Manolis Chiou | CV

Research Fellow in Robotics
Extreme Robotics Lab, University of Birmingham
m.chiou@bham.ac.uk
manolis.chiou.com - Google Scholar - LinkedIn - Twitter

Research Profile

I aim to develop AI for effective and fluent Human-Robot Teaming using the complementing competencies of robot AI and humans. My research is cross-disciplinary, drawing on methods from AI, robotics, human factors, and cognitive science. I emphasise application-driven research on Human-Robot Teaming and Human-Robot Interaction in safety-critical and hazardous environments via variable autonomy paradigms where humans collaborate with intelligent robots capable of dynamically self-regulating their level of autonomy.

Keywords: Human-Robot Teaming, Human-Robot Interaction, Variable Autonomy, Mixed-Initiative, Shared Control, robotics in hazardous environments

Employment

Research Fellow (Senior Postdoc) — 2020 – Present
University of Birmingham
Extreme Robotics Lab (PI: Rustam Stolkin)
Leading the Human-Robot Teaming group
Research in Variable Autonomy, Human-Robot Teaming, HRI

Research Fellow (Postdoc) — 2018 – 2019
National Centre of Nuclear Robotics, University of Birmingham
Extreme Robotics Lab (PI: Rustam Stolkin)
Research in Variable Autonomy, Human-Robot Teaming, HRI

Research Scientist — 2017 – 2018
Greek Army Center of Informatics
Part of conscript military service

Research Assistant — 2017 (5 months)
University of Birmingham
Extreme Robotics Lab (PI: Rustam Stolkin)
Research in Variable Autonomy, Human-Robot Teaming, HRI

Research Assistant — 2013 (6 months)
School of Psychology, University of Birmingham,
PI: Dietmar Heinke
Research in Brain-Computer-Interfaces using EEG signals to move robots

Education

PhD in Robotics 2017
University of Birmingham

MSc in Computational Intelligence 2012
University of Sheffield

BEng in Automation Engineering 2011
University of West Attica

Teaching

Guest Lecturer 2018
Artificial Intelligence MSc joint course between departments
University of West Attica

Teaching Assistant 2014 – 2017
Robot Programming undergraduate course
School of Computer Science, University of Birmingham

Lead Organiser and Lecturer 2015
Robotics Hack Day one-day workshop
School of Computer Science, University of Birmingham

Supervision & Mentoring

PhD Students' Supervision 2020 – Present
Principal supervisor of 3 PhD students
Co-supervisor (faculty): Prof. Rustam Stolkin

Students, Interns, and Research Assistants 2014 – Present
Directly supervised 13 MSc and undergraduate students
From the Uni. Of Birmingham and various institutions across the world
Erasmus+, research visits, KONICOF internships
Completed Internships, thesis, and research projects, both remotely and in person

Leading the Birmingham Autonomous Robotics Club 2014 – 2016
A robotics club where students were getting hands-on experience in using state-of-the-art robots. This was done through student projects, workshops, and participating in robotic competitions.

Grants

Nuclear Decommissioning Authority (NDA) 2023 PhD Bursaries 2023
Title: "Variable autonomy control paradigms applied to mobile manipulator decommissioning robots"
PI: Prof. Rustam Stolkin
Role Manolis Chiou: CO-I/Co-supervisor, co-author
Funding: £93,750

NCNR Flexible Partnership Funding 2019 – 2020
Title: "Haptic-guided shared control of mobile manipulation task"
PI: Dr Amir Ghalamzan
Role Manolis Chiou: CO-I, co-author
Funding: £125,730

Institutional Leadership & Citizenship (UoB)

Organising the Biweekly Extreme Robotics Lab seminars 2020 – 2022
Talks by internal and external prestigious speakers
Brainstorming and discussion sessions

PhD Assessment Panel Member (Regular) 2019 – Present
Assessing PhD students' yearly progress as a formal requirement from the school and Extreme Robotics Lab

