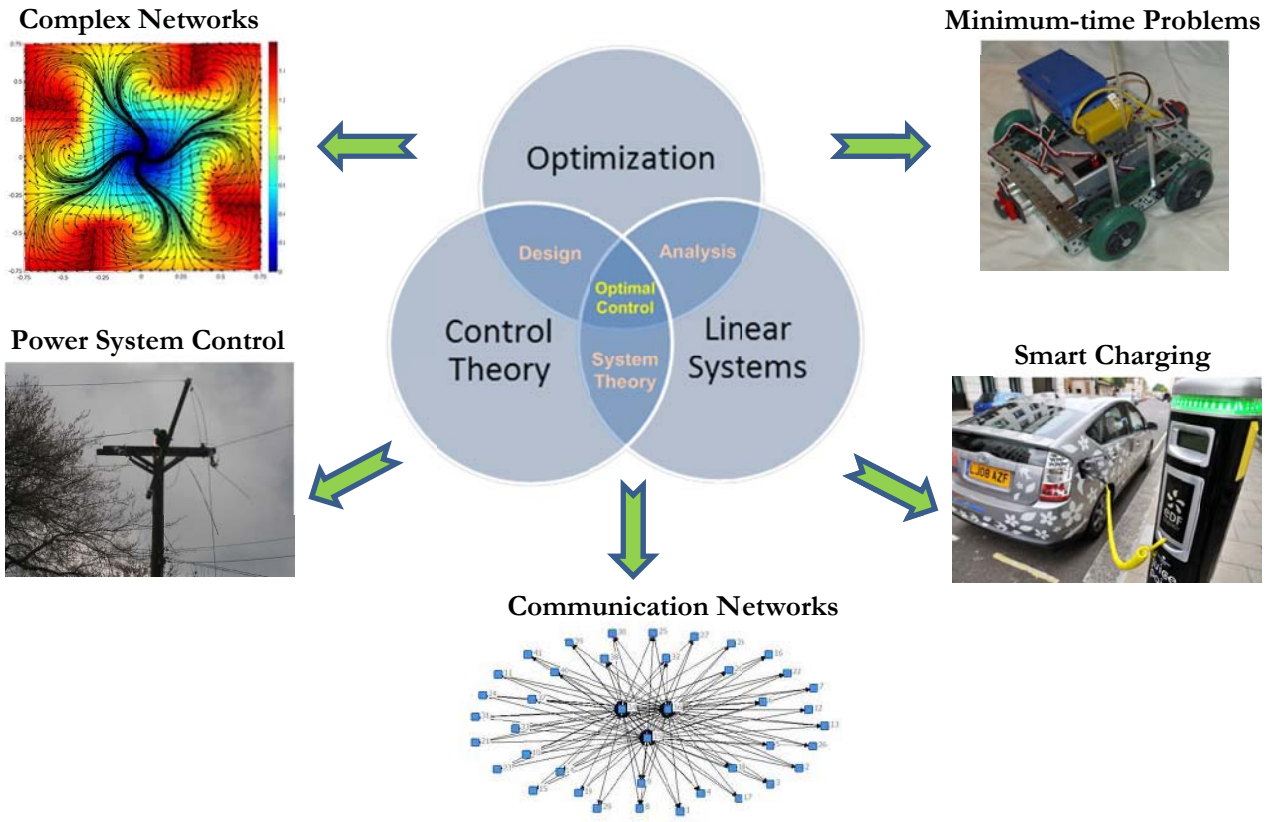
ECE 726: Advanced Feedback Control

Instructor: Dr. Aranya Chakrabortty



The objective of this course is to provide an understanding of how advanced concepts of linear system theory, control and optimization merge together to form one of the most useful tools of engineering – namely, **Optimal Control**. Whether it be operating a power grid, driving a car, browsing the internet, or even using a toaster, optimal control plays an essential role behind the operation, planning and design of all physical systems in our daily life. This course will explore the theory behind such optimization-based control designs, their stability properties and their implementation via numerical algorithms. Real-world examples from power systems, electric vehicles, micro-grids, communication networks, robotics and aerospace applications will be used for illustration of concepts through interesting class projects.

Pre-requisite: A graduate-level course on control theory (ECE 516/ MA 531 or equivalent)

The course is targeted towards a highly inter-disciplinary group of students from all branches of Engineering, especially Electrical, Mechanical and Chemical, as well as from Mathematics and Operations Research.