

Liam Ilan Toran

San Francisco, CA

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Driven data scientist with an international background in Research and great analytical skills. Highly motivated to dive deep in the world of Data & Analytics. Fluent in Python and Maths, with a passion for learning new things.

Education

Ecole Normale Supérieure de Lyon (ENS Lyon)

Lyon, France

Master's Degree in Applied Mathematics

2018

○ Studied courses include advanced statistics and machine learning, numerical methods, statistical physics, stochastic calculus, dynamical evolution equations, harmonic fluid dynamics and the Boltzmann gaz equation.

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

2016

○ Studied courses include Algorithms I & II, Data Structures, Logic, Programming and Junior level classes in Physics.

○ Entered ENS Lyon, a top 3 school in the field in France, through a top 0.5% ranking in nation-wide competitive exams.

Experience

J.A.Dieudonné Research Institute, University of Nice Sophia Antipolis

Nice, France

Technical Research Assistant Intern, 6 months

2019

My work was centered on the simulation and analysis of Dynamical Networks, e.g. social media networks or fungus growth.

○ Learned about 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.

Knight Lab, Biomedical Research Institute of UCSD

San Diego, USA

Machine Learning Research Assistant Intern, 5 months

2017

My focus was on analysing and understanding compositional microbiological datasets (supervised & unsupervised learning):

○ Coded several new compositional statistical data analysis methods with Python & applied them to the Knight Lab datasets,

○ Co-authored a research article about the horseshoe effect, explaining how it arises in various datasets after SVD dimensionality reduction, and how to learn from it to **build a better metric for data sets with an underlying gradient**:

See: [*Uncovering the Horseshoe Effect, Morton - Toran*](#) (11 citations).

Inria (National Institute for Research in Computer Science and Automation)

Grenoble, France

Computer Science Research Assistant Intern

2016

3 months at the BiPoP team. My work was centered on the modelization, simulation, control and optimisation of non-smooth systems, applied on the example of cloth's move simulation with implicit contact and exact Coulomb friction:

○ Solved and simulated use cases and prototypes of the problem in Python,

○ Invented a new scalable type of solving of the problem and implemented it in production software using C and C++.

○ The resulting solver was **ten times faster** than the previous product. It later led to the following research article:

See: [*An Implicit Frictional Contact Solver for Adaptive Cloth Simulation*](#)

Miscellaneous

Math & Physics Teaching and Tutoring for Undergraduate students

2018 - 2019

Professional Skills

Software Development: Python (Jupyter, Pandas, sklearn, Keras, PyTorch, TensorFlow, Matplotlib, ...), C, C++, SQL, Linux, Git, LaTeX, MatLab, Lisp, Excel.

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

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

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

Interests and Hobbies

Travelling the world, Sci-Fi, Mangas, Gaming, Piano (self-taught).