

## Sujets de thèses

### PhD offer: Archeological Acoustics

4 07 2019 15:39

Experimental Virtual Archeological-Acoustics: Multimodal study of the influence of rooms on the playing techniques of musicians on instruments of the 17th and 18th century at Versailles.

#### Partners

In the context of the collaborative project EVAA, the EVAA\_Ver project unites the following team members to provide a PhD funding opportunity (2019-2022):

- ETIS UMR 8051 – Université Paris-Seine, Université de Cergy Pontoise, ENSEA, CNRS
- Institut Jean Le Rond d'Alembert
- CRC – Equipe Conservation et recherche du Musée de la musique – Cité de la musique – Philharmonie de Paris
- Centre de recherche du château de Versailles

This project has been certified by the Cluster of Excellence (Labex) "Patrima - Foundation for Cultural Heritage Science".

#### Application

The position will be opened until the 31<sup>st</sup> of July 2019. The candidate should be registered at the University of Cergy-Pontoise before the 13<sup>th</sup> of September. The doctoral contract should start ideally on the 1<sup>st</sup> of October 2019. Please submit a detailed CV, Master's degree transcript, letter of motivation concerning the proposed subject, and a list of 2 references that can be contacted. Material, PDF format, should be addressed to both [catherine.lavandier@u-cergy.fr](mailto:catherine.lavandier@u-cergy.fr) and [brian.katz@sorbonne-universite.fr](mailto:brian.katz@sorbonne-universite.fr).

#### Detailed PhD offer

[http://www.lam.jussieu.fr/Stages/index.php?page=These\\_FSP](http://www.lam.jussieu.fr/Stages/index.php?page=These_FSP)

# Thèse INEX APP 2019

28 06 2019 15:45

Dans le cadre d'un appel à projet "Initiative d'Excellence" de l'Université de Cergy-Pontoise, nous sommes à la recherche d'un(e) candidat(e) pour une offre de thèse intitulée : "Sécurité et sûreté de fonctionnement des systèmes complexes avec AltaRica // Security and Safety of Complex Systems with AltaRica (SSA)".

Résumé :

Failures of safety-critical embedded systems used in industries such as aeronautics, automotive, railway or nuclear can lead to catastrophic consequences. These more and more connected complex systems, also known as Cyber-Physical Systems (CPS), also have to face cyber-attacks, which most of time cause serious dysfunctions and undermine the security of such systems. For instance, in 2015, an attack via the SPRINT cellular network targeted a Jeep Cherokee. The vehicle happens to be fitted with a multimedia device named Uconnect, connected to a CAN bus using a Renesas V850 processor; at the software level, it also manages the cellular open TCP port 6667 to support a Dbus service for interprocess communication (IPC) and remote procedure call (RPC). The security breach consisted in injecting a modified firmware into the V850 co-processor, exploiting a "buffer overflow" error. It became then possible, and actually tested in the field, to remotely, over-the-air, inject CAN packets into the TCP port, and thus taking the hand over the car's various controls, from the radio volume to the brakes: clearly a serious design flaw...

The relationships between security and safety are thus at the heart of the current concerns of specialists in the field of complex embedded systems. In fact, one can no longer consider designing safe systems without ensuring them to be also secured. For instance, a vulnerability may compromise the functional safety of an autonomous car, while, on the other hand, a safety constraint such as the introduction of redundant components or diagnostic ports can increase the attack surface of the system. The increasing complexity of software and hardware components used in complex embedded systems has thus motivated the adoption of new approaches to anticipate security and safety problems. In particular, system designers have been advised to adopt an early modeling and validation approach against potential threats during the design phase to reduce the costs of lately detected errors and correction time.

Encadrant : Nga Nguyen, Equipe CELL du laboratoire ETIS

Contact : nn@eisti.eu

## **Offre de PhD : Deep Learning & sciences sociales computationnelles**

12 06 2019 09:15

Proposition de thèse : IA / Deep Learning & sciences sociales computationnelles.

**Date limite de candidature : 1er juillet 2019.**

Date début de thèse : 1er octobre 2019.

## **Encadrants**

- Directeur de thèse : David Chavalarias, Directeur de Recherche CNRS, HDR, sciences sociales computationnelles et analyse de données
- Co-directeur de thèse : Hedi Tabia, Maître de conférences / Associate Professor at the ENSEA, machine learning and IA
- Référents techniques : Mazyar Panahi, ingénieur CNRS (Masses de données et machine learning), Boris Borzic, ingénieur CNRS (image processing, machine learning)

## **Institutions**

- Etablissement de rattachement : CNRS
- Laboratoire d'accueil : Institut des Systèmes Complexes de Paris Île-de-France (ISC-PIF)
- Laboratoire partenaire : Equipes Traitement de l'Information et Systèmes (ETIS)

Thèse financée par le programme 80 PRIME du CNRS.

