needs for tools that can provide new capabilities, such as integrated detection system and multiplexed, single-cell resolution imaging, which hold promise in offering telemedicine and high-content sample analysis. Building tools like this would open up opportunities in healthcare industry, such as portable genetic disease detection and preclinical drug screening for brain disease treatment. Motivated by these, my research has focused on building integrated molecule detection and multiplexed cell imaging tools, aided by expertise in bioelectronics, nanodevices, and neuroimaging. In this talk, I introduce my work on: 1) integrated DNA chip with all-electrical operation, using graphene and CMOS sensor arrays, respectively; 2) spatially multiplexed neuroimaging system, offering up to 10-20 different signals in one mammalian neuron. I will close with a vision of my future research.

Bio: Dr. Guangyu Xu is currently a postdoctoral associate at MIT Media Lab, working on multiplexed neuroimaging technologies. Before he has been working as a postdoctoral fellow at the Harvard School of Engineering and Applied Sciences, where he developed high-performance all-electrical biosensor arrays. He received the Ph.D. degree at University of California, Los Angeles, where he studied the variability effects of graphene electronics. He was the recipient of the MRS Spring Meeting Best Symposium Presentation Golden Award and the Chinese Government Award for Outstanding Students Abroad, among others. His research interests include developing integrated molecule detection system, high-content cell imaging tools, and self-powered implantable devices, aiming to provide new capabilities for next-generation personal health.

Host: Dr. Lan Yang