

ZEYU ZHOU

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Education

University of Illinois at Urbana-Champaign

Champaign, IL

Doctor of Philosophy, Electrical and Computer Engineering. GPA: 4.0

Aug 2021

Dissertation: [Particle Thompson Sampling](#) (Advisor: Bruce Hajek)

Master of Science, Electrical and Computer Engineering. GPA: 3.96

Dec 2016

Thesis: *Per-flow Cardinality Estimation Based on Virtual LogLog Sketching*.

University of Canterbury

Christchurch, New Zealand

Bachelor of Engineering with First Class Honors, Electrical and Electronic Engineering

Dec 2013

Purdue University

West Lafayette, IN

Exchange student

Jan 2012 - Dec 2012

Publications ([Google Scholar](#))

*co-first author

Zhang X*, **Zhou Z***, Zhao T, Benjaram K, Gardus J, DeLorenzo C, Parsey R, Huang C, FDG-PET Ventricular Clearance Tracks SSRI Response in Depression: Evidence for a Glymphatic Marker of Treatment Efficacy, 2025, *In preparation*.

Zhou Z, Zhao T, Gardus J, Wen Q, Feng Y, DeLorenzo C, Parsey R, Huang C, [Quantifying Ventricular CSF Clearance in the Human Brain Using Dynamic 18F-FDG PET: Insights into Age-Related Glymphatic Impairment](#), 2025, medRxiv 2025.04.07.25325241, *Under review at Fluids and Barriers of the CNS*.

Zhou Z, Alfayad A, Chao TC, and Pipe JG. [Acoustic noise reduction for spiral MRI by gradient derating](#). *Magn Reson Med*. 2023; 90(4): 1547-1554. doi: 10.1002/mrm.29747

Z. Zhou and B. Hajek, [Improving Particle Thompson Sampling through Regenerative Particles](#), 2023 57th Annual Conference on Information Sciences and Systems (CISS), Baltimore, MD, USA, 2023, pp. 1-4, doi: 10.1109/CISS56502.2023.10089647.

Z. Zhou and B. Hajek, [Particle Thompson Sampling with Static Particles](#), 2023 57th Annual Conference on Information Sciences and Systems (CISS), Baltimore, MD, USA, 2023, pp. 1-6, doi: 10.1109/CISS56502.2023.10089653.

Zhou, Z., Hajek, B., Choi, N., and Walid, A., [Regenerative Particle Thompson Sampling](#), arXiv preprint arXiv:2203.08082. 2022. doi:10.48550/arXiv.2203.08082

Z. Zhou and B. Hajek, [Per-Flow Cardinality Estimation Based On Virtual LogLog Sketching](#), 2019 53rd Annual Conference on Information Sciences and Systems (CISS), Baltimore, MD, USA, 2019, pp. 1-6, doi: 10.1109/CISS.2019.8692884.

Patents

Method and System for Quantifying Ventricular CSF Clearance Using Dynamic PET Imaging, Inventors: Chuan Huang, **Zeyu Zhou**, Tianyun Zhao, Applicant: Emory University, *Provisional Patent Application*: No. 63/783,569, April 10, 2025

Presentations and Posters

Zhang X*, **Zhou Z***, Zhao T, Benjaram K, Gardus J, DeLorenzo C, Parsey R, Huang C, FDG-PET Ventricular Clearance Tracks SSRI Response in Depression: Evidence for a Glymphatic Marker of Treatment Efficacy, *Abstract submitted for RSNA Annual Meeting*, Chicago, Dec 2025

Zhou Z, Zhao T, Gardus J, Wen Q, DeLorenzo C, Parsey R, Huang C, [Dynamic 18F-FDG PET Imaging Reveals Age-Related Impairment of Ventricular CSF Clearance: Implications for Glymphatic Dysfunction](#), *SNMMI Annual Meeting*, New Orleans, Louisiana, USA, June 2025

Zhou Z, Zhao T, Sekendiz Z, Kritikos M, Fontana A, Clouston SAP, Luft BJ, Huang C, [Impaired Cerebrospinal Fluid 18F-FEPPA Clearance in Long COVID Suggests Altered Glymphatic System Function](#), *SNMMI Annual Meeting*, Toronto, Canada, June, 2024

Ying J, **Zhou Z**, Yuan S, Huang H, Zhang M, Luo J, Huang C, [Seizure Frequency and Disease Duration: Their Impact on Brain Metabolic Connectivity in MTLE Patients](#), *SNMMI Annual Meeting*, Toronto, Canada, June, 2024

