

Marius MIRON

Research Scientist in Machine Learning and Signal Processing

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Born on February 15th 1982 in Piatra Neamț, Romania



Machine learning researcher working on deep learning, audio & image signal processing. Recently interested in FATML: interpretability & fairness in machine learning. PhD in music source separation. Solid 4+ years background in software engineering.

PROFESSIONAL EXPERIENCE

Now March 2018	Postdoctoral Researcher, EUROPEAN COMMISSION'S JOINT RESEARCH CENTRE, Seville, Spain HUMAINT project - assessing the impact of AI on humans <ul style="list-style-type: none">> Detecting bias in medical records, criminal recidivism records, unemployment records> Developing methods to visualize and mitigate unfairness for machine learning models> Machine learning interpretability to better understand and debug classification algorithms> Scientific support for policy makers on machine learning <p><code>python</code> <code>pytorch</code> <code>sklearn</code> <code>pandas</code></p>
December 2017 October 2017	Machine Learning Intern, TELEFONICA RESEARCH, Barcelona, Spain Catastrophic forgetting, Life-long learning <ul style="list-style-type: none">> Machine learning with applications to various image classification tasks.> Implementing and reviewing state of the art methods in catastrophic forgetting> Benchmarking and improving a new model with respect to the existing ones <p><code>python</code> <code>pytorch</code> <code>tensorflow</code></p>
September 2017 October 2013	Research Engineer (PhD Grant), POMPEU FABRA UNIVERSITY, Barcelona, Spain PHENICX project - orchestral source separation <ul style="list-style-type: none">> Developing new methods for music source separation using neural networks and matrix factorization> Developing new methods for audio-to-score alignment, audio source localization> Integrating source separation algorithms into an easy to access framework> Creating apps and demos and collaborating with the consortium's partners> Supervising and helping master students on deep learning;> Preparing and writing work packages reports for European projects. <p><code>python</code> <code>matlab</code> <code>cvxopt</code> <code>theano</code> <code>tensorflow</code> <code>pytorch</code></p>
September 2013 February 2012	Research Engineer, INESC PORTO, Porto, Portugal SHAKEIT project - modelling groove <ul style="list-style-type: none">> Developing novel features for the computational description of groove in musical audio signals> Developing beatStation, a gamified annotation system for western and non-western music> Implementing state of the art algorithms related to beat-tracking and drum transcription> Prototyping real-time applications for analysis and generation of musical signals> Collaborating with an interdisciplinary research team in designing music perception experiments <p><code>c</code> <code>c++</code> <code>matlab</code> <code>openframeworks</code> <code>vst</code> <code>puredata</code> <code>maxmsp</code></p>
March 2011 November 2010	Web developer Intern, POMPEU FABRA UNIVERSITY, Barcelona, Spain Freesound website - porting to Django <ul style="list-style-type: none">> Implementing testing procedures for the beta 2.0 version> Writing installing guides and deployment scripts for developers> Porting features from older php version to the newer Django version <p><code>python</code> <code>django</code> <code>php</code> <code>nginx</code> <code>postgresql</code></p>
August 2010 October 2006	Software Engineer, CTCE PIATRA NEAMT, Piatra Neamț, Romania <ul style="list-style-type: none">> Designing and developing software components for document management systems> Solving problems and challenges related to porting software to different platforms> Website and database maintenance for the portal legisplus.eu <p><code>php</code> <code>apache</code> <code>mysql</code> <code>c++</code> <code>java</code> <code>c#</code></p>

January 2006
August 2006

System Administrator, CLIFFORD CHANCE, Bucharest, Romania

- > Network and systems maintenance for a small computers network
- > Operating and implementing procedures
- > Dealing with suppliers and international offices

Windows Server Active Directory

EDUCATION

- 2018 PhD in Computer Science - Source separation for orchestral music mixtures, Pompeu Fabra University, Barcelona
- 2011 Master in Computer Science - Sound and Music Computing, Pompeu Fabra University, Barcelona
- 2006 Bachelor in Engineering – Systems Engineering and Computer Science, Faculty of Automatic Control and Computers, University Politehnica of Bucharest

SOFTWARE ENGINEERING SKILLS

- Programming** python (numpy, scipy, pytorch, tensorflow, pandas, sklearn), C, C++ (DSP, openFrameworks), Microsoft .Net (C#), Java, php, Javascript
- Databases** MySQL, PostgreSQL
- Development tools** Sublime Text, Atom, PyCharm, Visual Studio, SVN, git
- Middleware** Apache, Nginx
- Operating systems** Mac OS X, Windows Server, Windows 7, Linux Ubuntu, Linux Redhat, Linux Centos

PROJECTS

DEEPCONVSEP

2015 - 2018

 github.com/MTG/DeepConvSep

DeepConvSep stands for Deep Convolutional Neural Networks for Musical Source Separation. It is a repository for music source separation using convolutional neural networks which I have developed during my PhD. This repository contains classes for data generation and preprocessing and feature computation, useful in training neural networks with large datasets that do not fit into memory.

Python Theano numpy

PYDATA DEEP LEARNING FOR AUDIO WORKSHOP

2017

 github.com/nkundiushuti/pydata2017bcn

This repository contains the workshop presented at the PyData 2017 conference in Barcelona. The goal of the workshop is to familiarise intermediate python users with deep learning for audio processing.

Python numpy Tensorflow

LIVE DRUM TRANSCRIPTION

2012 - 2013

 github.com/nkundiushuti/drumtranscription_pd

An open-source streaming drum transcription system for Pure Data and MaxMSP (Max4Live). The software can transcribe kick, snare, and hi-hat from live drum performances. It takes live audio or files as input and triggers events for each drum type as output.

C C++ PureData MaxMSP

LANGUAGES

Romanian ● ● ● ● ●
English ● ● ● ● ●
Spanish ● ● ● ● ●
Portuguese ● ● ● ○ ○
French ● ● ○ ○ ○

SCHOLARSHIPS

- > NVIDIA research grant (2015,2017,2018)
- > ISMIR student grant (2017)
- > UPF-DTIC open research award (2017)
- > PHENICX grant 601166, ICT2011.8.2
- > SHAKEIT grant PTDC/EAT-MMU/112255/2009