

# Zhanwen Chen

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## Education

### University of Virginia

PH.D. IN DATA SCIENCE (Advisor: DR. TOM HARTVIGSEN)

Charlottesville, VA

Aug. 2022 - Present

### Vanderbilt University

M.S. IN COMPUTER SCIENCE (THESIS TRACK) (Advisor: DR. MAITHILEE KUNDA)

Nashville, TN

Jan. 2018 - Dec. 2019

- Thesis: Noise Suppression in Ultrasound Beamforming Using Convolutional Neural Networks
- Area: Intelligent Systems

### Vassar College

B.A. IN ECONOMICS; MINOR IN COMPUTER SCIENCE

Poughkeepsie, NY

Aug. 2012 - Dec. 2016

## Research Interests

Large Language Model Agents, Multimodal Representation Learning, Automated Reasoning, Scene Graph Generation

## Publications

### Humanizing the Machine: Proxy Attacks to Mislead LLM Detectors

TIANCHUN WANG, YUANZHOU CHEN, ZICHUAN LIU, ZHANWEN CHEN, HAIFENG CHEN, XIANG ZHANG, WEI CHENG

ICLR, Singapore

Apr 2025

### Through the Theory-of-Mind's Eye: Reading Minds with Multimodal Large Language Models

ZHANWEN CHEN, TIANCHUN WANG, YIZHOU WANG, MICHAL KOSINSKI, YUN FU, XIANG ZHANG, SHENG LI

arXiv

May 2024

### More Knowledge, Less Bias: Unbiasing Scene Graph Generation with Explicit Ontological Adjustment

ZHANWEN CHEN, SAED REZAYI, SHENG LI

WACV, Waikoloa, Hawaii

Jan 2023

### Characterizing Datasets for Social Visual Question Answering, and the New TinySocial Dataset

ZHANWEN CHEN, SHIYAO LI, ROXANNE RASHEDI, XIAOMAN ZI, MORGAN ELROD-ERICKSON, BRYAN HOLLIS, ANGELA MALIAKAL,

IEEE ICDL-EpiRob, Valparaíso, Chile

XINYU SHEN, SIMENG ZHAO, AND MAITHILEE KUNDA

Oct. 2020

### Compact Convolutional Neural Networks for Ultrasound Beamforming

ZHANWEN CHEN, ADAM LUCHIES, BRETT BYRAM

IEEE IUS 2019, Glasgow, UK

Oct. 2019

## Other Conferences

### Towards a New Technology-based Theory of Mind Intervention for Adolescents on the Autism Spectrum

ROXANNE RASHEDI, MANDY ZI, SHIYAO LI, CHRIS KETCHUM, ZHANWEN CHEN, CHRISTINE KIM, TENGYU MA, MAITHILEE KUNDA

Vanderbilt Kennedy Center Science

Day, Nashville, TN

September, 2019

## Research Experience

### RAVE Lab (PI: Dr. Tom Hartvigsen), University of Virginia

GRADUATE RESEARCH ASSISTANT

Charlottesville, VA

Aug. 2024 - Present

- Research multiturn reinforcement learning agent training to large language model agents finetuning
- Experiment
- Implemented a SLURM array pipeline for algorithm dataset hyperparameter tuning with Ray

### Amazon

APPLIED SCIENTIST INTERN

Seattle, WA

May 2024 - Aug 2024

- Worked on applying multimodal large language agents on video understanding
- Implemented multi-instance training pipeline on A100 AWS instances with DeepSpeed
- Developed a multi-turn video chatbot with API endpoints and GUI with Gradio

### Futurewei Technologies Inc.

INTERN, NLP

Santa Clara, CA

May 2023 - Sep 2023

- Research methods for probing and improving the meta-reasoning capabilities of large language models (LLMs)

## RISE Lab (PI: Dr. Sheng Li), University of Georgia & University of Virginia

Athens, GA & Charlottesville, VA

GRADUATE RESEARCH ASSISTANT

Aug. 2021 - May 2024

- Research the vision-and-language problem of Scene Graph Generation and published work at the 2023 IEEE/CVF Winter Conference on Applications of Computer Vision
- Serve as a peer reviewer for journals and conferences, including AAAI, CVPR, ECCV, ACL, TNNLS, TPAMI, and TCSVT
- Train vision and language models in parallel on PyTorch, AWS, GCP, and UVA's Slurm-based university cluster
- Co-developed the lab website <https://riseai.github.io/> with GitHub Actions

## AIVAS Lab (PI: Dr. Maithilee Kunda), Vanderbilt University

Nashville, TN

GRADUATE RESEARCH ASSISTANT (PART-TIME, 10 HRS/WEEK)

Sep. 2018 - Dec. 2019

- Developed an automated crowdsourcing pipeline with Python, HTML/CSS, JavaScript, and AWS Mechanical Turk
- Developed a logic production system to model social question answering using Python and Prolog
- Adapted a systems education environment (Betty's Mind) to teach social skills to high school students on the autism spectrum
- Published work at the 2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)

## BEAM Lab (PI: Dr. Brett Byram), Vanderbilt University

Nashville, TN

GRADUATE RESEARCH ASSISTANT (PART-TIME, 10 HRS/WEEK)

Mar. 2018 - Dec. 2019

- Implemented a machine learning pipeline to suppress noise in ultrasound beamforming in the frequency domain with PyTorch, Matlab, and SciPy
- Developed a novel method to conduct random neural architecture search (NAS) with Prolog constraint satisfaction
- Analyzed neural networks' effect on beamforming and ultrasound imaging quality with Python (Jupyter Notebook)
- Published work at the 2019 IEEE International Ultrasonics Symposium (IUS)

