Integral to our efforts in reaching out to technical institutions across Karnataka, IEEE Computer Society Bangalore Chapter arranges guest lectures by the Execomm members and/or experts in the field. Coined as "Talk Series: “Celebrating Computing", these lectures are aimed at disseminating advanced and complex topics in computing.

Talk Series: “Celebrating Computing”

IEEE Computer Society Bangalore Chapter is delighted to present a series of technical talks for “Celebrating Computing”. These technical talks are meant to be accessible to young and budding engineers and technologists while engaging them in intellectually stimulating discussions on the nature of computing, its applications, and various scientists, mathematicians and engineers who have contributed to this fascinating field of computing.

1. Title: Claude E Shannon and the birth of Digital Computing & Information Science

Speaker: Nithin Nagaraj, NIAS, Bengaluru

Date: April 7, 2018

Venue: PES University, Bengaluru

IEEE celebrated the 100th birthday of Claude E Shannon last year. Shannon was a mathematician, electrical engineer, cryptographer, a creative scientist-engineer and the father of Digital Computing and Information Theory. His groundbreaking work laid the foundations for the computer industry, telecommunications and resulted in the birth of the Information Age. Shannon also had a fun side – juggling and building juggling machines, tinkering and creating things such as a rocket-powered Frisbee and a device that could solve the Rubik’s cube. In this talk, we will celebrate the genius of Claude E Shannon, by discussing his contributions to Digital Computing, Information Science and Cryptography.

2. Title: Moving from Heuristics to theoretical habitability model in Exoplanets: A convex optimization approach in AstroInformatics

Speaker: Snehanshu Saha, PES University, Bengaluru

Date: March 17, 2018

Venue: MVJ College of Engineering

ESI, a heuristic metric for habitability of Exoplanets lack theoretical foundation. The talk focuses on CDHS scores, apparently similar in the sense of being computed from essentially the same ingredients, however throws rich insights from Econometric computing and convex optimization. Additional exploration of the general relationship between ESI and CDHS scores reveal that the former is a special case of the generalization, developed five years after the former was proposed. Surprisingly enough, ESI and CDHS are not related and there exists no causal relationship between the two, fortifying the independence of the convex optimization based approach. We show that, the exponents of each term in the CDHS alpha, beta, gamma and delta are not predetermined; computing them is a part of the optimization problem. We highlight the challenges that include:

a) Local oscillations about the optima are difficult to mitigate even though we have shown there exists a theoretical guarantee for the same.

b) Extrema doesn't occur at the corner points and is therefore the location of such is difficult to determine

Stochastic Gradient Ascent and constrained PSO to solve the optimization problem will also be discussed.