# CE 6308/CS 6396/EEDG 6308: Real-Time Systems

## Fall 2021. Assignment 1. Due September 30, 2021

Consider a railway control system that coordinates multiple trains so that each train can move safely and in a timely way from one railway station to another. Each train has a specific route and schedule. For example, one train has to move from Station A to Station C and then to Station K while another train has to move from Station E to Station C and then to Station J, etc. The system also includes the control of each train.

For this railway control system, provide the following information:

1. What are the issues that need to be addressed in ensuring a high quality transportation system?
2. What types of tasks are needed in developing this system? For example, is it only periodic tasks or is there also a need for aperiodic and sporadic tasks? Do all tasks have hard deadlines or do some tasks have soft deadline? Also, are there any compute intensive tasks in this system?
3. What sensors and actuators are needed in implementing the overall control system? This can include devices on each train, devices at each station, devices along the railway tracks, etc.