Postdoctoral position - 12 months
Inria MimeTIC - M2S Lab

Motor and perceptual training tool in basketball based on virtual reality

Context

M2S Lab is concerned by the effects of sports on performance and health. Its originality is based on a multidisciplinary approach that allows innovative results combining motion analysis and synthesis based on numerical models of humans. To carry out this scientific research, the laboratory relies on an exceptional ImmerMove technical platform which includes a virtual reality room (a size of 12*4*4m) and a gymnasium exclusively dedicated to motion analysis. M2S Lab is also part of the top 200 of the famous Shanghai ranking of the world's top universities in the category of sports sciences.

M2S Lab works in particular on the use of virtual reality to objectively study the interactions between players by making real and virtual athletes interact. This allowed to tackle scientific challenges concerning the analysis of perceptual-action coupling in situations of duels. In recent years, it also worked on the transfer of this knowledge to the field thanks to virtual reality-based training tools. This is the context of this postdoctoral position.

Project

This postdoctoral position, funded by an Inria Carnot project and in collaboration with the Carnot STAR project obtained by the Comportement Perceptivo-Moteur team of Institut des Sciences du Mouvement, aims to set up a basketball simulator for motor and perceptual training. The contribution to this project consists in creating the simulation of virtual humans and in setting up experiments to analyze the behavior of real players according to the kinematical information of their virtual opponent. The candidate may refer to the paper below for more information on the scientific approach.

Brault S, Bideau B, Kulpa R, Craig CM (2012) Detecting Deception in Movement: The Case of the Side-Step in Rugby. PLOS ONE 7(6): e37494.

Skills

The objectives of the candidate will be:

- Development of the generic animation solution for virtual humans
- Motion capture related to the game situation and for the animation of the virtual opponent
- Development of the basketball throw simulator
- Motion analysis according to the action of the virtual opponent

The candidate will mainly have a computer sciences profile with if possible knowledge in 3D motion. The skills required are therefore:

- Programming in C++/C#
- Knowledge of the Unity software
- Skills in virtual humans animation

Informations
Start: September 1st 2017
Duration: 12 months
Salary: 2130€ net monthly salary

Contact

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