

Yitao Chen

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Education

The University of Texas at Austin (UT Austin)

Austin, TX

PH.D. STUDENT IN ELECTRICAL AND COMPUTER ENGINEERING

Aug. 2014 - PRESENT

Advisor: Prof. Sriram Vishwanath. GPA: 3.83/4.00

Shanghai Jiao Tong University (SJTU)

Shanghai, China

BACHELOR OF SCIENCE IN ELECTRONIC SCIENCE AND TECHNOLOGY

Sep. 2010 - Jun. 2014

Advisor: Prof. Xinbing Wang. GPA: 92.4/100.0

Publications

On the Key Generation Rate of Physically Unclonable Functions

YITAO CHEN, M. KIM AND S. VISHWANATH

SUBMITTED TO ISIT'18, 2018

From Centralized to Decentralized Coded Caching

YITAO CHEN, K. SHANMUGAM, A. G. DIMAKIS

SUBMITTED TO ISIT'18, 2018

Reconciling Selfish Routing with Social Good

S. BASU, G. YANG, T. LIANEAS, E. NIKOLOVA, AND YITAO CHEN

IN PROC. OF SAGT'17, L'AQUILA, ITALY, 2017

Approximate Capacity of a Class of Partially Connected Interference Channels

M. KIM, YITAO CHEN, AND S. VISHWANATH

IN PROC. OF IEEE ISIT'17, ACHEN, GERMANY, 2017

Index-coded Retransmission for OFDMA Downlink

M. KIM, YITAO CHEN, AND S. VISHWANATH

IN PROC. OF IEEE GLOBECOM'16, WASHINGTON DC, 2016

Secrecy Capacity Scaling of Large-scale Cognitive Networks

YITAO CHEN, J. ZHANG, X. WANG, X. TIAN, W. WU, F. WU, AND C. TAN

IN PROC. OF ACM MOBIHOC'14, PHILADELPHIA, 2014

Work Experience

GenXComm Inc.

Austin, TX

ENGINEER INTERN. PROJECT: FULL DUPLEX RADIO. HOST: HARDIK B. JAIN

Jun. 2016 - Aug. 2016

- Build MAC layer for full-duplex radio on Xilinx FPGA (Zedboard).
- Theoretically model co-channel interference for full-duplex access point (it ensembles multiple full-duplex access points).

Selected Research Experience

Key Generation Rate of Physically Unclonable Functions

WNCG, UT Austin, Austin, TX

RESEARCH ASSISTANT. ADVISOR: PROF. SRIRAM VISHWANATH

Dec. 2016 - Present

- Formulate the Physically Unclonable Functions (PUFs) key generation problem into an information-theoretic problem based on the generated-secret (GS) model.
- Show the optimal key generation rate achievable scheme with algebraic binning and polar codes.
- Uncover the connection between Slepian-Wolf distributed source coding problem and PUF key generation problem.
- Design and implement a PUF key generation system with polynomial time encoding and decoding with polar codes.

From Centralized to Decentralized Coded Caching

WNCG, UT Austin, Austin, TX

RESEARCH ASSISTANT. ADVISOR: PROF. ALEXANDROS G. DIMAKIS

Jan. 2017 - Present

- Design a generic scheme that translates centralized code caching schemes to decentralized counterparts.
- Prove any centralized scheme with constant rate and sub-exponential file size scaling with the number of users can be turned into a decentralized scheme with target coding gain g with file size that is sub-exponential in g .
- Show our decentralized scheme does not require any change in the rest of the system when a new user joins and prove the worst case rate degrades by at most a constant factor when there are not too many adversarial arrivals and departures.
- Show that the centralized scheme with near constant rates and polynomial file size requirements can also be translated into decentralized schemes that provide a polynomial scaling in the target gain g .

Index Coding and the Capacity of Interference Channel with Side Information

WNCG, UT Austin, Austin, TX

RESEARCH ASSISTANT. ADVISOR: PROF. SRIRAM VISHWANATH

Jan. 2016 - Sep. 2016

- Design a randomized Greedy coloring algorithm which beats the state of the art index coding algorithms.
- Prove the $1/2$ -bit gap between the up-bound and lower-bound of the capacity of interference channel with side information.

Reconciling Selfish Routing with Social Good

WNCG, UT Austin, Austin, TX

RESEARCH ASSISTANT. ADVISOR: PROF. EVDOKIA NIKOLOVA

Jan. 2015 - Dec. 2015

- Formulate the approximately fair path-flow decomposition routing game.
- Prove the negative result (complexity argument) of the problem.

Selected Project

Kaggle: Santander Customer Satisfaction

UT Austin, Austin, TX

COURSE PROJECT OF MACHINE LEARNING: LARGE-SCALE DATA

Mar. 2016 - Apr. 2016

- Final position top 28%.
- Learn the pre-processing techniques.
- Build the ensemble model with Gradient Boost Machine, Logistic Regression, Neural Network, Random Forest and MLP.

Teaching Experience

Information Theory

UT Austin, Austin, TX

TEACHING ASSISTANT WITH PROF. SRIRAM VISHWANATH

Spring 2018

Probability and Random Process

UT Austin, Austin, TX

TEACHING ASSISTANT WITH PROF. SRIRAM VISHWANATH

Fall 2017

Information Theory

UT Austin, Austin, TX

TEACHING ASSISTANT WITH PROF. ALEXANDROS G. DIMAKIS

Spring 2017

Honors & Awards

2013	Shanghai Scholarship , Top 1% in college	SJTU, Shanghai, China
2013	Honorable Prize , Mathematical Contest in Modeling	Shanghai, China
2012	Ricoh Scholarship , Top 2% in college	SJTU, Shanghai, China
2011	National Scholarship , Top 1% in college	SJTU, Shanghai, China
2011	Academic Excellence Scholarship , 1st-class, top 1% in college	SJTU, Shanghai, China

Selected Courses

Probability & Stochastic Process I, Markov Chain and Mixing Time, Large Scale Optimization, Information Theory, Analysis and Design of Communication Networks, Advanced Algorithms, **Machine Learning: Large-scale Data**, Estimation Theory, Sublinear Algorithm.

Skills

High-level languages	MATLAB (Expert), Python (Expert), C++(Competent)
Hardware description languages	C, VHDL, C#, Assembly
Hardware design tools	Xilinx Vivado, GNU radio, Spark
Frameworks	NumPy, Pandas, Scikit-learn
Algorithms	Polar Code, Spectral Clustering, Locality Sensitive Hashing, Nonlinear Kalman Filtering, 802.11 MAC Layer, Stochastic Gradient Descent, Support Vector Machines

Reference

Dr. Sriram Vishwanath

PROFESSOR, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING, UT AUSTIN

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