Interview and Hiring Assessment Panel Member (Regular) 2019 – Present
Hiring of new postdoctoral researchers and PhD students in the Extreme Robotics Lab

Owner and Maintainer of the Extreme Robotics Lab's GitHub 2019 – Present
https://github.com/uob-erl

Leading Ethics Applications 2018 – Present
Leading ethics applications to Uni. Of Birmingham ethics committee for the Extreme Robotics Lab projects that include human participants

Line Manager for the Human-Robot Teaming Group 2018 – Present
Line manager, admin, and paperwork responsibilities
Indicative responsibilities: liaising with admissions and graduate school, casual work paperwork and supervision, liaising for VISA checks, writing ATAS

Academic Leadership & Service

Workshops
Lead organiser of the “Variable Autonomy for human-robot Teaming (VAT)” workshop at ACM/IEEE HRI 2023

Editing
Topic editor on “Variable Autonomy for Human-Robot Teaming”, Frontiers in Robotics and AI journal, 2023

Program Committee
AAMAS 2023, ECAI 2023

Conference Reviewing
AAMAS, IEEE/RSJ IROS, IEEE ICRA, ACM/IEEE HRI, IEEE SMC, IEEE ROMAN

Journal Reviewing
IEEE Robotics & Automation Letters, ACM Transactions on Human-Robot-Interaction, IEEE Transactions on Human-Machine Systems

Awards & Honours

Finalist, Best Paper Award in IEEE/RSJ IROS 2022
In safety, security, and rescue robotics category
Paper: “Robot-Assisted Nuclear Disaster Response: Report and Insights from a Field Exercise.”

Finalist, Best Paper Award in IEEE/RSJ IROS 2016
In cognitive robotics category
Paper “Experimental analysis of a variable autonomy framework for controlling a remotely operating mobile robot.”

Won RoCKIn@Home Robotics Challenge Prizes 2015
Leading Uni. of Birmingham robotics club
Best team in functionality benchmark “Object Perception”
Third overall place in the competition

Won RoCKIn@Home Robotics Challenge Prizes 2014
Leading Uni. of Birmingham robotics club
Best team in task benchmark ‘‘Getting to know my home”
Best team in task benchmark “Welcoming Visitors”
Second overall place in the competition

Invited Talks and Panels

“Meaningful Shared Control” 2023
Invited talk and expert panellist at the “Trusted AI - the Future of Creating Ethical and Responsible AI systems” workshop organised by VISION EU project consortium.

“Towards Transdisciplinary Human-Robot Teaming” 2023
Department of Computing Science, Umea University

“Human-Robot Teaming in Remotely Operated Robotic Systems” 2022
Responsible AI group
Department of Computing Science, Umea University

“Towards Mixed-Initiative Control in Remotely Operated Robots” 2021
Cooperative Systems Group
Institute of Control Systems, Karlsruhe Institute of Technology

“Towards Robotic Systems that can Regulate their Autonomy Level” 2019
Frontiers of robotics research seminar series
Lincoln Centre for Autonomous Systems Research, University of Lincoln

“Variable Autonomy in Mobile Robots” 2016
Matsuno Lab
School of Engineering, Kyoto University

Outreach Activities

“Robot Lab Live” for UK Festival of Robotics 2021
Extreme Robotics Lab organiser and delivered one of the talks
Live streaming showcasing labs across the UK by EPSRC UK Robotics and Autonomous Systems

“Robotics masterclasses” for the Royal Institution of Great Britain 2015 – 2016
Organised and delivered five talks and classes to teach and promote robotics and science in schools across the UK

Work Experience Workshops 2015 –2016
Organised and delivered two workshops to give high school students a taste of Computer Science. Hosted by the University of Birmingham.

