

Léopold Crestel – Ph.D student at IRCAM

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Date of Birth	21 st June 1991	Email	leopold.crestel@ircam.fr
Nationality	French		

Research interest

Machine learning, neural networks, sequential models, multi-modal models, automatic musical orchestration.

Education

- 2014-2015** Master ATIAM - IRCAM, UPMC and Télécom Paristech - Paris
Master in Acoustic, Signal processing and Computer sciences applied to Music
- 2011-2015** Engineering degree - Télécom Paristech, Paris
Major in audio signal processing
Minor in Statistics and Probability
Cumulative GPA - 3.80/4.0
- 2009-2011** Preparatory classes - Lycée Faidherbe, Lille
MPSI/MP*

Professional experience

- Oct. 2015 -** IRCAM, 1 Place Igor Stravinsky, Paris 75014, France
Sept. 2018 *Ph.D student*

Thesis subject : Deep symbolic learning of multiple temporal granularities for musical orchestration. The goal of the PhD project is to provide an approach that could help in translating the intent of a composer in the process of orchestration. Hence, the main idea is to first learn the inherent structures that co-exist between different musical elements (relationships inside the symbolic knowledge of musical scores, between different signals but also between the signal and the score). Then, based on the learned connexionist architectures of representation, the system could propose some re-orchestration and original improvisations. Modelling orchestral time series is the massive challenge at the hearth of this project. It raises several important issues for the deep learning field : how to model multi-modal data, highly sparse and with multiple temporal granularities.

- Feb. 2015 -** IRCAM, 1 Place Igor Stravinsky, Paris 75014, France
July 2015 *Research Intern*

Deep symbolic learning for musical orchestration analysis and generation

- Development of a music generation model based on a conditional RBM. Evaluation in a quantitative framework based on a predictive task
- Extension of the model to an automatic orchestration system
- Definition of a quantitative evaluation framework for the orchestration based on a predictive task
- Realisation with the help of team-mates of a real-time generative orchestration system

Feb. 2014 - Arkamys, 31 rue Pouchet, Paris 75017, France

Aug. 2014 *Innovation Intern*

Active reduction of the engine noise in the cockpit of a car

- Recommendation for the architecture of the final system
- Development of an active noise reduction prototype with 2 loudspeakers, a microphone and a Digital Signal Processing board

Sept. 2013 - Universitat Pompeu Fabra - Music Technology Group, Roc Boronat 138, Barcelona 08018, Spain

Feb. 2014 *Research intern*

Work on *Kaleivoicecope*, a voice transformation module based on Wide-Band Harmonic Sinusoidal Modelling

- Realization of a perceptive test to determine the most relevant transformation in order to perform gender transformation

Honours and awards

- **EDITE grant for doctoral studies**

3 years funded Ph.D.

Publication

- **Ongoing : Live Orchestral Piano, a system for real-time orchestral music generation**

Léopold Crestel, Philippe Esling

International Conference on Computational Creativity (ICCC), Paris, 2016

- **Deep symbolic learning for musical orchestration analysis and generation**

Léopold Crestel

M.Sc. Thesis, IRCAM-UPMC, 2015

Programming

- Python/Theano, LUA/Torch, Matlab
- C, C++, Java
- HTML, CSS, Php, JS

Complementary formation

2013-2016 Certificate of music - Conservatoire du 7^e arrondissement, Paris

Major in piano interpretation

Minor in piano jazz and electroacoustic composition

1998-2009 End-of-study diploma in Piano - Conservatoire National de Région, Douai

Classical music