Design of Virtual Reality Systems for Rehabilitation of Cancer Related Cognitive Impairments

PhD position description

Project (Short presentation): The term "Cancer Related Cognitive Impairments" (CRCI) is used to define cognitive disorders related to cancer and its treatments, such as memory and attention troubles, double tasking difficulties or slowdown in information's processing. Several studies showed a positive effect of a cognitive rehabilitation in this population, but despite that more than 50% of people do not go back to work after cancer due to CRCI. The number of clinical tools available to rehabilitate people with CRCI with work is limited. Virtual reality tools may be useful in this context in order to create innovative rehabilitation tools in order to help this population to rehabilitate.

The objective of this PhD program is therefore to design novel interactive systems based on Virtual Reality technologies to support a rehabilitation program for people suffering from Cancer Related Cognitive Impairments. The successful candidate will study, design, and then assess a set of several novel Virtual Reality techniques and interactive systems in an iterative manner. Examples of such techniques are #FIVE/#SEVEN. #FIVE is a set of interconnectable software modules for virtual environments to make them interactive and add collaboration. #SEVEN, a scenario engine that allows the execution of complex scenarios running applications.

The PhD results will be integrated into operational prototypes which will be tested in a series of clinical studies dedicated to return-to-work in participants with cancer and conducted in Rennes University Hospital, Centre Eugène Marquis and Caen University Hospital

Place of work: Hybrid team, Inria, Rennes, France

Candidate: Should aim at completing a PhD and hold a Master degree in Computer Science. He/she should demonstrate knowledges with programming and with the conception of Virtual Reality tools.

Skills :

- Master of Science (or equivalent) in Computer Science (Computer Science, Visualization, Virtual Reality, Computer Graphics)
- Good programming skills : C/C++/C#, Unity
- Motivation for Medical Applications, Human Perception, or Neuroscience

Starting date: Fall/Winter 2021

Duration: 3 years (PhD)

Interested candidates are required to send their applications including CV with publication list, a summary of their research interests together with names and contact information of references to melanie.cogne@inria.fr, Anatole.Lecuyer@inria.fr, Valerie.gouranton@insa.fr, f.joly@baclesse.unicancer.fr and laure.tron@inserm.fr.