General Science Outreach 2010 – Present
Showcased robotics in a plethora of science outreach events
Among others: I2fest; Athens Digital; University of Birmingham open days; BBC′s “Make it Digital” and others

Selected Publications

[J1] Ramesh, A., Stolkin, R., & **Chiou, M.** (2022). Robot Vitals and Robot Health: Towards Systematically Quantifying Runtime Performance Degradation in Robots Under Adverse Conditions. IEEE Robotics and Automation Letters (RA-L), 7(4), 10729–10736. https://doi.org/10.1109/LRA.2022.3192612

[J2] **Chiou, M.**, Hawes, N., & Stolkin, R. (2021). Mixed-initiative Variable Autonomy for Remotely Operated Mobile Robots. ACM Transactions on Human-Robot Interaction(T-HRI), 10(4), 1–34. https://doi.org/10.1145/3472206

[C1] Ramesh A., Braun C. A., Ruan, T., Rothfuß S., Hohmann S., Stolkin R., **Chiou M.** (2023). Experimental Evaluation of Model Predictive Mixed-Initiative Variable Autonomy Systems Applied to Human-Robot Teams. IEEE International Conference on Systems, Man, and Cybernetics (SMC).

[C2] **Chiou, M.**, Epsimos, G.-T., Nikolaou, G., Pappas, P., Petousakis, G., & Stefan, M. (2022). Robot-Assisted Nuclear Disaster Response: Report and Insights from a Field Exercise. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). **Finalist, best paper award.** https://doi.org/10.1109/IROS47612.2022.9981881

[C3] Rothfus, S., **Chiou, M.**, Inga, J., Hohmann, S., & Stolkin, R. (2022). A Negotiation-Theoretic Framework for Control Authority Transfer in Mixed-Initiative Robotic Systems. IEEE International Conference on Systems, Man, and Cybernetics (SMC), 1, 921–928. https://doi.org/10.1109/SMC53654.2022.9945196

[C4] Ruan, T., Wang, H., Stolkin, R., & **Chiou, M.** (2022). A Taxonomy of Semantic Information in Robot-Assisted Disaster Response. IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR). https://doi.org/10.1109/IROS47612.2022.9981881

[C5] Panagopoulos, D., Petousakis, G., Ramesh, A., Ruan, T., Nikolaou, G., Stolkin, R., & **Chiou, M.** (2022). A Hierarchical Variable Autonomy Mixed-Initiative Framework for Human-Robot Teaming in Mobile Robotics. IEEE International Conference on Human-Machine Systems (ICHMS). https://doi.org/10.1109/ICHMS56717.2022.9980686

[C6] Panagopoulos, D., Petousakis, G., Stolkin, R., Nikolaou, G., & **Chiou, M**. (2021). A Bayesian-Based Approach to Human Operator Intent Recognition in Remote Mobile Robot Navigation. IEEE International Conference on Systems, Man, and Cybernetics (SMC), 125–131. https://doi.org/10.1109/SMC52423.2021.9658942

[C7] Chatzithanos, P., Nikolaou, G., Stolkin, R., & **Chiou, M.** (2021). Fessonia: A Method for Real-Time Estimation of Human Operator Workload Using Behavioural Entropy. IEEE International Conference on Systems, Man, and Cybernetics (SMC), 1325–1331. https://doi.org/10.1109/SMC52423.2021.9658880

[C8] **Chiou, M.**, McCabe, F., Grigoriou, M., & Stolkin, R. (2021). Trust, Shared Understanding and Locus of Control in Mixed-Initiative Robotic Systems. IEEE International Conference on Robot & Human Interactive Communication (RO-MAN), 684–691. https://doi.org/10.1109/RO-MAN50785.2021.9515476

[C9] **Chiou, M.**, Talha, M., & Stolkin, R. (2019). Learning effects in variable autonomy human-robot systems: how much training is enough? IEEE International Conference on Systems, Man and Cybernetics (SMC), 720–727. https://doi.org/10.1109/SMC.2019.8914558

[C10] **Chiou, M.**, Stolkin, R., Bieksaite, G., Hawes, N., Shapiro, K. L., & Harrison, T. S. (2016). Experimental analysis of a variable autonomy framework for controlling a remotely operating mobile robot. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 3581–3588. https://doi.org/10.1109/IROS.2016.7759527 **Finalist, best paper award.**