

Fangyu Liu

Graduate from the University of Waterloo
fangyu.liu@uwaterloo.ca | fangyuliu.me/about
[LinkedIn](#) | [GitHub](#) | [Google Scholar](#)

EDUCATION **University of Waterloo** Waterloo, ON, Canada, Jan. 2017 - April. 2019
Bachelor of Mathematics, Honours in Computer Science (with lots of credits in Math)
Graduated with Distinction, on Dean's Honours List (**Summa Cum Laude**).

Beijing Normal University Beijing, China, Sep. 2014 - Dec. 2016
Candidate for Bachelor of Science, Mathematics and Geography
Unfinished and transferred out to the University of Waterloo.

PUBLICATION **Conferences / Workshops**

- **F. Liu***, S. Li*, L. Zhang, C. Zhou, R. Ye, Y. Wang, J. Lu. "3DCNN-DQN-RNN: A Deep Reinforcement Learning Framework for Semantic Parsing of Large-scale 3D Point Clouds." *IEEE International Conference on Computer Vision (ICCV'17)*, October 2017 (* - equal contribution) [[CVF Openaccess](#)] [[Poster](#)] [[Slides](#)]
- C. Yang, J. Huang, **F. Liu**, F. Chiu, M. Gao, W. Lyu, I. Lin, J. Tegner. "A Novel Hybrid Machine Learning Model for Auto-Classification of Retinal Diseases." *ICML Workshop on Computational Biology (ICML Workshop'18)*, July 2018 [[arXiv](#)]
- **F. Liu**, R. Lebet, K. Aberer. "Visually-Grounded Cross-Lingual Transfer Learning." *NAACL Workshop on Shortcomings in Vision and Language (NAACL Workshop'19)*, June 2019 [[PDF](#)] [[Poster](#)]
- **F. Liu**, R. Ye. "A Strong and Robust Baseline for Text-Image Matching." *ACL Student Research Workshop (ACL Student Session'19)*, August 2019 (35.1%, 71/202) [[arXiv](#)]

In Submission

- **F. Liu**, R. Ye. "Anonymous Submission." **Submitted to** *Conference on Empirical Methods in Natural Language Processing and International Joint Conference on Natural Language Processing (EMNLP-IJCNLP'19)*
- **F. Liu**, R. Lebet, D. Orel, P. Sordet, K. Aberer. "Upgrading the Newsroom: An Automated Image Selection System for News Articles." **Submitted to** *ACM Transactions on Multimedia Computing, Communications, and Applications (ACM TOMM)* [[PDF](#)] [[Slides](#)] [[Demo](#)] (Click RANDOM and it's good to go!)

(Please view [Google Scholar](#) for a full list of publications.)

EXPERIENCE

University of Waterloo
Undergraduate Research Assistant (URA) Waterloo, Canada, Sep. 2018 - Present
URA with [Prof. Yuri Boykov](#) on weakly-supervised CNN segmentation. Together with [Meng Tang](#), we released a PyTorch version [[code](#)] of [regularized loss](#). I am currently researching on integrating 3D information into regularized loss.

École Polytechnique Fédérale de Lausanne (EPFL)
Research Intern Lausanne, Switzerland, Jun. 2018 - Sep. 2018

Interned at *Distributed Information Systems Laboratory (LSIR)* led by Prof. Karl Aberer. Worked closely with Research Scientist Dr. Rémi Lebret and Postdoc Dr. Hamza Harkous on the topic of natural language transfer learning and text-image retrieval.

State Key Lab of Remote Sensing Science

Research Assistant Beijing Normal University, China, Mar. 2016 - Dec. 2017
Member of a Computer Vision group led by Prof. Liqiang Zhang for applications of Machine Learning methods on large-scale image/3D scene understanding.

PROJECTS

Visually Grounded Cross-Lingual Transfer Learning Waterloo, Canada, Sep. 2018 - Now

The only full-mark winner in CS480/CS680, Fall 2018, at U. of Waterloo. Explored transfer learning in a multilingual setting under the context of bidirectional text-image retrieval and Visual Semantic Embeddings (VSE). [[Proposal](#)] [[Report](#)] [[Code](#)]

WLM Compiler Waterloo, Canada, Jan. 2018 - Mar. 2018

A course project for *Foundations of Sequential Programs* at U. of Waterloo. Implemented a compiler for C-like language WLM and an assembler for MIPS using C++. Full marks.

