

Sri. Bhagavatula Rama Murthy  
and  
Smt. Bhagavatula Saradamba  
16<sup>th</sup> Memorial Lecture



SCHOOL  
OF MATHEMATICS AND  
STATISTICS  
UNIVERSITY OF  
HYDERABAD

# INFERRING ROAD MAPS FROM GPS DATA

## Abstract

Maps are an important resource in the modern world. Maps are currently used for our daily commute and navigation; in the future, maps will become imperative for self-driving cars to get to their destinations. Map production, however, is an expensive and time-consuming effort. Moreover, as new roads appear or old roads fall into disrepair beyond use, it often takes several months before maps are updated. To address these challenges, an emerging technology trend in recent years is to infer maps from a large volume of opportunistically collected Global Positioning Satellite (GPS) data. As the popularity of smartphones and GPS navigators significantly increased in the last decade, the map coverage possible via map inference has become larger and cheaper, when compared to conventional manually surveyed maps. In this talk, we will discuss the basic ideas as well as technical challenges in extracting road locations from GPS data opportunistically collected from vehicles during their normal commutes.

Time permitting, we will also present another recent transportation innovation called virtual traffic lights (VTL) where the traffic lights can be inside the vehicle rather than at intersections. VTL can reduce the traffic congestion and commute times.

Date : February 28, 2022

Time : 5:00 PM, IST

Venue: Seminar Hall-1/Google Meet

Google Meet Link:

<http://meet.google.com/wjf-ovkf-kyx>



All are welcome



**Prof. Vijayakumar Bhagavatula**  
U.A. & Helen Whitaker Professor of  
Electrical and Computer Engineering  
Carnegie Mellon University,  
Pittsburgh, USA

Prof. Vijayakumar (“Kumar”) Bhagavatula received his B.Tech. and M.Tech. in Electrical Engineering from IIT/Kanpur in 1975 and 1977, respectively and his Ph.D. in Electrical Engineering from Carnegie Mellon University (CMU), Pittsburgh. Since 1982, he has been a faculty member in the Electrical and Computer Engineering (ECE) Department at CMU where he is now the U.A. & Helen Whitaker Professor of ECE. At CMU, he has held multiple leadership positions including Associate Dean, interim Dean of Engineering and most recently as the Director of CMU’s campus in Kigali, Rwanda. Professor Kumar’s research interests include Pattern Recognition, Deep Learning, Error Correction Coding and Signal Processing. He has supervised or co-supervised 53 Ph.D. students, authored or co-authored over 600 technical papers, 24 book chapters, 15 patents and one book entitled Correlation Pattern Recognition. Professor Kumar is a Fellow of IEEE, SPIE, the Optical Society of America (OSA), the International Association of Pattern Recognition (IAPR), the National Academy of Inventors (NAI) and the American Association for the Advancement of Science (AAAS).