Master Diploma Project:
Evaluating and Reducing Motion Sickness in Labyrinth Games under a Range of Default Postures.

Main Objective:
Assessing critical factors inducing motion sickness in labyrinth-like games and proposing rendering, displacement and interaction guidelines for minimizing such adverse effects.

Project Idea:
The immersive power of Virtual Reality can have some adverse effect due to the perceptual conflict between what we see in the head-mounted display and what we feel through our sense of balance. In a labyrinth-like game the player is moving around in search of rewards or to escape penalties. Hence the typical visual input is the one induced by motion. On the other hand the player is likely to be seated or standing up but is not effectively moving, so the human vestibular system in charge of sensing balance and accelerations has nothing to provide to the brain that would be consistent with the visual displacements. Such a discrepancy may trigger motion sickness for some users. The project will review and implement the most effective method allowing to reduce this problem either through rendering or displacement metaphor or both. This will be evaluated both for a seated and a lying player. For the second case, an additional transition stage from the current posture to the one needed to move in the game will be assessed too.

Goal:
- Review methods allowing to reduce motion sickness in labyrinth-games
- Exploring metaphors for introducing a relative transformation between the user default posture and the posture required for a labyrinth-game
- Assessing design proposition through user studies

Requirements:
- VR course background
- Unity (scripting in C#/DLL in C++)
- 3D geometry and quaternions (Vectors, cross products, rotations)

Information, materials and resource:
Unity3D game engine: http://unity3d.com/learn

Contact:
Ronan.BOULIC@epfl.ch, INJ 141