

Yuanxin Guo

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EDUCATION

The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen)

Bachelor of Science

September 2018 - Present

School: School of Science and Engineering (SSE)

GPA: 3.904/4.000

Major: Mathematics and Applied Mathematics

School Ranking: 4/135

PUBLICATIONS & PATENTS

- (C.3) **Yuanxin Guo**, Zihan Tang, Bin Li. On the Equivalence between Pre-transformed Monomial Codes and Parity-check Monomial Codes. Accepted for Poster presentation by IEEE ISTC 2021.
- (C.2) Xiaopeng Cheng, Ximing Fu, **Yuanxin Guo**, Kenneth W. Shum, Shenghao Yang. Successively Solvable Shift-Add Systems - A Graphical Characterization. Accepted by IEEE ISIT 2021.
- (C.1) Ximing Fu, Chenhao Wu, **Yuanxin Guo**, Shenghao Yang. Two-tone Shift-XOR storage codes. Accepted by IEEE ISIT 2021
- (P.1) Ximing Fu, **Yuanxin Guo**, Shenghao Yang. A Distributed Storage and Transmission Decoding Method [pending]. Publication number: CN 111447044 A

RESEARCH EXPERIENCE

Multimedia Lab, University of Toronto

June 2021 - Present

Research Intern

Toronto, Canada

- Advisor: Prof. Stark Draper.
- Studying community detection problems on stochastic block models (SBM) and variant models taking account of geometric information.
- Developing a semidefinite programming (SDP) based algorithm for community detection in geometric block models (GBM).

Shenzhen Research Institute of Big Data (SRIBD)

June 2020 - Present

Undergraduate Research Intern

Shenzhen, China

- Advisor: Prof. Zhi-Quan Luo.
- Developed and analyzed statistics-based algorithms for intelligent reflecting surfaces (IRS).
- Currently leading the research of designing efficient algorithms for course timetabling problems.

Network Coding Lab, CUHK-Shenzhen

June 2019 - Present

Undergraduate Research Assistant

Shenzhen, China

- Advisor: Prof. Shenghao Yang, Dr. Ximing Fu.
- Designed and analyzed computationally efficient, low-overhead storage coding algorithms based on shift-XOR codes (C.1, P.1).
- Establishing a comprehensive theory on solvability of shift-XOR systems using graph-theory (C.2).

Wireless Technology Lab, Huawei Technologies

January 2021 - May 2021

Research Engineer Intern

Shenzhen, China

- Advisors: Dr. Mengyao Ma, Dr. Zihan Tang, Dr. Bin Li.

- Reviewed recent advances on polar codes, Reed-Muller codes, and the connection between these codes.
- Established the equivalence of pre-transformed polar codes and parity-check polar codes. (C.3)

PRESENTATIONS

Poster Presentation. *IEEE ISTC 2021*, Montréal, Canada (Virtual Event), August 2021
On the Equivalence between Pre-transformed Monomial Codes and Parity-check Monomial Codes.

Oral Presentation. *IEEE ISIT 2021*, Melbourne, Australia (Virtual Event), July 2021
Successively Solvable Shift-Add Systems - A Graphical Characterization.

End of Internship Report. *Wireless Technology Lab*, Shenzhen, China, May 2021
Recent results on Reed-Muller Codes.

TEACHING EXPERIENCE

Undergraduate Student Teaching Fellow September 2019 - December 2020
SSE, CUHK-SHENZHEN Shenzhen, China

- Taught recitation classes for Linear Algebra, Complex Variables, and Calculus I.

Member of Independent Study Group January 2019 - December 2019
Supervisor: Prof. Zhi-Quan Luo & Prof. Jim Dai Shenzhen, China

- Gave presentations on topics in Numerical Linear Algebra and a lecture on Markov Chains.
- Wrote a report on actor-critic methods and policy gradient algorithms in reinforcement learning (RL).

AWARDS AND HONORS

2021 Dean's List	SSE, CUHK-Shenzhen
2020 Academic Performance Scholarship, Class A (RMB 80,000/year)	SSE, CUHK-Shenzhen
Dean's List	SSE, CUHK-Shenzhen
Undergraduate Research Intern Fellowship (RMB 3,000/month)	SRIBD
2019 Academic Performance Scholarship, Class A	SSE, CUHK-Shenzhen
Dean's List	SSE, CUHK-Shenzhen
China Undergraduate Mathematical Contest in Modeling: Provincial Third Prize	Chinese Mathematical Society
2018 Full Tuition Scholarship (RMB 95,000/year)	CUHK-Shenzhen
Bowen Scholarship (RMB 30,000/year)	CUHK-Shenzhen

EXTRACURRICULAR ACTIVITIES

Office of Academic Links, CUHK-Shenzhen September 2019 - December 2019
Student Assistant Shenzhen, China

- Assisted foreign exchange students with various issues; organized several recreational activities.

Institute of Data and Decision Analytics, CUHK-Shenzhen November 2018 - September 2019
Student Assistant Shenzhen, China

- Assisted new faculty members with accommodation; translated several paper and video files.

TECHNICAL SKILLS

Software & Tools Python, MATLAB, L^AT_EX
Language Chinese (Native speaker), English (Fluent, TOEFL 117, GRE 159+170+4)