Ning Zhang

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Education

BSc in Physics, Nankai University **Sep 2015 – Jun 2019**
GPA: 90.8/100 Ranking: 3/92 (3/15 in Poling class, an academic talent program) *Tianjin, China*

MASc in ECE, University of British Columbia **Sep 2019 – Current**
GPA: 94.4/100 Thesis topic: graph alignment *Vancouver, Canada*

Research Interest

My current research interest main lies in *graph theory*, *probability theory* and *randomized algorithms*. I am also interested in topics about *spectral methods*, *statistical learning theory* and *operational research*.

Research Experience

Graph alignment | *Supervisor: Lele Wang, ECE department, UBC* **Sep 2020 – Current**

- Study the information theoretic limits for perfectly aligning graphs that are correlatedly generated from random graph models, e.g. Erdős–Rényi model, stochastic block model..
- Design polynomial time algorithms for aligning random graph pair and prove the corresponding feasible regime

Biophotonics | *Supervisor: Shuo Tang, ECE department, UBC* **Sep 2019 – Aug 2020**

- Performed wavelength calibration in spectral-domain optical coherence tomography (SD-OCT) system and explored SD-OCT image analysis and enhancement methods

Undergraduate research projects (funded by Poling program) **Jun 2016 – Jun 2019**

Deep learning | *Supervisor: Xin Chen, Computer Science department, University of Nottingham* Oct 2018 – June 2019

- Designed a new CNN model based on U-Net for semi-supervised semantic segmentation tasks. We proposed a dynamic kernel to combine information from the spatial neighbors and add a local smoothness constrain on output.

He-Ne laser stabilization |*Supervisor: Ben Sauer, School of Physics, Imperial College London* Jun 2017 – Sep 2017

- Designed a feedback control system to adjust the length of He-Ne laser cavity to stabilize its output frequency.

Topological photonics Mar 2017 – Mar 2018

- Implemented beam propagation method and simulated the propagation properties of Gaussian beam in photonic lattices

Two-dimensional material Jun 2016 – Dec 2016

- Worked on nano fabrication on graphene, $MoSe_2$, black phosphorus and testing photon-electron reaction

Selected Publications

1 Ning Zhang, Weina Wang, and Lele Wang. Attributed graph alignment. *arXiv preprint arXiv:2102.00665*, 2021

2 Ning Zhang, Susan Francis, Rayaz A Malik, and Xin Chen. A spatially constrained deep convolutional neural network for nerve fiber segmentation in corneal confocal microscopic images using inaccurate annotations. In *2020 IEEE 17th International Symposium on Biomedical Imaging (ISBI)*, pages 456–460. IEEE, 2020

Awards

2021	NASIT Best Poster Award (second prize, 2/50)
2020	Honorable Mention in Graph Attack and Defence Track of KDD Cup (Rank 14/106)
2019	Outstanding Graduate in Nankai University (3%)
2016,2018	The Second/First Prize Scholarship for Outstanding Student (6%)
2017	Gong Neng Award (5%)
2015,2016	Poling Scholarship

Teaching

Fall 2021	TA for ELEC321/STAT321 Stochastic Signals and Systems
Spring 2021	Tutorial for ELEC321/STAT321 Stochastic Signals and Systems
Fall 2020	TA for ELEC321/STAT321 Stochastic Signals and Systems
Spring 2020	Lab TA for ELEC291 Electrical Engineering Design Studio I

Technical Skills

Coding languages: MATLAB, Python, Mathematica, C++
Technologies/Frameworks: Linux, Github