SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Microwave & Radio Frequency (MWRF)

Host: Prof Chen Xudong

TOPIC	:	**GPS Denied UAV Navigation using SAR Images**
SPEAKER	:	**Mr Hariharan Mohanabala Krishnan** **Graduate Student, ECE Dept, NUS**
DATE	:	**Friday, 14 November 2025**
TIME	:	**3:00PM-3:30PM**
VENUE	:	**Join Zoom Meeting** **https://nus-sg.zoom.us/j/89737330904?pwd=HG2G3ypdlJaPuNWyAOSDOgijf2hG5H.1** **Meeting ID: 897 3733 0904** **Passcode: 358427**

ABSTRACT

This talk is on turning SAR defocus into a navigation signal. Instead of only “de-blurring” images, we read the blur to estimate UAV velocity biases when GPS is unavailable. Starting from FMCW Ka-band data, I use Range-Migration imaging, split-aperture map-drift to extract a range-dependent quadratic phase ε(R), and a conjugate-gradient solver to recover a 3-D velocity bias that feeds an INS/EKF. Real UAV data and matched simulations show reduced drift and consistent mosaics, and quantify observability vs. anchor geometry and bandwidth. The takeaway: SAR becomes a practical onboard velocity sensor, not just an imager.

BIOGRAPHY

Hariharan Mohanabala Krishnan received his B.Eng. (with Honours) in Electrical Engineering from the National University of Singapore (NUS) in 2022. He is currently pursuing his Ph.D. under the supervision of Prof Chen Xudong. His recent research focus is navigation in GPS-Denied zones with SAR Images.

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