Singapore-MIT Alliance for Research and Technology Centre

SMART is a major new research enterprise established by the Massachusetts Institute of Technology (MIT) in partnership with the National Research Foundation of Singapore (NRF). SMART serves as an intellectual hub for international research collaborations, not only between MIT and Singapore, but also involving researchers from the region and beyond. At SMART, we identify and carry out research on critical problems of societal importance. SMART is a magnet attracting and anchoring global research talent, while simultaneously instilling and promoting a culture of translational research and entrepreneurship in Singapore. Five interdisciplinary research groups (IRGs) have been established to date: BioSystems and Micromechanics (BioSym), Centre for Environmental Sensing and Modeling (CENSAM), Future Urban Mobility (FM), Infectious Diseases (ID) and Low Energy Electronic Systems (LEES). Two new interdisciplinary research groups (IRGs) have started in 2018: Antimicrobial Resistance (AMR) and Disruptive, Sustainable Technologies for Agricultural Precision (DiSTAP).

Postdoctoral Associate (Ref: IRG_FM_2018_020)
Future Urban Mobility Interdisciplinary Research Group

Project Overview:

The project involves autonomous vehicles for Mobility on Demand for the purpose of addressing the "first and last mile" problem. Mobility on Demand is to be demonstrated on a fleet of golf buggies. The driverless capabilities are to be extended to an actual electric car.

Duties and Responsibilities

The FM IRG is seeking to employ a Postdoctoral Associate to enhance its autonomous vehicles research group. The job scope entails:

- Software design and maintenance of autonomous vehicles.
- Develop and implement machine learning techniques for preprocessing and interpreting the environment information, synergistically integrating the perception information with the planning module, and prepare deep understanding of the world for the vehicles to drive in dynamic changing environments, with real-time planning and decision making.
- Data fusion for multi-modal sensor measurements, use deep learning algorithms (including Deep Neural Network, Reinforcement Learning, etc.) to extract useful features and produce meaningful attention and awareness to principle driving factors, such as road context and risk semantics.
- Integrate the developed algorithms with our existing AV framework and pipelines, to enable the vehicles to perform online and offline experiments, including data collection, processing, driving task planning and execution.
- Push the autonomous driving capabilities towards various road driving scenarios, including those requiring safely driving along with multi-class road participants.
- Advice and mentor PhD students in the group.
- Advance research in any of these or related areas.
Requirements:

The most qualified candidates must have a PhD degree in related fields of robotics, machine vision, planning and decision making, and have the following research experience:

- Expertise in software design and maintenance
- Experienced with system integration, both hardware and software, low-level and high level control, have successfully built integrative robotic systems
- Experience in development of autonomous systems, at least 3 years
- Experienced with ROS (Robot Operating System)
- Familiar and adaptable to various computer languages, including C/C++/C#/Python/Java
- Experience in various deep learning techniques (CNN, RL, DRL, etc.) and at least one of the frameworks (Tensorflow, Pytorch, Caffe, etc)
- Published research in robotic perception, planning, and deep learning
- Writing scientific reports
- Good command of written and spoken English

To apply, please visit our website at: https://smart.mit.edu/careers/career-opportunities. Interested applicants will have to submit their full CV/resume, cover letter and list of three references (to include reference names and contact information) via the website. We regret that only shortlisted candidates will be notified.