PhD Student/Doctorand  
Max Planck Institute for Intelligent Systems - Perceiving Systems Department  

Title: Reinforcement Learning for Aerial Systems  

Job description:  

Within the scope of the EU-H2020 project DeepField and the Max Planck grassroots project AirCap, a PhD student position is available in the Robot Perception Group (https://ps.is.tuebingen.mpg.de/research_fields/robot-perception-group). The student will be jointly supervised by Dr. Aamir Ahmad and Dr. Michael Black. The start date can be as early as 1st October 2019.  

The focus of the Robot Perception Group is on vision-based perception in multirobot systems. To perform a set of perception-driven tasks a team of network-connected robots with vision sensors requires two fundamental functionalities: i) autonomous navigation in the environment and ii) vision-based pose estimation of all static and dynamic objects in the scene. Our research aims to understand how the overall task performance can be maximized within the constraints of communication and computation. To this end, we focus on the following interconnected research threads: i) **Multi-robot Active Perception** -- We investigate both classical and deep methods for multi-robot formation control based on cooperative target perception without relying on a pre-specified formation geometry, ii) **Multi-robot Sensor Fusion** -- We study and develop unified methods for sensor fusion that are not only scalable to large environments but also simultaneously to a large number of sensors and teams of robots, and iii) **New Robot Platforms** -- In order to have extensive access to the hardware, we design and build most of our robotic platforms. Our current flying platforms include 5 Octocopters, 2 quadcopters and a blimp.  

The available PhD position is in the area of deep reinforcement learning-based navigation and control of multiple robots in outdoor environments. The candidate is expected to have a background in at least one of the following areas: robot control and state estimation (tracking, localization and navigation) or reinforcement learning. Programming expertise in C/C++, Python and familiarity with ROS, Gazebo and Unreal Engine will be highly appreciated. Candidates with a solid mathematics background including probability and linear algebra will be preferred.  

The selected candidate will have a doctoral funding contract for a period of 3 years with a possibility of up to 1 year extension. Salary will be based on the German Tarifvertrag für den Öffentlichen Dienst (TVöD) guidelines. The position is at the Tübingen site of the institute. The position will be open until filled.  

The Max Planck society seeks to increase the number of women in those areas where they are underrepresented and therefore explicitly encourages women to apply. The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals.  

**Contact:**  

Please direct your applications to aamir.ahmad@tuebingen.mpg.de. The position is open until filled but preference will be given to applications received by September 1, 2019.