Pour plus d'informations et postuler, cliquer sur le lien suivant :

<https://emploi.cnrs.fr/Offres/Doctorant/UPS3611-DAVCHA-004/Default.aspx>

# **Nouvelle architecture d'amplificateurs de puissance pour les applications 5G**

31 01 2019 14:45

## **Sujet de la thèse**

L'objectif de la thèse est de proposer une nouvelle architecture pour assurer la partie amplification des dispositifs 5G afin de satisfaire les nouvelles exigences telles que la flexibilité (fréquence, modulation, bande passante, puissance d'émission) et une très bonne autonomie. La méthodologie de conception de l'amplificateur de puissance devra déboucher sur de nouveaux critères de conception liés au système (et non basés uniquement sur l'amplificateur) mais aussi sur le signal envoyé (non sur une approche mono-fréquence). Une technique de linéarisation pourra être utilisée afin d'améliorer les performances.

## **Encadrement**

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- Cédric DUPERRIER (MCF-ASTRE), cedric.duperrier@ensea.fr , (+33)130736627

## Sujet de stage M2

Un sujet de stage de master M2 est proposé avant le sujet de thèse.

## Détail du sujet

 [Sujet de thèse et de stage \(PDF\) \(39.3 KiB\)](#)

## 3-year fully funded PhD position in the research area of Big Data and Artificial Intelligence

22 08 2018 10:15

3-year fully funded PhD position in the research area of Big Data and Artificial Intelligence (AI) in collaboration of the MIDI team of the ETIS Lab UMR 8051, Paris, France and the Department of Computer Science, University of Warwick under the supervision of Professor Dimitris Kotzinos and Professor Peter Triantifillou respectively. (PhD funded under the Paris Seine Initiative of Excellence)

### Scope and Context

Due to the massive amounts of available data, various critical database tasks, e.g. query answering, become more of an approximate task than an exact one. On the other hand, the functioning of many critical Big Data system components depends on monitoring and predictions: e.g. in caching subsystems (which items to cache/prefetch), in query optimisation (the best access method to use), in indexing (when and for which attributes to build indexes). Additionally, big data analytics' systems need to be able to decide on the fly the most suitable (e.g. matching or optimization) algorithms to use in different cases. Similarly, many different prediction models for analytical queries (e.g., regression models) may perform differently for different predictive analytics tasks, so the system must decide on the best model to use. These problems can be approached by the use of predictive modelling adaptation techniques, well established in Artificial Intelligence (AI) and Machine Learning (ML). So, we propose to focus on working towards extending current Big Data management and analysis systems with ML and AI-based:

- Approximate analytical query processing engines based on ML models - e.g., queries based on descriptive statistics (COUNT, AVG, SUM, etc.) or on dependence statistics (CORR, CoVar, regressions, etc.). Given the massiveness of the current datasets, approximate query answering is one of the solutions we can employ in order to get responses in reasonable time and provide at the same time error feedback and control. At the same time, we want to introduce into the system uncertainty models with guarantees of maximum error and an understanding of the trade-off error

vs time/costs during query processing.

- Self-learning capabilities, big data management and analysis systems should be able to learn by monitoring operations and decisions made so far and use them to extract useful information in order to optimize various of the system's operation, like selecting the best possible algorithms, models, etc. So, during this PhD we want to investigate the above issues and develop solutions that can be integrated to real world big data management systems. We expect the successful applicant to be one of the driving forces behind the newly established collaboration between the two entities mentioned above.

The successful applicant will work jointly with Professor Dimitris Kotzinos (ETIS / Paris Seine University) and Professor Peter Triantafillou (Department of Computer Science, University of Warwick) and their respective groups, will be based at ETIS lab at the University of Cergy Pontoise in the greater Paris area but frequent exchanges and stays at Warwick are envisioned.

**Tentative Starting Date:** October 2018

## **Application**

If interested, please send your application (including a detailed CV, university transcripts, a copy of the master thesis and/or scientific papers if available, as well as a list of personal references and a motivation letter) in PDF format to Professor Dimitris Kotzinos ([Dimitrios.Kotzinos@u-cergy.fr](mailto:Dimitrios.Kotzinos@u-cergy.fr)) and Professor Peter Triantafillou ([P.Triantafillou@warwick.ac.uk](mailto:P.Triantafillou@warwick.ac.uk)). Further enquires are also welcome. Applications are welcome until 20/08/2018 or until the position is filled.