Open PhD Positions: Robot Navigation and Control, Sensor Fusion and Reinforcement Learning for Autonomous Aerial Robots

The Flight Robotics Group at the University of Stuttgart is looking for multiple excellent and highly motivated PhD students in the area of robot navigation and control, sensor fusion and reinforcement learning. Applications are possible through IMPRS-IS only. For IMPRS-IS application procedure see here.

Who are we?

To know about our group’s past, present and future work, watch -- https://youtu.be/MTMW6nmwhLk

The Flight Robotics Group (FRG) is a newly established group (since Sep ‘20) by Jun. Prof. Aamir Ahmad. FRG is embedded within the Institute of Flight Mechanics and Control in the department of Aerospace Engineering and Geodesy, University of Stuttgart. The Robot Perception Group (RPG), founded and led by Aamir Ahmad, at the Max Planck Institute for Intelligent Systems is currently a sister group of FRG. Aerial Outdoor Motion Capture, or AirCap, is the defining project running at RPG, and now also at FRG. For details see AirCap and AirCapRL.

FRG is within the umbrella of both IMPRS-IS and Cyber Valley. Through the International Max Planck Research School – Intelligent Systems (IMPRS-IS), we select highly talented PhD students in our group. Being embedded in the Cyber Valley enables us to have extremely rich collaboration opportunities within the research and technology ecosystem of the Stuttgart-Tübingen region, one of the largest hotspots for ML, AI and robotics in Europe.

AirCap Project — Perception-driven formation control of aerial robots tracking a person. The jointly estimated uncertainty in the person's 3D position estimate is minimized while avoiding inter-robot collisions.

What do we do?

The research focus of FRG is on state estimation, autonomous navigation and control of teams of aerial robots. We investigate both deep reinforcement learning based aerial navigation, as well as classical and learning-based methods for formation control of multiple aerial robots. In the context of state estimation and sensor fusion, our research interest lies in cooperative localization, target tracking and aerial vision. Aerial vision includes detection and tracking of humans and animals from autonomous aerial robots. Our research has a strong application focus, particularly in the area of urban search and rescue and wildlife monitoring.
What do we look for in an ideal candidate?

You have completed (or going to finish soon) your master studies with excellent grades and published at least one paper in a highly reputed conference (RSS, IROS, ICRA, CVPR, ICCV, NeurIPS, etc.) or journal (IEEE RA-L, T-RO, IJRR, IJCV, PAMI, etc.). Your research focus spans the general research focus of FRG. You are excited to solve open research challenges and make flying robots. Strong mathematical background, analytical skills and good programming skills (c++, python) are additional prerequisites.

What do we offer?

* A PhD student employment contract (see IMPRS-IS website for details).

* Highly dynamic and research-focused working environment at the University of Stuttgart and a strong collaboration with the Max Planck Institute for Intelligent Systems in Tübingen.

* Extensive research and training opportunity to budding academics.

* Opportunity to make a positive societal and environmental impact through cutting-edge robotics research.

How to apply?

Please apply through IMPRS portal only, select ‘Aamir Ahmad’ as adviser on the portal and send an email stating this to aamir.ahmad@ifr.uni-stuttgart.de Please use the following phrase as subject line ‘FRG PhD position IMPRS-IS’. Note that the application deadline is 02/11/2020.

Additional details:

We seek to increase the number of women in those areas where they are underrepresented and therefore explicitly encourage women to apply. We are committed to increasing the number of individuals with disabilities in our workforce and therefore encourage applications from such qualified individuals.