William Macke

PH.D. STUDENT · RESEARCH ASSISTANT

✉ wmacke@cs.utexas.edu | ⌂ williammacke.github.io | williammacke

Education

University of Texas at Austin
Austin, TX

MASTERS IN COMPUTER SCIENCE
2023 (Anticipated)

· Advisor: Peter Stone
· GPA: 4.0

University of Tulsa
Tulsa, OK

B.S. IN COMPUTER SCIENCE, MATHEMATICS, COMPUTER SIMULATION AND GAMING
2019

· Summa Cum Laude
· GPA: 4.0

Research Interests

◇ Ad Hoc Teamwork
◇ Multi-agent Reinforcement Learning

Publications

◇ Reuth Mirsky, Ignacio Carlucho, Arrasy Rahman, Elliot Fosong, **William Macke**, Mohan Sridharan, Peter Stone, Stefano V. Albrecht, "A Survey of Ad Hoc Teamwork Research", *EUMAS, 2022*

◇ Jiaxun Cui, **William Macke**, Harel Yedidsion, Aastha Goyal, Daniel Urielli, Peter Stone, "Scalable Multiagent Driving Policies For Reducing Traffic Congestion", *AAMAS, 2021*

◇ **William Macke**, Reuth Mirsky and Peter Stone, "Expected Value of Communication for Planning in Ad Hoc Teamwork", *AAAI 2021*

◇ Garret Bingham*, **William Macke***, Risto Miikkulainen, "Evolutionary Optimization of Deep Learning Activation Functions", *GECCO, 2020*

◇ Reuth Mirsky, **William Macke**, Andy Wang, Harel Yedidsion, and Peter Stone., "A penny for your thoughts: The value of communication in ad hoc teamwork.", *IJCAI, 2020*

◇ Zhuoshu Li, Kelsey Lieberman*, **William Macke*** Sofia Carrillo, Chien-Ju Ho, Jason Wellen, and Sanmay Das, "Incorporating compatible pairs in kidney exchange: A dynamic weighted matching model.", *ACM Conference on Economics and Computation, 2019*

◇ Jon Bolin, Chad Crawford, **William Macke**, Sam Beckman and Sandip Sen, "Gesture Based Control of Autonomous UAVs", *AAMAS extended abstract, 2017*

Non-Archival

◇ Yulin Zhang, **William Macke**, Jiaxun Cui, Daniel Urieli, and Peter Stone., "Learning a Robust Multiagent Driving Policy for Traffic Congestion Reduction", *Adaptive and Learning Agents Workshop at AAMAS (ALA), 2022*

◇ Jennifer Suriadinata, **William Macke**, Reuth Mirsky, and Peter Stone, "Reasoning about Human Behavior in Ad Hoc Teamwork", *Adaptive and Learning Agents Workshop at AAMAS (ALA), 2021*

◇ **William Macke**, Reuth Mirsky and Peter Stone, "Expected Divergence Point of Plans in Ad Hoc Teamwork", *NeurIPS Workshop on Cooperative AI (CoopAI), 2020*

◇ Jiaxun Cui, **William Macke**, Aastha Goyal, Harel Yedidsion, Daniel Urieli and Peter Stone, "Multiagent

*Equal contribution

Driving Policy for Congestion Reduction in a Large Scale Scenario", *NeurIPS Workshop on Machine Learning for Autonomous Driving, 2020*

◇ **William Macke**, Reuth Mirsky and Peter Stone, "Query Content in Sequential One-shot Multi-Agent Limited Inquiries when Communicating in Ad Hoc Teamwork", *Presented at the ICAPS Workshop on Distributed Multi-Agent Planning (DMAP), 2020*

◇ Reuth Mirsky, **William Macke**, Andy Wang, Harel Yedidsion, and Peter Stone., "Communication in Ad Hoc Teamwork", *Presented at the AAAI Workshop on Planning and Intent Recognition (PAIR), 2020*

◇ Nathaniel Beckemeyer, **William Macke**, and Sandip Sen, "Stable Configurations with (Meta)Punishing Agents", *Presented at the AAMAS workshop on Multi-Agent Based Simulations (MABS), 2017*

Research Experience

University of Texas at Austin
Austin, TX

GRADUATE RESEARCHER
August 2019–Present

· I am performing research toward the completion of a masters in the Learning Agents Research Group at UT Austin, under the supervision of my advisor, Professor Peter Stone.

Sony AI
Remote

INTERN
Summer 2021

· Worked as an intern in AI and Machine Learning for Sony AI in the summer of 2021.

Washington University in Saint Louis
Saint Louis, MO

NSF REU STUDENT
Summer 2018

· Research Opportunities for Undergraduates (REU) consist of a number of sites funded by the NSF that allow undergraduate students to work with professors on research. I performed research and development of online matching algorithms for kidney exchange under the supervision of Professors Sanmay Das and Chien-Ju Ho at Washington University in Saint Louis.

University of Tulsa
Tulsa, OK

TULSA UNDERGRADUATE RESEARCH CHALLENGE SCHOLAR
Summer 2016/2017

· TURC is a program at the University of Tulsa where undergraduate students work on research under professors during the summer. I performed research on several projects involving multi-agent systems under the supervision of Professor Sandip Sen.

Selected Software Projects

HTTPS://GITHUB.COM/WILLIAMMACKE/KMEANS (kmeans)

· Project demonstrates KMeans Clustering Algorithm graphically given 2 dimensional data as input.

TEMPLATEFLOW

· Project performs basic ML optimization using symbolic differentiation through the c++ template engine.

LIGHTGCN

· Lightweight implementation of Graph Convlutional Neural Networks using cusparse library for class project.

Honors & Awards

2015   **Awardee**, University of Tulsa Presidential Scholarship (covering all tuition and living expenses)
2017   **Awardee**, AAMAS Multi-Agent Based Simulations Workshop Most Visionary Paper Award

Skills

Languages	C99 and C++17, Python2 and Python3, Java, R, Haskell, Bash, LaTeX
Libraries and Tools	TensorFlow, NumPy, SciPy, Pandas, SciKit-Learn, OpenCV, Eigen
Misc. Engineering	Git, CMake, GNU Make