Antoine **Loriette**

Data Scientist, Applied Machine Learning for Human and Computer Interaction

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Industry — 2023 (6 months)

Lili.ai — *Paris, France*

Full-stack Data Scientist — *Apr. - Sept. 2023 (6 months)*

- Designed, developed and deployed a machine learning framework in Kubernetes, including experiment tracking (Polyaxon), data quality monitoring with human labelling (Label Studio), dataset bookeeping (S3 and DVC) and model serving (BentoML).
- Supervised and mentored a Big Data Master student working with vector databases (Milvus) and LLMs (BERT-based).
- Advised and reviewed the overall data processing pipeline (Prefect).
- Contributed end-user features impacting both frontend and backend (Vue.js, Django.)
- Acted as a Scrum master for a team of 8 people, organising stand-up, planning and restrospective meetings.

Research — 2014 - 2022 (8 years)

CNRS - IRCAM - INRIA — *Paris, France*

Post-doctoral Researcher — *Jan. 2020 - Sept. 2022 (2.5 years)*

- Studied the perception of motor learning in tasks involving complex and creative movements by implementing a **metric learning** approach on top of Dynamical Time Warping (Pytorch) - published in *PLOS One*.
- Improved upon and released an **open-source project** on Github and Pypi providing the soft-DTW algorithm for CUDA devices (Pytorch, CUDA) now downloaded more than 6k times - available at *pysdtw*.
- Optimised a training schedule for a motor task using **reinforcement learning** and MABs based on a framework specialised in interactive machine learning (*Marcelle*, Javascript, Python) - submitted to IHM'22.
- Developed a prototype for movement exploration and modelling based on an algorithm performing live incremental clustering of time series (Javascript, MaxMSP, Python, C++) - demoed at *NIME'22*.

University of Glasgow — *Glasgow, United Kingdom*

Research Assistant and PhD Candidate — *Mar. 2015 - Sep. 2019 (4.5 years)*

- Researched *computational methods for the study of novel gestural interactions*:
  - **Deployed discriminative models** (Keras) to create virtual surfaces from RGB-D sensors - published at *ISS'17*.
  - **Optimised gameplay experiences** for custom game controllers using user probabilistic modelling - available on *arXiv*.
  - Explored and characterised user physical capabilities with audio-based reinforcement learning.
  - **Recorded a synthetic dataset** for detecting repetitive movements from accelerometer data and **wrote from scratch a deep model** based on 1D convolutions (Python, Keras).
- Contributed to the European project MoreGrasp:
  - **Led redaction** of deliverable documents involving coordination with several project members.
  - Implementated visual feedback mechanisms on smartwatches (Android).
  - **Prepared live demos** and posters for review meetings.
  - **Established contacts** with health practitioners at Glasgow's hospital leading to workshops and a funding proposal.
- Analysed visualisation techniques (*Jupyter notebooks*) for low-dimensional embeddings, i.e. t-SNE.
- **Tutored the courses Artificial Intelligence and Data Fundamentals** for Undergraduate and Master students.
- Developed and released open source software for Intel Realsense camera. This package was recommended by Intel as a primary choice for community maintained Python bindings (until librealsense 2.0 was released) and has accrued over one hundred stars on github and 54k downloads to this day - available at *pyrealsense*.

Stockholm University, *Mobile Life* — *Stockholm, Sweden*

Research Assistant — *Feb. 2014 - Oct. 2014 (9 months)*

- Explored innovative designs for always-on in the background speech interactions - published at *CHI'15*. **Designed and ran an experiment** capturing day-long recordings of participants' everyday life followed by qualitative analysis and design workshop with trained Interaction designers.

Industry — 2008 - 2013 (6 years)

Now & Net *Paris, France*

Founder *2013 - 2015 (2 years)*

- Co-founded a startup providing a collective musical experience organised around DJ-ing.
- Developped a proof-of-concept recommender system (Neo4j) for creating attractive playlists.
- Wrote R&D plans leading to the successful application to the status of JEI.

Ericsson AB *Stockholm, Beijing, Seattle*

Multiple Positions *2008 - 2013 (6 years)*

- **SCRUM master** and Software Developer [2013]: Acted as the "guardian of the process" to facilitate daily operations of a cross functional team (8 people). Animated planning meetings, daily follow-up meetings and retrospective meetings.
- **System engineer** at AT&T laboratory [summer 2012]: Integrated features into the customer network with laboratory and in-the-field experiments.
- **Research engineer** at Ericsson Research [2012]: Prepared the 4G+ prototype for the Mobile World Congress.
- **Software Developer** 4G/LTE [2008/2011]: Developped algorithms (embedded C) from standard 3GPP specifications. Extended and supported an Erlang test framework used by 50 engineers. Provided training sessions in Stockholm and Beijing.

Education

University of Glasgow *Glasgow, United Kingdom*

PhD in Computing Science *grad. 2019*

Thesis title: A Computational Approach to Gestural Interactions of the Upper Limb on Planar Surfaces.

Royal Institute of Technology (KTH) *Stockholm, Sweden*

MSc in Applied Physics *grad. 2009*

Telecom Physique Strasbourg *Illkirch-Graffenstaden, France*

MSc in Engineering and Physics *grad. 2008*

Skills

Programming	Python, C, embedded C, C++, Erlang, Javascript, LaTeX, bash, make, git, GitHub, Docker
Data Modelling	Python, Pytorch, Keras, Cuda, MlFlow, Pyro, Seaborn, Jupyter
ML ops	Kubernetes, Polyaxon, Label Studio, DVC, S3, BentoML
Applied Research	Scientific Writing and Review, Quantitative Analysis, Experiment Design, Ethics
Soft skills	Lean, Agile, Scrum Master, Teaching, Tutoring, English, French (native), Swedish