Alfayad A, **Zhou Z**, Chao TC, Pipe JG, Patient-Centric Sequence Design: Reducing the Other Noise ([talk abstract](#)), *ISMRM Workshop on Data Sampling and Image Reconstruction*, Sedona, AZ, USA, Jan, 2023

Zhou Z, Pipe JG, Rigid Body Rotation Estimation for Spiral MRI with Conventional Sampling ([poster abstract](#)), *ISMRM Workshop on Data Sampling and Image Reconstruction*, Sedona, AZ, USA, Jan, 2023

Research Honors

- SNMMI Annual Meeting – Brain Imaging Council Young Investigator Award (third place) June 2025

Research Experience

Emory University School of Medicine

Atlanta, GA

Postdoc Fellow, Supervisor: Chuan Huang

June 2023 - June 2025

Project 1: Positron emission tomography (PET) kinetic modeling

- Developed a [self-contained Python program](#) for PET kinetic modeling, including segmentation, time-activity curve extraction, and all basic models, for radiotracers like ^{18}F -VAT, ^{18}F -FEPPA, and ^{18}F -Fallypride.

Project 2: Neurofluid

- Investigated altered dynamics of cerebrospinal fluid in Long COVID patients using ^{18}F -FEPPA PET imaging.
- Analyzed uptake of ^{18}F -FDG in lateral ventricles with various kinetic models.

Mayo Clinic

Rochester, MN

Research Fellow, Supervisor: James Pipe

Feb 2022 - May 2023

Project 1: Acoustic noise reduction

- Designed an auto-derating (gradient strength and slew rate) scheme to reduce acoustic noise of spiral MRI by 16.6 dB(A) on average with minimal penalty in scan time and image quality.

Project 2: Motion correction

- Developed a rigid body rotation estimation algorithm for spiral MRI with conventional sampling.
- Coded in Python, simulated in Graphical Programming Interface (GPI), and conducted volunteer experiments on a Philips 1.5T scanner.

University of Illinois at Urbana-Champaign

Champaign, IL

Ph.D. project, Advisor: Bruce Hajek

April 2018 - Aug 2021

- Analyzed particle Thompson sampling (PTS), a powerful and flexible tool for solving learning problems modeled by general stochastic bandits, for which no known effective solution exists.
- Proposed RPTS, a simple and effective improvement of PTS, which reduced the average regret significantly (by at least a factor of 3) across a representative set of bandit models.
- Applied PTS and RPTS to a communication network slicing problem and demonstrated efficacy in simulation.

Nokia Bell Labs

Murray Hill, NJ

Summer Research Intern, Mentors: Anwar Walid and Nakjung Choi

June 2019 - Aug 2019

- Proposed a novel contextual stochastic bandit model for modeling in 5G communication network slicing.
- Solved the problem with recently developed algorithms and simulated in Python.

University of Illinois at Urbana-Champaign

Champaign, IL

Master thesis, Advisor: Bruce Hajek

Aug 2014 - Aug 2016

- Developed new sketching algorithms for high speed, large scale flow cardinality estimation at Internet routers.
- Evaluated the algorithms empirically and demonstrated their near-optimality compared to state-of-the-art.

University of Canterbury

Christchurch, New Zealand

Summer Research, Mentor: Rick Millane

Nov 2013 - Feb 2014

- Evaluated a solvent flipping algorithm for phase retrieval in crystallography by coding in Matlab.

ECE Department, University of Canterbury

Christchurch, New Zealand

Honors Year Research Project, Mentor: Peter Smith and Nicholas Pau

Feb 2013 - Nov 2013

- Proposed a dynamic greedy base station (BS) grouping algorithm in macrodiversity using short-term channel station information, which increases the user pass rate by nearly two folds compared to no-macrodiversity.
- Identified the optimal size and shape of BS clusters for specific configurations and verified in simulation.

Teaching Experience

University of Illinois at Urbana-Champaign

Champaign, IL

Teaching Assistant

Jan 2016 - Aug 2021

Delivered short lectures, created video overviews ([sample1](#), [sample2](#)), held recitation sessions and office hours, administered lab sessions, designed problems, supervised graders, answered questions on Piazza, graded assessments, etc.

