INSTITUTE COLLOQUIUM

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TITLE: A 30 YEAR JOURNEY IN CONTROL

Abstract: I have spent the last 30 years of my academic life in "Control," and have been a restless traveller to various destinations in this landscape. The first phase started with the classical Laplace domain, led on to state-space models, and then to estimation and robust control and differential games. The next phase saw me visit nonlinear systems and nonlinear control. The terrain here was more difficult, but the efforts more rewarding. Restlessness followed, and a feeling of not doing things the right way set in. It was then that I took a plunge into a vast expanse of water called "differential geometry." The commute was tougher and I had to resurface for breaths every now and then. But soon the journey was enjoyable, and I was led to greater depths called Lie groups and their many applications. I have never looked back since then.

In this journey I have delved into many applications as well, notable among them being wheeled mobile robots and aerospace vehicles. This talk will walk you through this journey, highlighting the many contributions from my students in the past 10 years.

Bio:
Ravi N. Banavar is currently an Institute Chair Professor in Systems and Control Engineering at IIT Bombay. He received his B.Tech. in Mechanical Engineering from IIT Madras (1986), his Masters (Mechanical, 1988) and Ph.D. (Aerospace, 1992) degrees from Clemson University and the University of Texas at Austin, respectively. He had a brief teaching stint at UCLA during 1991–92, soon after which he joined the Systems and Control Engineering group at IIT Bombay in early 1993. From 2009 onwards, during his tenure as the Convener of the group, the strength of the group grew from 5 to 9 members, with academic strengths in nonlinear control, switched systems, optimization, geometric mechanics, formation and cooperative control, robotics and adaptive control. He has spent a few sabbatical breaks at UCLA (Los Angeles), IISc (Bangalore) and LSS (Supelec, France.) His research interests are broadly in the field of geometric mechanics, nonlinear and optimal control, with applications to electromechanical and aerospace engineering problems. He is an Associate Editor of the Elsevier journal, Systems and Control Letters, on the Editorial Advisory Board of the Taylor and Francis publication, The International Journal of Control, and a Technical Associate Editor of the IEEE Control Systems Society magazine.