Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : GECHTER | Given names : Franck

Status (prof., assistant prof., …) : prof.

Laboratory : CIAD (Knowledge and Distributed Artificial Intelligence) UR 7533 | Website address : http://www.ciad-lab.fr

Institution : UTBM | Website address : https://www.utbm.fr

Scientific competence of the supervisor:

Distributed Artificial Intelligence, HIL Simulation, Complex System modeling. (Bio-)Cyber-Physical Systems modelling, simulation and control ; Augmented/Virtual Reality, autonomous vehicles and ADAS

Two major publications in the field proposed for the PhD :

1. Michael WEBER, Tobias WEISS, Franck GECHTER, Reiner KRIESTEN. “Approach for improved development of advanced driver assistance systems for future smart mobility concepts”. In the Autonomous
2. Michael WEBER, Tobias WEISS, Franck GECHTER, Reiner KRIESTEN. “Mapping of a Low-Textured Environment Using Visual Simultaneous Localization and Mapping to Use Augmented Reality Simulation for

Website address of the personal page : https://www.ciad-lab.fr/franck_gechter/

Supervisor's email : franck.gechter@utbm.fr

Description of the research work proposed for a PhD ***Topic # (see list) :*** I-8

Title : Virtual Reality vs. Augmented Virtuality in Procedural Training: Impact on Kinesthetic Memory and Skill Retention

Subject :

This PhD research explores the effectiveness of Virtual Reality (VR) and Augmented Virtuality (AV) in procedural training, focusing on their impact on kinesthetic memory, cognitive load, and skill retention. VR fully immerses users in synthetic environments with simulated haptic feedback (e.g., force-feedback gloves, exoskeletons), while AV integrates real-world objects into virtual spaces, allowing for natural tactile interactions.
Despite their growing adoption in fields like surgical training, industrial maintenance, and rehabilitation, a direct comparison between VR and AV in procedural learning remains underexplored. This study aims to bridge this gap by evaluating how simulated vs. tangible feedback influence cognitive processing, motor learning, and user experience.

This research will contribute to designing more effective, user-centered, and evidence-based training solutions across various professional and scientific domains.

Keywords :

Virtual Reality, Aumgented Virtuality, Procedural and Gesture Training and Rehabilitation

Expected collaborations :

Université de Québec à Chicoutimi: Pr. Bob Antoine Ménelas

Background required from the applicant :

Object Oriented Programming, Unity or Unreal Engine, Human Machine Interface

Existence of a PDF file detailing the proposal ("yes" or "no") : Yes

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