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	Major Ranking: 3/79

RESEARCH EXPERIENCE

Multimedia Lab, University of Toronto — June 2021 - Present
Research Intern — Toronto, Canada

· Advisor: Prof. Stark Draper.
· Reviewed literature on the community detection problem and the stochastic block model (SBM).
· Currently generalizing SBM into a new model incorporating underlying geometric information.

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 efficient, low-overhead storage coding algorithms based on shift-XOR codes (C.1, P.1).
· Currently establishing a comprehensive theory on solvability of shift-XOR systems (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)

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

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 of Reed-Muller Codes.

Internship Midterm Report. *Wireless Technology Lab*, Shenzhen, China, March 2021
Pre-transformed Monomial codes.

Group Seminar. *Network Coding Lab*, Shenzhen, China, September 2020
In-place Decodable Shift-XOR 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   Shenzhen, China

· Gave tutorials on topics in Numerical Linear Algebra and a lecture on Markov Chains.

AWARDS AND HONORS

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 their accommodation, organized welcome party, farewell party, and multiple events to unite exchange students and domestic students.

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

· Co-edited a guide for new members joining the institute, and assisted some of the new faculties with their accommodation. Translated several paper files and videos between English and Chinese.

TECHNICAL SKILLS

Software & Tools	Python, MATLAB, R, LaTeX, C/C++
Language	Chinese (Native speaker), English (Fluent, TOEFL 117, GRE 159+170+4)