Abstract: Plug-in electric vehicles (PEVs) have become a practical and affordable alternative in recent years to conventional gasoline-powered vehicles. Their ability to connect to the electrical grid to recharge offers the potential for significant fuel cost savings and fewer greenhouse gas emissions, but issues such as "range anxiety" and unfamiliarity with PEV technologies still stand in the way of mass PEV adoption. In this talk, we examine ways of overcoming these barriers to adoption from the perspectives of both drivers and charging station providers. We present two decision support tools: (1) an agent-based information system for identifying patterns in residential PEV ownership and driving activities to enable strategic deployment of new charging infrastructure, and (2) efficient algorithms for finding an optimal recharging policy for a PEV along a given path. We also discuss our analytical and empirical findings.

Bio: Timothy Sweda is a PhD candidate in the Department of Industrial Engineering and Management Sciences at Northwestern University and a Transportation Center Dissertation Year Fellow. He received his BS in Engineering from Harvey Mudd College and his MS in Industrial Engineering and Management Sciences from Northwestern University. Timothy’s research interests span a variety of topics on logistics and sustainable transportation with particular emphasis on problems concerning electric vehicles.