

# Liam Ilan Toran

San Francisco, CA

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*Enthusiastic and driven data scientist with an international background in Research. Highly motivated to dive deep in the dynamic and ever-evolving world of Data & Analytics. Fluent in Python and Maths, with a passion for learning new things.*

## Education

### École Normale Supérieure de Lyon (ENS Lyon)

Lyon, France

*Master's Degree in Applied Mathematics*

2016-2018

- 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 & Mathematics*

2014-2016

- Studied courses include Algorithms I & II, Data Structures, Logic, Programming and Junior level classes in Physics.
- Entered ENS Lyon through a top 0.5% ranking in nation-wide competitive exams.

## Experience

### J.A.Dieudonné Research Institute, Université de Nice Côte d'Azur

Nice, France

*Research Assistant Intern, 6 months*

2019

My work was centered on the modelization and simulation of Dynamical Branching Networks, for instance 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 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*

2017-2018

My focus was on analysing and understanding compositional microbiological datasets:

- Implemented several compositional statistical methods through Python while applying 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 examples of Coulomb friction problems in Python,
- Created an enumerative type solving of a new formulation of the Coulomb friction problem and implemented it using C and C++. The resulting solver was **ten times faster** than the previous one. It later led to the following research article:  
See: [\*An Implicit Frictional Contact Solver for Adaptive Cloth Simulation\*](#)

### Miscellaneous

Math & Physics Tutoring for Undergraduate students

2018-2019

## Professional Skills

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

**Machine Learning:** Regression, Classification, Feature engineering, NLP, Cross validation, Scoring, Metrics.

**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).