

2 PhD students POSITIONS: Human Behavior

Dr. Charlotte Roy post-doctorate in the Applied Cognitive Psychology Group at Ulm University, Germany and Prof. Marc Ernst head of the group are inviting applications for 2 PhD positions.

Position 1: The PhD is funded by the European Commission (CrowdDNA).

State-of-the-art: the human crowd is a place of contradictions. Humans are social animals that like to come together to share certain common experience (concert, festival or match). Being part of a large and dense audience in movement is certainly a pleasure, but can turn into a traumatic experience when proximity turns into uncomfortable physical contacts, pushes and finally uncontrolled crowd movements. Many combined factors can lead to disasters. Past stampedes have shown that the tipping point cannot be predicted neither by experienced managers nor by current technologies, which leaves the crowd management practice purely empirical, with no guarantee of safety. Therefore, there is a need for a deep understanding of the relations between the smallest scales of crowd behaviors (e.g., contact and pushes at the limb scale) and the largest ones up to the entire crowd. The project is a first attempt to combine biomechanical and behavioral simulation in complex scenarios of interactions between many humans. Our part in this project is to investigate human behavior in a crowd.

Position 2: 3D Navigation-project focus on human navigation behavior the PhD is funded by an internal grant from Ulm University.

State-of-the-art: Navigation is a central ability of us humans, ensuring our survival. Until now, the study of navigation has focused almost exclusively on the 2D horizontal plane even though our world is 3D. A largely unanswered question is how navigation strategies described in 2D extend to the third dimension. Our long-term goal is to understand and model human 3D navigation behavior. In the Applied Cognitive Psychology Group, we have the chance to conquer this new field of research as we have just set up a unique 3D locomotion platform, akin to a flight simulator topped with a treadmill. Having such a setup brings us into an exceptional situation to expand our navigation knowledge from 2D to 3D, which is the challenge currently animating the community striving for experimental evidences and theoretical modeling.

The two 3-year positions will be embedded in a highly interdisciplinary, international research group at Ulm University led by Prof. Marc Ernst. The focus of the group is on multisensory perception, sensorimotor integration, perceptual learning, navigation, development of perception and its applications to human computer. Experimental work predominantly relies on behavioral methods from psychophysics and experimental psychology. For this there are many state-of-the-art virtual reality setups available, including force feedback and robotic devices, force platforms and a unique treadmill setup for studies on human locomotion and navigation. Additionally, there are several eye- and motion tracking systems available for the recording of human behavioral data. The group has a strong focus on the modelling of human behavior, relying heavily on the Bayesian Framework and the development of ideal observer models. Currently, the group is supported by several grants which involve collaborations with groups from neuroscience, rehabilitation, engineering, robotics, perceptual development and computer science.

The two successful candidates should fit in with these interests and should have a background in cognitive science, cognitive systems, computer science or related field. Programming experience is a plus. The positions are available immediately and are fully funded for a period of 3 years. Salary is according to German Public Service regulations at the level of E13 (65% position). Applications will be considered until the position is filled. The application should include a cover letter stating the candidates research interests, curriculum vitae, reprints, and recommendation letters of two referees. Electronic submission is preferred and sent to both Dr. Roy and Prof. Ernst.

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