Office of Naval Research
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Distinguished Lecture Series

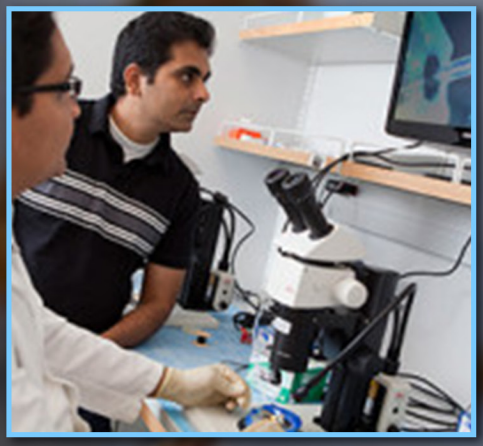
Understanding and Hijacking the Insect's Sense of Smell

Presented by:

Dr. Barani Raman

Associate Professor of Biochemical Engineering
Washington University in St. Louis
School of Engineering & Applied Science

MAY 16
11 a.m.
IN THE JUNKER CENTER



Office of Naval Research
875 N. Randolph St., Arlington, Virginia
Bobby Junker Executive Conference Center, 14th Floor

Stream: **https://conference.apps.mil/webconf/onrdls**

Understanding and hijacking the insect's sense of smell

What are the design and computing principles of the biological olfactory system? Using locusts and fruit flies as model systems, I will discuss how odorants evoke dynamic patterns of neural responses in the insect brain that allow odor recognition in an invariant fashion. Our current understanding of the biological solution for dealing with variation arising due to external parameters (intensity, changes in humidity) and internal parameters (plasticity, hysteresis) will be explained. I will conclude with a discussion of our more recent work in hijacking the insect's sense of smell to solve parallel engineering problems, including detecting explosives.

ABOUT Dr. Barani Raman

Barani Raman received his B. Eng. degree (with distinction) in computer science from the University of Madras, Chennai, India, in 2000, and the M.S. and Ph.D. degrees in computer science from Texas A&M University, College Station, TX, in 2003 and 2005, respectively. From 2006 to 2010, he was a joint Post-Doctoral Fellow with the National Institutes of Health and the National Institute of Standards and Technology, Gaithersburg, MD. Following his postdoctoral training, he joined the Department of Biomedical Engineering, Washington University in St. Louis in 2010 as an assistant professor, and was promoted to an associate professor with tenure in 2016. His current research interests include computational and systems neuroscience, sensor-based machine olfaction, machine learning, biomedical intelligent systems, and biorobotics. Dr. Raman is a recipient of the Wolfgang Gopel Award in 2011 from the International Society for Olfaction and Chemical Sensing, a NSF CAREER awardee in 2015 and a IEEE Donald G. Fink award in 2016.