

Vestibular haptic feedback for virtual reality

Supervisors

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Hosting structure

City: Rennes

Institution: Inria Laboratory

Team: [HYBRID](#)

Duration

The internship is intended for a duration of 4 to 6 months, from September 2020. Depending on results and student wishes the option for continuing on to a Ph.D. on a related topic may arise.

Internship context and description

Audiovisual technologies have gone through considerable development over last decades and their performances are constantly increasing. But no matter their quality and sophistication, they can't help a lack of body sensations, because other modalities have to be used to efficiently produce bodily effects.

The most obvious way to produce physical sensations is of course to move the whole body (like in "4D cinemas"), but the energy needed by such devices makes them massive and expensive. Another approach is to produce the sensation of movement instead the actual movement itself, i.e. create an illusion. Although perceptual illusions are often limited to a certain context, they can sometimes be achieved with very light and elegant setups, which is an important criterion for virtual reality applications, for instance. However, this topic is still underexplored and little is known about limits and possibilities of motion perception, except that its complexity can lead, for sure, to many surprises.

The aim of this research internship is to study and evaluate experimentally a set of vestibular haptic effects provided by for a new kind of haptic technology acting on balance and whole-body motion sensations, and to implement a set of use cases for virtual reality. In particular, we are interested in studying the effect of this technology on cybersickness and vection.

Requested profile

The candidate must be interested and curious about human perception, immersive technologies and scientific experimentation. They should also be comfortable with as much following items as possible:

- Knowledge about psychophysics or cognitive sciences
- Experience with Unity
- Knowledge in programming real-time 3D (video games, VR...)
- Experience in haptics
- Technical English

Applications (CV + cover letter) should be sent by e-mail to Anatole Lécuyer (anatole.lecuyer@inria.fr) and Antoine Costes (antoine.costes@inria.fr).