- ECE314 Probability in Engineering Lab (lead TA/instructor) Spring 2017, Fall 2017, Spring 2018, Spring 2020
Summer 2020, Fall 2020, Spring 2021, Summer 2021
- simulation and computation in Python with Jupyter notebook
- ECE313 Probability with Engineering Applications Fall 2016, Fall 2019
- ECE498 Networking for Big Data Spring 2016
- ECE543 Statistical Learning Theory Spring 2019
- ECE586 Game Theory Fall 2018

Purdue University

West Lafayette, IN

Undergraduate Teaching Assistant

Sep 2012 - Dec 2012

Provided in-class tutoring, supervised exams, and organized problem-solving sessions.

- ECE270 Intro to Digital System Design

Teaching Honors

- UIUC Incomplete List of Teachers Rated Outstanding (top 10%) Fall 2017, Fall 2018
- UIUC Incomplete List of Teachers Rated Excellent (top 30%) Spring 2016, Spring 2017
- Nomination for UIUC ECE Harold L. Olsen Undergraduate Teaching Award Fall 2017

Professional Affiliations

Institute of Electrical and Electronics Engineers (IEEE)

Student Member

2012 - 2021

The International Society for Magnetic Resonance in Medicine (ISMRM)

Trainee Member

2022 - 2025

Society of Nuclear Medicine and Molecular Imaging (SNMMI)

Member

2023 - 2025

Coursera Online Certificates

- [Introduction to Neural Networks and PyTorch \(IBM\)](#) March, 2023
- [Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization \(DeepLearning.AI\)](#) Jan 2023
- [Structuring Machine Learning Projects \(DeepLearning.AI\)](#) Jan 2023
- [Neural Networks and Deep Learning \(DeepLearning.AI\)](#) July 2022
- [Machine Learning \(Stanford\)](#) Feb 2019

Academic Service Experience

UIUC 11th Coordinated Science Laboratory Student Conference

Champaign, IL

Presentation Co-chair

Feb 2016

- Shared responsibilities of organizing the talks of the conference, including advertisement, invitation, management, selection and delivery, etc.

PREFACE Summer Camp

West Lafayette, IN

Helper

July 2012

- Helped high school students build circuits for electronic guitar.

Non-Academic Service Experience

Ronald McDonald House Charities Midwest

Rochester, MN

Housewarmer

May 2022 - March 2023

- Provided weekly support for the charity and families: welcoming, sanitation, product restocking, laundry, office assistance, activity assistance, meal service, etc.

Silver Lining Missions

Online

English Teacher

Oct 2022 - Oct 2023

- Taught weekly online English lessons for some children in a Myanmar orphanage.

Champaign Chinese Christian Church

Champaign, IL

Church Committee Member

May 2015 - May 2019

- Participated in church planning and decision making.
- Three years as the Administration Deacon and one year as the Evangelism Deacon.

Small Group Leader

Jan 2018 - May 2019

- Led small discipleship groups through book discussions.

Illini Chinese Christian Fellowship

Champaign, IL

Board Member, Treasurer

July 2015 - July 2016

- Served in planning and finance.

Christchurch Chinese Church

Christchurch, New Zealand

Life Influencer

May 2013 - Feb 2014

- Influenced children by weekly storytelling, teaching, reading, and playing games.

Young Adult Group President

Feb 2011 - Dec 2011

- Led a group of young Christians to build a home for college-level students.

Other Honors

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| • IEEE Eta Kappa Nu Honor Society Member | 2015 |
| • University of Canterbury Summer Research Scholarship | 2013 |
| • Purdue University One Brick Higher Award (group award for community service) | 2012 |
| • Purdue University Dean's List and Semester Honors | 2012 |
| • Member of Sigma Alpha Lambda National Leadership and Honors Organization | 2012 |
| • University of Canterbury Engineering College Ian McMillan Prize | 2011 |
| • University of Canterbury International Mobility Outbound Exchange Award | 2011 |
| • University of Canterbury 2011 Earthquake Scholarship | 2011 |
| • University of Canterbury Brian Morrison Memorial Scholarship in Engineering | 2011 |
| • Member of Golden Key International Honor Society | 2011 |
| • University of Canterbury Friendship City Scholarship (full undergraduate tuition cover) | 2009 |

Graduate Coursework

UIUC (graduate level courses marked by *)

- Intro to Abstract Algebra
- Real Variables
- Real Analysis*
- Probability Theory*
- Control System Theory and Design*
- Random Process*
- Statistical Learning Theory*
- Detection and Estimation Theory*

- Information Theory*
- Communication Network Analysis*
- Game Theory*
- Markov Decision Process and Reinforcement Learning*
- Convex Optimization*
- Algorithm Theory