PhD Research Offer: “Eye tracking-based emotion recognition in video games”

Using eye tracking for interaction is an appealing issue. It can be used as a primary interaction channel (e.g. for physically disabled users), in generic [1] or more specific contexts (e.g. videogames [2][3]). However, interest arises as using eye tracking as an interaction channel that supplements the traditional keyboard/mouse/gamepad devices, thus broadening the interaction channel [1]. We can expect that interest in using eye trackers as nonintrusive, supplemental interaction devices will rise with the very recent release of the Tobii Rex [4], a cheap eye tracking solution designed for interaction, which drivers are integrated in Windows 8 [8].

The context of videogames in particular is very interesting for such a use of eye tracking. According to Gabe Newell, founder and CEO of Valve Corporation, eye tracking is “super important” in how players will interact with video games in the future [4]. Rather than considering game-related interactions, that may differ with each game genre, we focus on emotion recognition in a video game context, using eyetracking. It has been shown that some information about a user’s affective state (e.g. valence, arousal) can be perceived using eyetracking (through pupil dilatation [5] [6] or lateralized eye movements [7]). The goal of this PhD is threefold. First, identify a small set of affective states typically experienced while playing a videogame (e.g. stress, involvement, fulfillment) and extract from the literature relevant eyetracking cues for recognizing them. Second, develop a library/software able to recognize these emotions in real time, taking into account external parameters (e.g. brightness of the screen, expected emotion in a specific part of the game). Third, validate this development by integrating them in a custom and simple video game for user testing. The PhD student will be able to benefit from the PESS platform (for evaluation, prototyping and usability testing, www.estia.pepss.fr), situated in ESTIA, to conduct the user experiments.

The Tobii eyetracking company [8] is involved in the project, and will provide free training and technical support, dissemination opportunities, and partnership opportunities to the candidate.

Project supervisor (name, surname, tél.,email):

- **COUTURE Nadine**, tel +33 5 59 43 84 67, n.couture@estia.fr (main supervisor), Professor in Computer Science in ESTIA school of engineering (Bidart, France), in charge deputy of Estia-Research Department, member of LaBRI. Research keywords: Tangible Interaction, Interaction Design. http://profils.estia.fr/n.couture/
- **CLAY Alexis**, tel +33 5 59 43 84 78, a.clay@estia.fr (alt. alexis.clay@gmail.com) (associate supervisor), Associate Professor in ESTIA school of Engineering (Bidart, France), Researcher at Estia-Research Department. Research keywords: Emotion Recognition, Bodily Natural User Interaction. http://profils.estia.fr/a.clay/

Industrial Agreements

- Tobii and ESTIA have a common agreement. A Tobii eyetracking company Account Manager is hosted in the PEPSS technological platform in ESTIA.
- Advances in the PhD will lead to take contact with videogame companies for technology transfer during the course of the Ph.D.
Laboratory (UMR):
Laboratoire Bordelais de Recherche en Informatique (LaBRI)
Unité Mixte de Recherche CNRS (UMR 5800)
351, cours de la Libération F-33405 Talence cedex

The PhD student will enroll in LaBRI and be a full member of LaBRI. He/She will however be conducting his/her research in ESTIA school of Engineering, Bidart, France (http://www.estia.fr).

Candidate profile

Computer Science profile. Must speak good English (see application form). French proficiency not required. Gaming culture (indie to AAA) appreciated.

References

CALL FOR PROPOSALS UNIVERSITE BORDEAUX 1, FRANCE

CHINA SCHOLARSHIP COUNCIL THESIS ALLOCATIONS

UB1- CSC APPLICATION FORM

This application is to be completed and sent back to the French Project Research Supervisor by 28 February 2013 (French time)

Before applying please make sure you read carefully all details concerning this call for proposals:

Candidate’s eligibility
- Candidates will be citizens and permanent residents of the People’s Republic of China at the time of application;
- Candidates must not be currently working abroad
- Successful candidates must return to China upon completion of the studies and/or research
- Candidates must have a high level of English (or French) language proficiency
- Candidates should specify in their application that they apply for the UB1/CSC joint scholarship scheme.
- Candidates can only apply for one subject.

Process
- Candidates send the application form completed with all requested documents by 28 February 2013 to the PhD project supervisor at UB1.
- UB1 will evaluate the student files, academic performance and English language capability of the candidates. Interviews will be conducted by telephone or visio by PhD supervisors.
- By March, 20th UB1 will provide CSC and each qualified candidates with a copy of the admission letter.
- By April 5th 2013, after receiving the admission letter from UB1 candidates must apply to CSC by completing an application for funding and employer reference. Forms are available online at http://apply.csc.edu.cn through CSC’s application agencies.
- CSC will evaluate the candidates according to CSC requirements and priorities and provide UB1 with a final list of scholarship recipient and inform the successful candidates before the end of May 2013.
CALL FOR PROPOSALS UNIVERSITE BORDEAUX 1, FRANCE
CHINA SCHOLARSHIP COUNCIL THESIS ALLOCATIONS

UB1- CSC APPLICATION FORM

This application is to be completed and sent back to the French Project Research Supervisor by
28 February 2013 (French time)

IDENTIFICATION OF UB1 FRENCH SUPERVISOR(S)

Name, surname: COUTURE, Nadine; and CLAY, Alexis

Email address: n.couture@estia.fr; a.clay@estia.fr

Lab address: ESTIA, Technopole Izarbel, 64210 Bidart, France

PHD RESEARCH PROJECT TITLE YOU ARE APPLYING FOR:

Eye tracking-based emotion recognition in video games

IDENTIFICATION OF APPLICANT

Name/ surname:
Date of Birth:
Country of Birth:
Nationality:
Gender:
Marital Status:
N° of children:
Contact address:
E-mail:
Phone number:
CALL FOR PROPOSALS UNIVERSITE BORDEAUX 1, FRANCE

CHINA SCHOLARSHIP COUNCIL THESIS ALLOCATIONS

UB1- CSC APPLICATION FORM

Please send the following documents to the PhD project supervisor at Université Bordeaux 1:

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<th>document</th>
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<th>compulsory?</th>
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<tr>
<td>Curriculum Vitae incl photo</td>
<td>1-2 pages</td>
<td>yes</td>
<td>university education, professional experience, main scientific achievements</td>
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<td>Copy of passport or ID card</td>
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<td>signed Reference Letter 1</td>
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<td>signed Reference Letter 2</td>
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<td>Cover Letter</td>
<td>1 page max.</td>
<td>yes</td>
<td>choice of preferred PhD project(s), motivations, skills, experience, knowledge</td>
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<td>Copy of Undergraduate(s) degree(s) or first degree(s)</td>
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<td>Name of institution, field, date of graduation, major, minor</td>
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<td>Copy of Master or equivalent Diploma OR proof of enrolment in final year of Master/equiv. degree</td>
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<td>yes</td>
<td>Official Licence (bachelor) and master transcript (marks) honours, ranking</td>
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