Liam Toran

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Driven Data Scientist with an international background in research and strong analytical skills. Fluent in Python and Maths.

Education

Ecole Normale Superieure de Lyon **France**

Master's Degree in Applied Mathematics *2018*

- Studied Machine Learning, advanced Statistics, Numerical Methods, Statistical Physics, Stochastic Calculus, Probabilistic Graphical Models, Convex Optimization, Dynamical Evolution Equations, Harmonic Fluid Dynamics and more.

Bachelor's Degree in Computer Science *and* ***Bachelor's Degree in Mathematics*** *2016*

- Studied Algorithms, Data Structures, Linear Algebra, Programming and Junior level classes in Physics.
- Entered ENS Lyon, **a top 3 school in France**, through a top 0.5% ranking in nation-wide competitive exams.

Experience

University of Nice Sophia-Antipolis, J.A.Dieudone Research Institute **Nice, France**

Data Science Research Assistant, 6 months *2019*

- Simulated and analyzed Dynamical Networks, e.g. social media networks or fungus growth.
- Mastered new models and uses of stochastic and partial differential equations in population dynamics.
- Implemented state-of-the-art numerical fluid simulation techniques and predictive models through Python.
- Solved the relationship between the physical parameters and the propagation speed for dynamical branching networks.

UCSD, Biomedical Research Institute, Knight Lab **San Diego, USA**

Machine Learning Research Assistant Intern, 6 months *2017*

- Analyzed compositional microbiological datasets using supervized & unsupervized learning.
- Coded several new compositional biostatistics analysis methods with Python & applied them to the Knight Lab datasets.
- Met with stakeholders and explained them how the new treatments were found and would work.
- Discovered a long time unresolved bias that arises during unsupervized SVD dimensionality reduction and it's cause.
- Found a way to resolve it using better metrics. **Led a conference in front of 55 scientists** to explain the phenomenon.
- This led to the following *research article* (11 citations).

Inria, BiPoP team **Grenoble, France**

Intern, Computer Graphics Algorithms, 3 months *2016*

- Modelized, simulated, optimized and controlled cloth's move with implicit contact and exact friction.
- Solved and simulated use cases and prototypes of the problem in Python.
- Built a new scalable solver of the problem. Implemented it in production software using C and C++.
- The resulting solver was **ten times faster** than the previous product. This led to the following *research article* (8 citations).

Professional Skills

Software Development: Python (Jupyter, Pandas, scikit-learn, Keras, PyTorch, TensorFlow, Matplotlib, ...), C, C++, SQL, Linux, Unix, Git, LaTeX, MatLab, Lisp, OCaml, Excel.

Machine Learning: Regression, Classification, Clustering, Deep Learning, Computer Vision, Natural Language Processing (NLP), Scoring, Metrics, Data Visualization.

Statistical Models: Linear, Decision Trees, Random Forests, Boosting, SVMs, Graphs, Neural Networks.

Languages: **English & French:** Fluent (native) **Japanese:** Basic (self-taught)

Projects

Asteroid Size Estimator: Kaggle notebook comparing 8 different regression techniques on a NASA database. The max accuracy achieved was 85% on noisy & corrupted data using XGBoost, data cleaning & feature transformation.

Wikipedia Promotional Article Classifier: 0/1 Classification problem for detecting bad wikipedia articles with Keras NLP Tokenization & LSTM Neural Network. 80% ROC AUC score and accuracy score.