CISUC
Centre for Informatics and Systems of the University of Coimbra

Call for **expression of interest in 1 open post-doctoral research position** to work in a radically new interdisciplinary approach to reduce the number of residual faults (bugs) in deployed software, called **Biofeedback Augmented Software Engineering (BASE)**

1 - The research work context

The goal is to research software bugs as human error manifestations in complex/abstract tasks using neuroscience to understand the brain mechanisms involved in software error making/discovery and the correlated psychophysiological manifestations, in order to identify conditions (and related code lines) that may cause programmers to make bugs or bugs escaping human attention. The work will push much further recently published work that can be found here:
https://link.springer.com/article/10.1007/s11682-018-9885-1

This foundational knowledge allows the establishment of predictive relationships between brain activation patterns in bug scenarios and autonomic physiologic manifestations that can be measured by wearable/low intrusive sensors, creating the scientific basis for the disruptive Biofeedback Augmented Software Engineering (BASE) approach.

BASE vision is to have programmers equipped with wearable/low intrusive sensors such as smart watches and wearable EEG to monitor physiologic reactions to cognitive stress/concentration/attention shift states during software development, considering also other sources of information available in software development setups such as computer camera, mouse and keystroke dynamics.

BASE will allow radically new features such as 1) **online warning of programmer/tester** on software lines that may have bugs and need a second look, 2) **guide the testing effort** through bug prediction models enhanced with biofeedback data, and 3) **create individual programmers' profiles** that will help define adequate training needs.

2 - Candidates' profile

We are seeking outstanding candidates that have finished their PhD in the last 5 years on one of the following domains:

- **Software engineering**, with focus on software reliability and software quality
- **Biosignal processing and analysis**, with focus on biosignal noise detection and elimination, feature extraction, feature reduction, information fusion and classification
- **Artificial intelligence**, with focus on multi-parametric data driven models and machine learning algorithms.

Candidates must be highly motivated to address the ambitious interdisciplinary research challenges of the BASE research work context mentioned above.

3 - The open position

Full-time research job under a contract for a **3 year** period, with a **monthly salary of 2 128.34 € (14 salaries per year) + 104.94 € per month as food allowanc**e (corresponding to the position "Nivel 1-TRU 33"). The candidate that gets the position will be fully assigned to research (i.e., no teaching load) and will be integrated in an interdisciplinary team of researchers from the following Research Centres of the University of Coimbra (http://www.uc.pt/en):

- **CISUC** - https://www.cisuc.uc.pt/
- **CNC.IBILI** - http://www.cnc-ibili.cnc.uc.pt/
- **ICNAS** - http://www.uc.pt/en/icnas

The formal Call for Applications, following the Portuguese law applicable and the regulations of the University of Coimbra, is expected to be issued by the end of June, at the latest.

4 - How to express your interest

Interested candidates should send an email with their CVs to Prof. Henrique Madeira (henrique@dei.uc.pt), no **later than June 22th**, 2018. The potential candidates should be available for an interview in person or over Skype.