Abstract:
The emergence of fully autonomous or “self-driving” vehicles may prove to be the most significant advance in personal mobility in more than a century. Recent reports have raised questions however regarding the accessibility of much of this emerging technology for persons with disabilities. This accessibility issue is especially problematic for persons who are blind or significantly visually impaired. These persons, who are unable to operate conventional motor vehicles due to the nature of their disability, may face challenges in interacting with emerging self-driving vehicle technologies according to the National Federation of the Blind. Despite increased awareness regarding this issue and the growing body of self-driving vehicle consumer research, the specific needs and concerns of visually impaired persons as it relates to this technology have been insufficiently investigated. In this talk I summarize my research that through surveys, focus groups and interviews has investigated the needs, preferences and concerns of visually impaired consumers as it relates to self-driving vehicles. I then describe a series of persona-driven participatory design sessions conducted to design an accessible self-driving vehicle human-machine interface prototype. The resulting Accessible Technology Leveraged for Autonomous vehicles System (ATLAS) combines natural language processing, affective computing principles and spatial audio with the goal of satisfying the experiential needs of visually impaired self-driving vehicle operators. I conclude the talk with a discussion of the results of a quasi-naturalistic evaluation of the ATLAS system conducted on public roads, the implications of my findings and the trajectory of my future research.

Bio:
Julian Brinkley is a Human-Centered Computing Ph.D. Candidate in the Department of Computer and Information Science and Engineering at the University of Florida. His research is focused on user experience and driver/operator performance in partially, highly and fully automated vehicles. His research also explores leveraging technology for the social good (e.g. social inclusion, public safety and accessibility). Julian holds an M.S. from East Carolina University and a B.A. from the University of North Carolina – Greensboro.