## Work Experience

### University of Virginia

Charlottesville, VA

(INAUGURAL) RESEARCH COMPUTING ASSISTANT

Jan. 2025 - Present

- Develop and host research computing tutorials on training PyTorch models on SLURM-based HPC systems
- Host office hours for debugging environment/code issues for other PhD students

### University of Virginia

Athens, GA

GRADUATE TEACHING ASSISTANT

Aug. 2022 - Dec. 2024

- Co-Developed and taught three Deep Learning courses in PyTorch

### University of Georgia

Athens, GA

GRADUATE TEACHING ASSISTANT

Jan. - May 2022

- Introduction to Data Science: Gave lectures on data processing with Pandas DataFrames and plotting with Matplotlib
- Web Development: Gave lectures on full-stack web development with PHP and NodeJS

### Vanderbilt Institute for Clinical and Translational Research

Nashville, TN

APPLICATION DEVELOPER (FULL-TIME, 40 HRS/WEEK)

Jul. 2020 - Present

- Developed Java, Shell, and SQL applications for data ETL pipelines to support medical NLP and Computer Vision research
- Designed cloud architectures on Microsoft Azure to migrate existing data pipelines

### Basil Systems Inc.

Nashville, TN

FULL-STACK DEVELOPER AND DATA SCIENTIST (FULL-TIME, 40 HRS/WEEK)

Jan. 2020 - Jul. 2020

- Developed a faceted search feature using Python, NodeJS, ReactJS, and AWS ElasticSearch
- Developed a data ingest pipeline with Python, MongoDB, MySQL, and AWS SQS/S3/ElasticSearch
- Used Agile Methodology (Jira Scrum) and CD/CI (CircleCI) checks in GitHub repositories
- Sourced and analyzed public regulatory datasets from the FDA and other HHS agencies with Python (Jupyter Notebook)

### Five Colleges Inc.

Amherst, MA

WEB DEVELOPER (FULL-TIME, 40 HRS/WEEK)

Jun. 2017 - Dec. 2017

- Developed and maintained web applications to support online educational programs
- Developed a Drupal frontend tool using NodeJS to batch create data types and view templates
- Created a DOM crawler using Python and JavaScript to inventory assets

### Pitney Bowes Inc.

Shelton, CT

SOFTWARE ENGINEERING INTERN (FULL-TIME, 40 HRS/WEEK)

Jun. 2016 - Aug. 2016

- Developed an API endpoint to deserialize and store event XML data from PB products around the globe using C# and Microsoft SQL Server
- Developed a configuration application that sets up Wi-Fi connections between PB mail printers and tablets using REST APIs, C#, and Java

### Nestlé Waters North America

Stamford, CT

IS/IT INTERN (FULL-TIME, 40 HRS/WEEK)

Jun. 2014 - Aug. 2014

- Developed a data analytics pipeline that automated sourcing, staging, visualization, and regressions using Microsoft SQL Server, SSIS, and R

## Online Courses & Certificates

**Microsoft**, Microsoft Certified: Azure Fundamentals

Nov 2020

**Udacity**, Natural Language Processing Nanodegree

Jul 2020

**Udacity**, Full-Stack Web Developer Nanodegree

May 2017

## Professional Services

CVPR 2022 **Reviewer**, The Conference on Computer Vision and Pattern Recognition (CVPR)

AAAI 2023 **Reviewer**, AAAI Conference on Artificial Intelligence (AAAI)

ECCV 2022 **Reviewer**, European Conference on Computer Vision (ECCV)

ACL 2022 **Reviewer**, Annual Meeting of the Association for Computational Linguistics (ACL)

SDM 2022 **Reviewer**, SIAM International Conference on Data Mining (SDM)

Since 2021 **Reviewer**, IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

Since 2021 **Reviewer**, IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

## Professional Associations

Since 2014 **Student Member**, The Institute of Electrical and Electronics Engineers (IEEE) - Computer Society (CS)

Since 2016 **Student Member**, Association for the Advancement of Artificial Intelligence (AAAI)

Since 2014 **Student Member**, Association for Computing Machinery (ACM)

## Scholarships, Prizes, and Honors

Sep. 2023 **Recipient**, Microsoft Accelerate Foundation Models Research (\$20,000)

Seattle, WA

Aug. 2019 **Recipient**, Vanderbilt University Graduate Student Travel Grant to Present Research (\$500)

Nashville, TN

Jul. 2016 **Recipient**, Inroads Scholarship Award (\$500)

Hartford, CT

Dec. 2015 **Finalist**, Vassar College Concerto Competition for Soloists

Vassar College

Mar. 2015 **3rd Place**, Area Contest, Toastmasters International Speech Contest

Poughkeepsie, NY

## Extracurricular Activity

### Repre Repo

Medium

EDITOR

08/2019 - Present

- Publish and edit technical articles on my Medium blog publication that focuses on Computer Science and applications

### Vanderbilt Robotics Competition Team

Vanderbilt

MEMBER

01/2018-05/2019

- Implemented autonomous navigation software for our team's competition robot with Java, C++, and ROS

## Programming Skills

PyTorch, NumPy, Python, OpenCV, TensorFlow, Keras, JavaScript, Matlab, C#, Java, Prolog, Shell, SQL, MongoDB, C, C++,  $\text{\LaTeX}$