

Universidade Lusófona

Call for four Research Initiation Fellowships, HEI-Lab/ULHT

(BIC_VeraocomCiencia_2022)

Description

Lusófona University and HEI-Lab has an open call until July 26, for 4 (four) Research Initiation Fellowships (BII) under the scope of the programme "Verão com Ciência", financed by the Special Support "Verão com Ciência" awarded by the Fundação para a Ciência e a Tecnologia, I.P.

Duration

The fellowship will last for one month, non-renewable, due to start on September 1st until September 30th 2022, under the regime of exclusive dedication.

Eligibility

Students must be enrolled (or in condition to be enrolled) in an undergraduate course, integrated master, master or enrolled in courses that do not confer an academic degree, as per articles 5.º and 6.º from Regulamento de Bolsas de Investigação da FCT, I.P. candidates that have already benefited from research grants (regardless of the typology), directly or indirectly financed by FCT, are not eligible.

Work Plan

Activities will be carried out under the following projects:

- 1- Welcome day;
- 2- Workshops (W) and MasterClasses (M):

1st week

M1: "eMental Health: Past, Present and Future". HEI-Lab Director Pedro Gamito

W1: "Systematic Literature Reviews" Carla Sousa & Micaela Fonseca

W2: "Physiological Measurement: planning, recording and inference". Pedro Rosa & Jorge Oliveira

2nd week

M2: "Game AI Creators". Phil Lopes

W3: "Disentangling Games, Play, Game Design". Pedro Neves

3rd week

M3: "Empathy as a means to design experience". Andreia Pinto de Sousa

W4: "Motion Capture: Studying Human Movement" Filipe Luz

4rd week

Final Conference

Joint organisation of a final conference in collaboration with (CICANT and CeIED) entitled

"Empowering students through transversal research skills".

01 PROJECT: Embodied mu rhythm activity during observation of simple hand movements in virtual reality

Mu rhythm is a brain wave that is associated with resting of motor neurons, assessed using electroencephalography. Literature has shown that this activity is suppressed either by motor action or observation, suggesting that the Mu rhythm is a marker of the human mirror neuron system (MNS). The mirror neurons are important neurons for observational learning and imitating the actions of others, which is an important asset during cognitive development. Research suggests that Mu rhythm suppression is influenced by the social context where the individuals are involved. More specifically, studies show that lower social class individuals show greater MNS activation, which may enable greater coordination, cooperation and stronger social ties. Importantly, empirical studies on intergroup relations have also shown that Mu rhythm suppression is reduced with increasing prejudice, with important consequences on the responsiveness towards outgroup members and on intergroup helping behaviors.

Therefore, this proposal aims to create a virtual reality scene to study Mu suppression during motor action and observation in first-person perspective, manipulating social-class of the self to study how perceived social class may influence Mu suppression. Within the field of social cognition, we intend to study whether Mu suppression relates to the visual appearance of the avatar and embodiment perception. Moreover, we intend to study if there is a moderating effect of prejudice on this effect.

GOALS:

1. Create an avatar with a realistic hand and another with a homeless person hand;
2. Create a virtual reality scene to study motor action and observation with the avatar.

TASKS

1. Requirements for the VR scene;
2. Development of the VR scene with the avatar;
3. Pilot testing for feasibility in a small sample;

Supervisors:

Jorge Oliveira: 2115-358A-C70D

Leonor Costa: 4D1C-725A-936B

02 PROJECT: BlindGame: exploring online gambling activities among young people

The Internet is transforming multiple industries and one of those is the gambling industry. The online gambling market is growing in many places due to factors such as advancements in technology, increased trust among gamblers paying online, and global digitization.

Due to the high level of accessibility, immersive interface and ease at which money can be spent, concerns have been expressed. Gambling is not a typical pastime, it is risk-based and harmful to one's health and negative consequences are numerous. Thus, a more comprehensive understanding of

young people's problem gambling is critical, and even more so, because new forms of gambling are known to be very seductive for this population, as is the case of gambling activities linked to eSports.

BlindGame project aims to map online gambling activities among Portuguese young people and explore possible antecedents and consequences across intra- generational, regional and social-demographic dimensions.

GOALS

The main goal of the BlindGame project is to map young people's access to online gambling, favourite forms of online gambling, prevalence, and their relationships with socio-demographic and economic characteristics.

