Zipeng Fu

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Education

Stanford University 09/2022 –
PhD in Computer Science

Carnegie Mellon University (CMU) 8/2020 – 12/2021
Master of Science in Machine Learning
- Advised by Prof. Deepak Pathak and Prof. Jitendra Malik; GPA: 3.93 / 4.00
- Advanced courses: Advanced Machine Learning Theory, Graphical Models, Convex Optimization, ML with Large Datasets, Embodied Action and Perception, Learning for 3D Vision

University of California, Los Angeles (UCLA) 9/2016 – 6/2020
Bachelor of Science in Computer Science and Engineering
Bachelor of Science in Applied Mathematics
- Advised by Prof. Mathieu Bauchy, Prof. Song-Chun Zhu and Prof. Weinan Zhang; GPA: 3.801 / 4.000

Research Interests

- Machine Learning, Robotics, Computer Vision

Publications (available at https://zipengfu.github.io/)

Learning a Unified Policy for Whole-body Control of Manipulation and Locomotion CoRL 2022
Z. Fu*, X. Chen*, D. Pathak (Oral, nominated for Best Paper)

Coupling Vision and Proprioception for Navigation of Legged Robots CVPR 2022
Z. Fu*, A. Kumar*, A. Agarwal, H. Qi, J. Malik, D. Pathak (Best Paper at Multimodal Leanring Workshop)

Minimizing Energy Consumption Leads to the Emergence of Gaits in Legged Robots CoRL 2021
Z. Fu, A. Kumar, J. Malik, D. Pathak

RMA: Rapid Motor Adaptation for Legged Robots RSS 2021
A. Kumar, **Z. Fu**, D. Pathak, J. Malik

Reducing Overestimation of Value Mixing in Cooperative Deep Multi-Agent Reinforcement Learning ICAART 2020
Z. Fu, Q. Zhao, W. Zhang

Multi-Modal Imitation Learning in Partially Observable Environments Preprint 2020
Z. Fu, M. Liu, M. Zhou, W. Zhang

Emergence of Theory of Mind Collaboration in Multi-Agent Systems NeurIPS 2019 Workshop
L. Yuan, **Z. Fu**, L. Zhou, K. Yang, S.-C. Zhu

Emergence of Pragmatics from Referential Game between Theory of Mind Agents NeurIPS 2019 Workshop
L. Yuan, **Z. Fu**, J. Shen, L. Xu, J. Shen, S.-C. Zhu

Machine Learning for Glass Science and Engineering: A Review Journal of Non-Crystalline Solids 2019
H. Liu, **Z. Fu**, K. Yang, X. Xu, and M. Bauchy

Adversarial Attack Against Scene Recognition System for Unmanned Vehicles ACM Turing Celebration Conference 2019
X. Wang, M. Wen, J. Li, **Z. Fu**, R. Lu, and K. Chen (Best Paper Runner-up Award)

Energy Theft Detection with Energy Privacy Preservation in the Smart Grid IEEE Internet of Things Journal 2019
D. Yao, M. Wen, X. Liang, **Z. Fu**, K. Zhang, and B. Yang

Experiences

IRIS Lab, Stanford University Advisors: Prof. Chelsea Finn
Graduate Student Researcher

- Leading research on autonomous learning for long-horizon manipulation

Robotics Institute, Carnegie Mellon University Advisors: Prof. Deepak Pathak and Prof. Jitendra Malik
Graduate Student Researcher 9/2020 – Current

- Led research on robot learning and Sim2Real transfer with a focus on mobile robots
- Led research on learning synergy among vision, planning, and control
- Led research on learning robust domain adaptation for legged locomotion

Center for Vision, Cognition, Learning and Autonomy (VCLA), UCLA Advisor: Prof. Song-Chun Zhu (On Leave)
Undergraduate Student Researcher 6/2019 – 10/2019

- Researched on deep reinforcement learning methods for collaboration & communication in multi-agent environments
- Co-developed And-Or Graph Library in C++ for incremental structural learning
- Led TensorFlow-based reproduction of state-of-the-art deep reinforcement learning methods for benchmarking
- Researched on unsupervised Monte Carlo tree search of stochastic grammars for natural language processing
- Supervised recruitment process of master and undergrad students

Physics of Amorphous and Inorganic Solids Lab (PARISlab), UCLA Advisor: Prof. Mathieu Bauchy
Undergraduate Student Researcher 3/2018 – 1/2019

- Led research on machine learning for material science
- Developed efficient empirical parametrizations based on neural networks and Gaussian process regression of interatomic potentials of several glass materials
- Developed Python package of derivative-free optimization for LAMMPS simulation
- Supervised enrollment process of undergrad student researchers and PhD positions in "Machine Learning for Material Science"

Apex Lab, UCLA Advisor: Prof. Weinan Zhang
Undergraduate Student Researcher 9/2019 – 12/2019

- Led research on multi-modal imitation learning for MuJoCo locomotion tasks in partially observable environments
- Led research on StarCraft agents' cooperation by multi-agent reinforcement learning

Professional Services

Robotics: reviewer of CoRL (2022), RA-L (2022), IROS (2022)
Misc.: reviewer of IEEE IoT Journal (2020, 2022)

Software Projects

And-Or Graph Library (C++11 & Boost) [https://github.com/MarkFzp/and-or-graph-lib] VCLA, UCLA

- *a machine learning library used as the code framework for graduate course CS266B (Stat. Computing and Inference) at UCLA*
- *used by about 50 people in the lab*
- 2nd major contributor, 6000 lines of C++, co-led the 3-month full-time software development
- Implemented, optimized and debugged several learning, search, parsing and graph algorithms, including Monte Carlo tree search, greedy search, beam search, backtracking, Metropolis-Hastings algorithms, Earley parser, and graph compression
- Used C++ techniques like templates, smart pointers, multi-index containers, functors and self-defined hashing
- Boosted the model performance from 0.64 to 0.80 in terms of F1 score

Mind Palace (Java & SQLite) [https://github.com/KeplerC/Mind-Palace] LA Hacks 2018

- *an Android app to help people with Alzheimer's diseases*
- Built by using Google Cloud's Vision and Natural Language pre-train models through REST APIs to search
- Sorted related images and texts stored on the device given photos and keywords based on similarity score

Honors

2022	Stanford Graduate Fellowship (approximately 100 fellows every year)
2022	Hewlett Packard Fellowship (declined)
2020	Cum Laude, UCLA
2019	ACM TURC'19 Best Paper Runner-up Award
2014	Bronze Medal, British Mathematical Olympiad

Technical Skills

- C++, Python, Bash, C
- PyTorch, TensorFlow, Numpy, Git, ROS, IsaacGym, MuJoCo, PyBullet, RaiSim