Chamber Crawler 3000 Waterloo, Canada, Jul. 2017

A final project for *Object-Oriented Software Development* at U. of Waterloo. Used C++ to develop a roguelike game. Scored 109.1 (99.1 + 10 bonus).

Side Projects

3D convolution optimization [[arXiv](#)] ([Canadian Conference on AI 2019](#), Long Oral, 20.4%, 27/132), Retinal diseases image understanding [[arXiv](#)] ([ACCV 2018 AIRIA Workshop](#)), PyTorch Semantic Segmentation Zoo [[Code](#)], Pointcloud Voxelizer [[Code](#)], etc.

SKILLS

Over 10⁴ lines: Python (PyTorch, TensorFlow, Keras) •C/C++

Over 10³ lines: Bash •JavaScript •Racket(Scheme) •Matlab

Others: HTML5 •SQL •L^AT_EX•Unix

AWARDS & GRANTS

Canadian AI Student Travel Grant Kingston, Canada, May 2019
600 CAD granted by Canadian Artificial Intelligence Association and the National Research Council Canada.

EPFL Summer Research Fellowship Lausanne, Switzerland, 2018
5,800 CHF granted by School of Computer and Communication Sciences, EPFL. One of 64 receivers out of ~3500 applicants (1.8%) in 2018.

Term Dean's Honours List (winner of multiple terms) Waterloo, Canada, 2017-2018
Honour for high GPA students at the University of Waterloo.

Jingshi Scholarship Beijing, China, Oct. 2016
2,000 CNY granted by Beijing Normal University for outstanding academic performance.

National Student Innovation Project Grant Beijing, China, Apr. 2016
20,000 CNY granted by Chinese Ministry of Education for a one-year research project.

Third Prize Beijing, China, Jun. 2016
Beijing Normal University Programming Competition

Silver Medal Beijing, China, Jun. 2015
Beijing Normal University Undergraduate Soccer Championship

COURSEWORK

Courses Taken (see transcripts for a full list)

- **Computer science**
- Basics of Computer Programming (C++) (BNU)
- Elementary Algorithm Design & Data Abstraction (Waterloo)
- Logic & Computation (Waterloo)
- Data Management & Data Structure (BNU & Waterloo)
- Object-Oriented Software Development (C++) (Waterloo)
- Database Basics (BNU)

- Computer Organization & Design (Waterloo)
- Foundations of Sequential Programs (Compilers) (Waterloo)
- Algorithms (Waterloo)
- Operating Systems (Waterloo)
- Intro. to Theory of Computing (Waterloo)
- Numerical Computation (Waterloo)
- Intro. to Machine Learning (Waterloo)
- Computational Techniques in Biological Sequence Analysis (Waterloo)
- Computational Vision (Waterloo)
- Intro. to Artificial Intelligence (Waterloo)
- Computer Graphics (BNU)
- **Mathematics**
- Intro. to Optimization (Waterloo)
- Intro. to Combinatorics (Waterloo)
- Nonlinear Optimization (Waterloo)
- Calculus/Mathematical Analysis (BNU)
- Intro. to Real Analysis (Waterloo)
- Linear Algebra (BNU & Waterloo)
- Advanced Algebra (BNU)
- Probability & Statistics (BNU & Waterloo)
- Applied Probability (Markov Chain) (Waterloo)
- Mathematical Modeling (BNU)

Online Courses on Coursera with Certificates

- Improving Deep Neural Networks (Deeplearning.ai)
- Neural Networks and Deep Learning (Deeplearning.ai)
- Machine Learning Foundations (UWashington)
- Python Data Structure (UMich)
- Using Python to access Web Data (UMich)
- Using Python to manipulate Database (UMich)
- Intro. to HTML5 (UMich)
- Interactivity with Javascript (UMich)
- Getting Started with with Python (UMich)
- Data Visualization (UIUC)