Zhuokai Zhao

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Education

University of Chicago *Chicago, IL*

Ph.D. in Computer Science. Areas: Deep learning; Interpretable ML; Recommendation System. *Sep, 2018 - Jun, 2024 (expected)*

Johns Hopkins University *Baltimore, MD*

M.S. in Robotics. Areas: Augmented Reality; Path/Motion Planning. *Aug, 2016 - May, 2018*

University of Illinois at Urbana-Champaign *Champaign, IL*

B.S. in Electrical Engineering. Areas: Computer Vision (SLAM); Robot Control. *Jan, 2013 - May, 2016*

Work Experience

Twitch *New York, NY*

Applied Scientist Intern *Jun, 2023 - Aug, 2023*

- Proposed a multi-modal model fusing features from both streaming (vision) and metadata (text) to conduct real-time violent contents moderation.
- Constructed a custom dataset from various sources inside company database to support the training and testing of the proposed approach.

Meta AI *Menlo Park, CA*

MLE Intern and Part-time Student Researcher *Jun, 2022 - Nov, 2022*

- Proposed *User-Centric Ranking*, a new formulation in recommendation system that trains better-converged models on substantially larger datasets.
- Published our findings and results in paper *Breaking the Curse of Quality Saturation with User-Centric Ranking*. Accepted to KDD 2023.

Kitware Inc. *Clifton Park, NY*

R&D Intern *Jun, 2019 - Sep, 2019*

- Developed new functions in open-source libraries including the Visualization Toolkit (VTK), Open Chemistry and Tomviz.

JD.COM Silicon Valley Research Center *Mountain View, CA*

Research Intern *May, 2018 - Sep, 2018*

- Developed body-garment registration (virtual try-on) using both rigid and non-rigid (collision-detection based optimization) point cloud alignments.
- Developed in-house simulation engine based on ARCSim to generate dynamic body-garment animations.

Siemens Corporate Research *Princeton, NJ*

Research Intern *May, 2017 - Aug, 2017*

- Filed US patent *System and method for assisted patient positioning* that reconstructs patient in real-time from 2D stream with limited field of view.
- Integrated AR (Microsoft HoloLens) with existing platform to support interactive visualizations.

Publications

(1) Zhuokai Zhao, Yang Yang, Wenjie Hu, and Shuang Yang. Breaking the curse of quality saturation with user-centric ranking. In *29th SIGKDD Conference on Knowledge Discovery and Data Mining*, 2023

(2) Zhuokai Zhao, Takumi Matsuzawa, William Irvine, Michael Maire, and Gordon L Kindlmann. Evaluating machine learning models with nero: Non-equivariance revealed on orbits. *arXiv preprint arXiv:2305.19889*, 2023

(3) Zhuokai Zhao, Takumi Matsuzawa, William Irvine, Michale Maire, and Gordon L Kindlmann. Utilizing Both Past and Future: Multi-Frame Memory Based Network In Solving Particle Image Velocimetry. *Under review*, 2023

(4) Zhuokai Zhao, Yao-Jen Chang, Ruhan Sa, Kai Ma, Jianping Wang, Vivek Kumar Singh, Terrence Chen, Andreas Wimmer, and Birgi Tamersoy. System and method for assisted patient positioning, September 22 2020. US Patent 10,783,655

(5) Christopher J. Harris, Patrick Avery, Peter Ercius, Alessandro Genova, Marcus D. Hanwell, and Zhuokai Zhao. Openchemistry/stempy: stable version. 2020

(6) Francis X Creighton, Mathias Unberath, Tianyu Song, Zhuokai Zhao, Mehran Armand, and John Carey. Early feasibility studies of augmented reality navigation for lateral skull base surgery. *Otology & Neurotology*, 41(7):883–888, 2020

(7) Zhuokai Zhao, Sing Chun Lee, Javad Fotouhi, Long Qian, and Nassir Navab. Head-mounted display integration for orthopedic surgery. 2017

Other Projects

Trajectory Planning and Control for Nonholonomic Robot *Baltimore, MD*

Autonomous Systems, Control and Optimization (ASCO), JHU *Jan, 2018 - May, 2018*

- Developed new path planning, trajectory generation and tracking algorithms based on RRT*, polynomial fitting and dynamic feedback linearization.
- Simulated a non-holonomic mobile robot (EduMIP) operating in environments with obstacles in both Matlab and ROS Gazebo.
- Project hosted at *https://github.com/zhuokaizhao/Planning-and-Control-for- Nonholonomic-Robot-Among-Obstacles*

Skills

Programming Python (PyTorch, TensorFlow, NumPy, PySide, and etc.), C/C++, SQL (Redshift, Presto), JavaScript (Svelte, React), CUDA.

Miscellaneous Linux, Git, LaTeX, Shell (Bash/Zsh), CMAKE.