Zhanwen **Chen**

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Education

University of Virginia — *Charlottesville, VA*
Ph.D. in Data Science (*Advisor*: Dr. Tom Hartvigsen) — *Aug. 2022 - Present*

Vanderbilt University — *Nashville, TN*
M.S. in Computer Science (Thesis Track) (*Advisor*: Dr. Maithilee Kunda) — *Jan. 2018 - Dec. 2019*

Vassar College — *Poughkeepsie, NY*
B.A. in Economics; Minor in Computer Science — *Aug. 2012 - Dec. 2016*

Research Interests

Large Language Model Agents, **LLM Self-Play**, **Automated Scientific Discovery**, **Multimodal Representation Learning**

Publications

Through the Theory-of-Mind's Eye: Reading Minds with Multimodal Large Language Models — *IJCNN, Rome, Italy*
Zhanwen Chen, Tianchun Wang, Yizhou Wang, Michal Kosinski, Yun Fu, Xiang Zhang, Sheng Li — *May 2025*

Humanizing the Machine: Proxy Attacks to Mislead LLM Detectors — *ICLR, Singapore*
Tianchun Wang, Yuanzhou Chen, Zichuan Liu, **Zhanwen Chen**, Haifeng Chen, Xiang Zhang, Wei Cheng — *Apr 2025*

More Knowledge, Less Bias: Unbiasing Scene Graph Generation with Explicit Ontological Adjustment — *WACV, Waikoloa, Hawaii*
Zhanwen Chen, Saed Rezayi, Sheng Li — *Jan 2023*

Characterizing Datasets for Social Visual Question Answering, and the New TinySocial Dataset — *IEEE ICDL-EpiRob, Valparaíso, Chile*
Zhanwen Chen, Shiyao Li, Roxanne Rashedi, Xiaoman Zi, Morgan Elrod-Erickson, Bryan Hollis, Angela Maliakal, Xinyu Shen, Simeng Zhao, and Maithilee Kunda — *Oct. 2020*

Compact Convolutional Neural Networks for Ultrasound Beamforming — *IEEE IUS 2019, Glasgow, UK*
Zhanwen Chen, Adam Luchies, Brett Byram — *Oct. 2019*

Other Conferences

Towards a New Technology-based Theory of Mind Intervention for Adolescents on the Autism Spectrum — *Vanderbilt Kennedy Center Science Day, Nashville, TN*
Roxanne Rashedi, Mandy Zi, Shiyao Li, Chris Ketchum, **Zhanwen Chen**, Christine Kim, Tengyu Ma, Maithilee Kunda — *September, 2019*

Research Experience

Amazon Fulfillment Technology — *Bellevue, WA*
Applied Scientist Intern — *May 2025 - Aug 2025*

- Applied various state-of-the-art image generation (diffusion models) pipelines and adapters on ComfyUI
- Modified a reference-guided inpainting pipeline, Paint-by-Example, to generate realistic merchandise bin images in Amazon warehouses
- Trained and evaluated an image-to-image diffusion pipeline for image domain transfer
- Implemented sophisticated wandb logging of FIDs and generated images during diffusion model training

RAVE Lab (PI: Dr. Tom Hartvigsen), University of Virginia — *Charlottesville, VA*
Research on LLM4RL — *Aug. 2024 - Present*

- Study data efficiency of finetuning LLM models in multi-turn interactive reinforcement learning environments
- Observe LLM-based agent behavior while exploring the ScienceWorld text-based game environment
- Implemented a SLURM array pipeline for agent/algorithm/dataset hyperparameter tuning with Hydra-Submitit sweeps

Amazon Prime Video — *Seattle, WA*
Applied Scientist Intern — *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. *Santa Clara, CA*

Intern, NLP *May 2023 - Sep 2023*

- Research methods for probing and improving the meta-reasoning capabilities of large language models (LLMs)
- Explore combinging graph neural networks (GNNs) with LLMs to improve reasoning capabilities on tasks lacking sufficient context

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*

- Created 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 trainig PyTorch models on SLURM-based HPC systems
- Host offices hours for debugging environment/code issues for other PhD students

University of Virginia *Charlottesville, GA*

Graduate Teaching Assistant *Aug. 2022 - Dec. 2024*

- Co-Developed and taught three Deep Learning courses in PyTorch
- Taught one Deep Learning online course in TensorFlow

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 *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 *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 Scrumban) 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 *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 *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 *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 Publication*
Editor *Aug 2018 - Present*

- Publish technical tutorials on AI/ML systems, deep learning, and software engineering
- Articles have received 360K+ lifetime views and 120K+ reads (2018-2025).
- Most-read tutorials include:
  - Install CUDA/cuDNN for PyTorch & TensorFlow on Ubuntu (176K views, 48K reads)
  - Build PyTorch from Source with CUDA 12.2 (Ubuntu 22.04) (10.6K views, 6.6K reads)
  - Recent AI-focused article: Local LLM Agents with AutoGen and Llama 3 (4.8K views, 2.8K reads)

Vanderbilt Robotics Competition Team *Vanderbilt*
Member *Jan 2018 - May 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++, LaTeX