

Maxime Baelde

Ph. D, Data Scientist

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Work experiences

March 2024 – **Senior Data Scientist**, ANTVOICE, Paris.

Today Context: Digital marketing

- Develop and maintain user advertisement algorithms
- Adaptation of existing DAGs to run the tasks on Airflow
- Techno: GCP, BigQuery, GCS, AI Notebook, Airflow, Github, git

July 2022 – **Mixing/Mastering Engineer**, FREELANCE, Lille.

Today Produce, record, mix and master songs for the bands The Pyloons and Fracton.

October 2019 **Lecturer in Statistics**, ENIGMA SCHOOL, Lille.

– Today Lectures of Statistics with R and Python at Enigma School (Master in Computer Science, Big Data)

May 2022 – **Data Scientist Consultant**, CONSORT GROUP, Lille.

February Context: Retail

- 2024
- Develop and maintain sales forecast algorithms
 - Backtest and implementation of new algorithm to forecast daily store sales
 - Adaptation of existing DAGs to run the tasks on Airflow
 - Techno: GCP, BigQuery, GCS, AI Notebook, Airflow, Github, git
- Participate in the recruitment of Data Scientists, Data Analysts and Data Engineers

July 2019 – **Machine Learning Engineer, Data Scientist**, WAVELY, Villeneuve d'Ascq.

- April 2022
- Development of Python packages about signal processing and machine learning.
 - Experiment deep learning methods for embedded audio source classification, using PyTorch.
 - Conversion to ONNX format to run the algorithms on small computers
 - Dockerization of audio classification service
 - Update SQLite database schemas using SQLAlchemy
 - Techno: Git, Python, SQL, Docker, Ansible, Grafana, Linux

November **Part-time lecturer in Signal Processing**, ECOLE CENTRALE DE LILLE, Villeneuve d'Ascq.

2017 –
September Involved in lectures of Signal Processing at Ecole Centrale de Lille (Bachelor and Master equivalent lectures)
2022

April 2015 – **R&D Engineer, Data Scientist**, A-VOLUTE, Villeneuve d'Ascq.

July 2019 Develop algorithms related to probabilities, statistics, machine learning and artificial intelligence, for applications to digital audio technologies.

January 2016 **Ph. D Student**, A-VOLUTE – INRIA, Villeneuve d'Ascq.

– January Thesis subject: Real-time identification, localization and separation of audio sources in multichannel audio streams. Supervisor: Christophe Biernacki, Professor (Université de Lille, INRIA, CNRS)
2019

September **Part-time lecturer in Statistics**, ISA, Lille.
 2018 – Involved in lectures of Statistics with R at ISA (Bachelor equivalent lectures)
 October 2018
 May 2014 – **Internship – Research assistant**, UNIVERSITÉ LIBRE DE BRUXELLES, Brussels.
 August 2014 Development of an experimental method for assessing the musical qualities of violin strings.
 Supervisor: Jean-Pierre Herman

Computer skills

Software programming GIT, PYTHON (NUMPY, PANDAS, ...), R, BASH, C/C++
 Machine Learning SCIKIT-LEARN, PYTORCH
 Data Visualization GOOGLE DATA STUDIO, TABLEAU, POWER BI, GRAFANA
 Data Engineering GOOGLE BIGQUERY, SQLALCHEMY, SQLITE, POSTGRESQL
 MLOps AIRFLOW, DOCKER, MLFLOW, DVC
 Operating system WINDOWS, LINUX

Scientific communications

2021 **Patent.**
Maxime Baelde et al. "Système de reconnaissance et d'identification de sources sonores en temps réel" FR Patent FR3109458B1.
 2020 **Patent.**
Maxime Baelde et al. "Apparatus and method for audio analysis" US Patent US11956616B2.
 2019 **Ph.D thesis.**
Maxime Baelde. "Modèles génératifs pour la classification et la séparation de sources sonores en temps-réel". Ph.D thesis, Université de Lille, 2019. [thesis]
 2019 **Journal article: Pattern Recognition.**
Maxime Baelde, Christophe Biernacki and Raphaël Greff. "Real-Time monophonic and polyphonic audio classification from power spectra". In : Pattern Recognition 92 (august 2019), p. 82-92. [paper]
 2019 **Pre-print: Grets2019.**
 Nathan Souviraà-Labastie, **Maxime Baelde**, Thomas Malet and Raphaël Greff. Impact des conditions d'attaques sur les contre-mesures pour la reconnaissance du locuteur. pre-print Grets2019. [paper]
 2019 **Pre-print paper: Interspeech 2019.**
Maxime Baelde, Nathan Souviraà-Labastie and Raphaël Greff. Influence of the attack conditions on countermeasures for Automatic Speaker Verification. pre-print Interspeech. [paper]

- 2017 **Conference paper: ICASSP 2017.**
Maxime Baelde, Christophe Biernacki and Raphaël Greff. A mixture model-based real-time audio sources classification method. 2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 5-9 Mar 2017, pp. 2427-2431, New Orleans, USA. [paper], [poster]
- 2017 **Conference paper: JDS 2017.**
Maxime Baelde, Christophe Biernacki, Raphaël Greff. Classification de signaux audio en temps-réel par un modèle de mélanges d'histogrammes. 49èmes Journées de Statistiques, June 2017, Avignon, France. [paper]
- 2015 **Master Thesis.**
Maxime Baelde. Modelization of HRTF filters and optimization for 3D audio effect. Master thesis, 2015, Université de Lille. [paper]
- 2014 **Abstract: JASA 2014.**
Maxime Baelde, Jessica De Saedeleer et Jean-Pierre Hermand. "Experiment to evaluate musical qualities of violin strings". In : The Journal of the Acoustical Society of America 136.4 (2014), p. 2284-2285. [abstract]

Education

- 2023 **Training**, *DJ Network*, MIXING & MASTERING (expert module): Mixing and processing audio tracks of a musical production.
 RNCP35223BC04 block - Mixing and processing audio tracks of a musical production
- 2016–2019 **Ph.D thesis**, *Université de Lille*, Villeneuve d'Ascq, Modèles génératifs pour la classification et la séparation de sources sonores en temps-réel.
- 2012–2015 **Engineering Degree**, *École Centrale de Lille*, Villeneuve d'Ascq, *Decision making and Data analysis*.
- 2014–2015 **Master Research in Applied Mathematics**, *Université de Lille*, Villeneuve d'Ascq.
- 2010–2012 **Preparatory classes: two-year undergraduate intensive course in mathematics and physics**, *Lycée Henri Wallon*, Valenciennes.
- 2007–2010 **A-Level, engineering sciences and physics speciality**, *Lycée Pierre Forest*, Maubeuge.

Language

- French **Mother Tongue**
 English **Technical and professional**

Hobbies

- Music (technical) Compose, produce, record, mix and master songs
- Music (artistic) Play the piano (since 8 years) and the guitar (since 17 years)
- Videogames RPG, Tactical, Action
- Reading Thriller (Maxime Chattam), science-fiction (Isaac Asimov, Alain Damasio,...)
- Others Bakery, Gardening and food autonomy