TASKS

1. Literature review;
2. Select relevant measures;
3. Questionnaire programming.

Supervisors:

Ana Rita Farias: 5718-46AC-401B

Ana Cristina Antunes: 2D13-2F76-689F

03 PROJECT: Virtual Reality Project: Exploring Interaction and Movement and its Impact on Emotional Intensity.

Affective Computing is a field of research investigating the development of computational systems with the capability of recognizing and processing human emotion for the personalization and benefit of individual users. VR provides users with a new perspective and interactive tools for the exploration of virtual environments. This can lead to a wider range of emotional experiences given that such interactions can often mimic “real-world” movements at a higher fidelity than ever before.

The main concept of this project is to both develop a VR game, with the intent of exploring how a specific in-game action can influence the player's affective state (i.e., anxiety). Given that anxiety (and stress) is one of the easiest emotions to measure, the thematic of the game will revolve around horror. Thus, a game scenario will need to be developed where a specific core interaction will be necessary. The scenario must allow this interaction to be accomplished in several different methods and must be able to synchronize and record specific physiological signals: Electrocardiogram (ECG) and Electrodermal Activity (EDA) with the core game. Finally, a small user study is necessary to understand how these different methods impact player emotions.

Goals:

- Implement a very simple horror theme VR Scenario;
- Work with physiological devices such as ECG and EDA.
- Process Physiological Signals using Python Libraries.

TASKS

1. Literature review;
2. Design a Simple Level with Horror Themes using Unity 3D Assets and Integrate Sensors (ECG and EDA) in the game;
3. Pilot Study;
4. Data collection and analysis;

Supervisors:

Phil Lopes: 8018-E267-2165

Micaela Fonseca: 961A-1B84-DB7F

04 PROJECT: Virtual Reality Project: Exploring the Effects of Challenge Over Player's Emotions Through Physiological Multimodality and Performance Features

Dynamic Difficulty Adjustment (DDA), provides automatic adaptation of real-time challenges based on players' emotions. VR games offer an ideal medium for emotion elicitation, as players tend to report intense emotional responses along with a heightened sense of presence. Thus, our work aims to further contribute to the field of affective gaming, by exploring physiological multimodality and performance to characterize player experiences, when exposed to different levels of challenge in a VR game.

We propose the development of a gesture-based VR game, based on the Trail Making Test, as this standard test allows us to evaluate the effects of physical and mental challenge. The game will be divided into 3 levels of difficulty (easy, medium, and hard). During the game tasks, Electrocardiogram, Electrodermal Activity, Respiratory Activity, and performance will be recorded, which will require synchronization between the recordings and the game. Players will also report their emotions using questionnaires, as to establish ground-truth. Finally, a user study will be conducted to assess the impact of the various levels of challenge on players' emotions.

GOALS:

The goals of the present work are related to the major purpose of proposing an automatic system for emotion recognition and dynamic difficulty adjustment in VR, namely:

- Design of a VR videogame and protocol for emotion elicitation;
- Collect three physiological signals during gameplay;
- Implement a signal processing workflow using Python Libraries.

TASKS

1. Literature review;
2. Implement 3 distinct VR experimental conditions in respect to the three levels of difficulty;
3. Carry-out a pilot study to collect data;
4. Data Processing and Analysis.

Supervisors:

Micaela Fonseca: 961A-1B84-DB7F

Phil Lopes: 8018-E267-2165

Work place

the work plans will be developed at HEI-Lab/Universidade Lusófona.

Application details

Applications must be sent by e-mail, indicating the competition reference (BII_VeraocomCiencia_2022) in the subject of the e-mail, to the following address: ana.mourato@ulusofona.pt

Amount of monthly maintenance allowance: The amount of the grant corresponds to 486,12 euros according to the table of values of grants awarded directly by FCT, I.P. in Portugal (<http://alfa.fct.mctes.pt/apoios/bolsas/valores>). The grant will be paid by bank transfer.

The performance of duties as grant recipient is carried out on an exclusive dedication basis, under Art.º 5.º do Estatuto do Bolseiro de Investigação Científica.

Selection Methods:

The selection of the candidates will be made by a jury composed by PhD Micaela Fonseca (President), PhD Ana Rita Farias and PhD Phil Lopes, PhD Pedro Gamito and PhD Jorge Oliveira (substitute members of the jury) based on the curricular evaluation, motivation letter and curriculum vitae that will correspond respectively to 70%, 20% and 10% of the candidates' evaluation.

Application deadline and form of presentation of applications:

The competition is open in the period from 13/7/2022 to 26/07/2022.

Applications must be accompanied by the following documents:

1. Qualifications certificate;
2. Motivation letter
3. Curriculum Vitae;
4. Other relevant training certificates (if applicable);
5. Proof of enrolment in a study cycle.

Applications should be sent by email, indicating the competition reference (BIC_VeraocomCiencia_2022_Project Number) in the subject of the email, to the following address: ana.mourato@ulusofona.pt