



PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

Open PhD position at FUB for CSC scholarship candidates 2017

Please note: the PhD position is only offered to Chinese PhD candidates for application in the framework of the FUB-CSC PhD Program.

<u>Department/Institute:</u>	Department of Mathematics and Computer Science/Institute of Computer Science
<u>Subject area:</u>	Swarm Robotics
<u>Name of Supervisor:</u>	Prof. Dr. Tim LANDGRAF (Mr.)
<u>Number of open PhD positions:</u>	1
<u>Type of the PhD Study:</u>	Full-time, Sandwich-Model (1-2 years) both possible
<u>Project title:</u>	RoboFish: analysis of collective behavior in Guppies and the development of interactive models for the control of fish robots

PhD Project description:

Animals often organize in groups for various benefits. In my lab, we investigate the collective behavior of Guppies with robots that look and behave realistically. The robots can integrate themselves in the swarm and can be used to learn about the biological system. We are interested in how the group recognizes relevant cues in the environment (like food or predators) and how this information is propagated to the swarm from the first individuals that sense these cues to the last ones that only react on the motion of their neighbors.

Our "RoboFish" system uses computer vision, to recognize and track all fish in the swarm and uses this information for controlling the behavior of the robots. A robot can approach other swarm members, swim along with them or recruit them to other places in the tank. We are using the system in an interdisciplinary team of biologists, physicists and computer scientists.

We offer one PhD project to **analyze video and tracking data in order to develop models of collective behavior** that can be tested ultimately with RoboFish. The candidate is expected to work closely with the biologists to test those models in life fish swarms. Video data has to be processed with custom video tracking software and the motion paths of all swarm members have to be statistically evaluated.

For more information visit <http://robofish.mi.fu-berlin.de>



Language requirements:

PhD studies are possible in English, certificate requirements are IELTS 6.5 or TOEFL 95 ibt.

Academic requirements:

Suitable fields: Computer Science, Statistics, Mathematics or similar.

Optional experience: Machine Learning, (Deep) Neural Networks, Clustering Algorithms, Python, Matlab
Bachelor graduates are eligible with excellent track record.

Information of the professor or research group leader:

<http://biorobotics.mi.fu-berlin.de>

http://www.mi.fu-berlin.de/inf/groups/ag-ki/members/Professoren/Tim_Landgraf.html

Please note:

In a first step the complete application should be submitted to the Beijing Office for evaluation by January 4th, 2017. Please don't contact the professor before. He/She will get in contact with you after having received the complete application in January.