

# TIANYU DU

Undergraduate Student Studying Economics and Mathematics at University of Toronto

## CONTACTS & PERSONAL INFO

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**Email** [tianyu.du@mail.utoronto.ca](mailto:tianyu.du@mail.utoronto.ca)

**Phone** (+1)647-886-7951

**Website** [www.tianyudu.com](http://www.tianyudu.com)

**Github** [www.github.com/tianyudu](https://github.com/tianyudu)

**LinkedIn** <https://www.linkedin.com/in/tianyu-du-7a56a7155>

## EDUCATION

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**University of Toronto, Canada**

*Sep. 2017 - Jun. 2020(Expected)*

Honours Bachelor of Science, Economics & Mathematics Specialist

Cumulative GPA: 4.00/4.00, Course Average: 94%.

**Stanford University, United States**

*Jun. 2019 - Aug. 2019*

Summer Session, Intensive Program in Data Science

Courses: CS229:Machine learning, STATS202:Data Mining and Analysis, STATS116:Theory of Probability(Undergraduate).

Cumulative GPA: 4.30/4.30, Course Average: 99%.

## RESEARCH INTERESTS

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Machine Learning Methods and their Applications on Time Series Forecasting.

Computational Economics, Simulations for Game Theory, and Market Design.

Behavioural and Experimental Economics.

## SCHOLARSHIPS & AWARDS

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Mc Nab Undergraduate Scholarship

*Dec. 2019*

Alexander Mackenzie Scholarship In Economics And Political Science

*Oct. 2019*

Dean's List Scholar(2018-19)

*Jun. 2019*

International Experience Award (Killam American Fund for International Exchange)

*May. 2019*

Dean's List Scholar(2017-18)

*Jan. 2018*

## ACTIVITIES & PROJECTS

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**Thesis on Stock Market Forecasting using News Sentiment with Machine Learning**

*Honours Essay in Applied Microeconomics*

*Sep. 2019 - Apr. 2020*

Top students from department of economics are selected to conduct their own original research in this program. My thesis focuses on forecast asset market movements from financial news. Specifically, sentimental analysis tools from natural language processing (NLP) are used to generate article-level sentiment scores. Then data science techniques including SVM, CNN-RNN are deployed to create predictive models and capture the underlying inter-temporal dependencies.

**Patient Data Analysis on PANSS Dataset**

*Jun.2019 - Aug.2019*

*The Final Project for STATS202 at Stanford University (Final Report Class Top)*

Positive and Negative Syndrome Scale (PANSS) scores of schizophrenia patients were used to test treatment effects, k-means and Gaussian mixture were used to cluster patients based on scores prior to treatment. Moreover, SVM, random forests, and boosting machines were developed to detect potential

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<sup>0</sup>Resume compile date: 17:13 Thursday 19<sup>th</sup> December, 2019

invalid assessments and forecast patients' future psychological states.

### **Artificial Neural Networks for Economic Forecasting**

*May.2018 - Jun.2019*

#### *Independent Research*

This project compared artificial neural networks and classical models on financial time series. Specifically, fully connected and RNN with LSTM cells were used on exchange rate forecasting, which had outperformed existing ARIMA and VAR models.

### **Independent Reading in Mathematics: Mathematical Economics**

*May.2019 - Jun.2019*

#### *Supervisor: Robert J. McCann*

A supervised learning program focusing on microeconomic theory with mathematical rigour. Topics included duality theory in optimization, consumer and producer theory, partial and general equilibrium, as well as market failures like adverse selection.

### **CIBC Machine Intelligence Hackathon**

*Sep.2018*

#### *Finalist Group (Top 5)*

An auto-encoder-decoder architecture neural network was implemented to detect fraud in medical insurance claims.

## **SKILLS**

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**Programmings** Python including TensorFlow, PyTorch, Sci-kit Learn, Pandas, Numpy, and various data visualization toolkits; R; STATA; Matlab; Mathematica; Bash.

**Development** Server deployment on Amazon Web Services (AWS) and Google Cloud Platform (GCP).

**Data Analytics & Machine Learning** Solid mathematical and statistical foundations for statistical learning models. Being able to implement and deploy machine learning models for both academic purposes such as paper replication and industrial purposes.

## **RECENT EXTRA-CIRRICULAR**

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Economics Peer Mentorship Program, as Mentor.

*Oct.2019 - Apr.2020*

Volunteer: University of Toronto, Representative at the Learning Abroad Fair.

*Nov. 2019*

Volunteer: University of Toronto, Second Year Learning Community Panel, as Panelist.

*Oct. 2019*

## **OTHER COURSES & CERTIFICATES**

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**Coursera** Practical Time Series Analysis; Machine Learning; Serverless machine learning with TensorFlow on Google cloud platform; Social and economic networks: models and analysis; Sequence models (recurrent neural networks); Mathematics for machine learning: multivariate calculus.

**Nvidia** Accelerated computing with CUDA python.