

Charlie Street

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Google Scholar

Research Interests: Planning Under Uncertainty; Multi-Robot Coordination; Formal Methods for Robotics; Continuous-Time and Non-Stationary Planning Models

Research Positions

- **University of Birmingham** **Jan 2023 - Present**
 - Research Fellow in Computer Science
- **Oxford Robotics Institute, University of Oxford** **July 2022 - Dec 2022**
 - Postdoctoral Research Assistant in AI for Autonomous Systems

Education

- **DPhil in Engineering Science at the University of Oxford** **2018-2022**
 - Thesis: *Multi-Robot Coordination Under Temporal Uncertainty*
 - Supervisors: Nick Hawes, Bruno Lacerda, and Manuel Mühlig
- **MSci in Computer Science at the University of Birmingham** **2014-2018**
 - Thesis: *IntelliJam: An Intelligent Agent for Musical Improvisation*
 - Supervisor: Peter Tino

Contribution to Projects

- **CONVINCE (UKRI grant no. 10042096)** **2023-Present**
 - Context-Aware Verifiable and Adaptive Dynamic Deliberation
 - Working on WP3: Task and Motion Planning in Dynamic Environments
- **First Fleet (with the University of Lincoln)** **2020-2021**
 - Deploying Multi-Robot Systems in Agricultural Environments
 - Implemented Multi-Robot Planning System
- **Team ORIon (RoboCup Competition Team)** **2019-2021**
 - Deploying Service Robots in Domestic Environments
 - Led Team ORIon and Task-Level Planning Sub-Team

Supervision

- **Stefano Bernagozzi, PhD (with M. Mansouri and L. Natale)** **2023-Present**
 - Topic: *Behaviour Trees for Robotics*
- **Weijian Zhang, PhD (with M. Mansouri)** **2023-Present**
 - Topic: *Human-Aware Formation Control for Multi-Robot Systems*
- **Rushikesh Bagul, Master's (with M. Mansouri)** **2023**
 - Topic: *Statistical Model Checking for Behaviour Trees*
- **Alex Rutherford, Master's (with B. Lacerda and N. Hawes)** **2021-2022**
 - Topic: *Multi-Agent Reinforcement Learning with a Model-Based Simulator*
- **Yifeng Wei, Master's (with B. Lacerda)** **2020-2021**
 - Topic: *Trial-Based Search for Generalised Stochastic Petri Nets*
- **James Wheadon, Master's (with N. Hawes)** **2019-2020**
 - Topic: *Multi-Agent Path Finding in Continuous Time*
- **Han Zhou, Master's (with B. Lacerda)** **2018-2019**

- Topic: *Auctioning for Multi-Robot Coordination*
- **Tom Liu, Intern (with N. Hawes)** **2021**
 - Topic: *Generalising Duration Distributions Across Topological Maps*
- **Clarissa Costen, Intern (with N. Hawes)** **2019**
 - Topic: *Continuous-Time Markov Chains for Shared Autonomy*

Outreach

- **Led Robot Demonstrations at Goodwood Festival of Speed** **2021**
- **Led Robot Demonstration at University Open Day** **2019**
- **Assisted with Robot Demonstration at Blenheim Palace** **2019**

Reviewing

- **Journal Reviewing:** IEEE Transactions on Robotics (T-RO); IEEE Robotics and Automation Letters (RA-L).
- **Conference Programme Committee:** AAAI Conference on Artificial Intelligence (AAAI) - 2023, 2024; International Conference on Autonomous Agents and Multiagent Systems (AAMAS) - 2023.
- **Conference Reviewing:** AAAI Conference on Artificial Intelligence (AAAI) - 2020; International Conference on Autonomous Agents and Multiagent Systems (AAMAS) - 2020, 2021; International Joint Conference on Artificial Intelligence (IJCAI) - 2019; International Conference on Automated Planning and Scheduling (ICAPS) - 2020-2022; Conference on Neural Information Processing Systems (NeurIPS) - 2020, 2021; IEEE International Conference on Robotics and Automation (ICRA) - 2020; IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) - 2021-2023; International Conference on Principles of Knowledge Representation and Reasoning (KR) - 2021; European Conference on Mobile Robots (ECMR) - 2019; Advances in Cognitive Systems - 2020; Robotics: Science and Systems (RSS) - 2023.
- **Workshop Programme Committee:** Workshop on Planning and Robotics (PlanRob) @ ICAPS 2023.

Talks

- **Multi-Robot Planning Under Uncertainty**
 - Tutorial at AAMAS, London May 2023
 - Guest Lecture for MSc Advanced Robotics, University of Birmingham April 2023
- **Congestion-Aware Policy Synthesis for Multi-Robot Systems**
 - ICAPS Journal Presentation Track June 2022

Publications

- [1] Charlie Street, Masoumeh Mansouri, and Bruno Lacerda. “Formal Modelling for Multi-Robot Systems Under Uncertainty”. In: *Current Robotics Reports* 4.3 (2023), pp. 55–64.
- [2] Weijian Zhang, Charlie Street, and Masoumeh Mansouri. “Multi-Formation Planning and Coordination for Object Transportation”. In: *Proceedings of the European Conference on Mobile Robots (ECMR)*. 2023.
- [3] Charlie Street, Sri Sadhan Jujjavarapu, Michael Nai-An Chen, Sanjoy Paul, and Nick Hawes. “Analysing the Effects of Congestion on Hybrid Order Picking Systems using a Discrete-Event Simulator”. In: *Proceedings of the 18th International Conference on Intelligent Autonomous Systems*. 2023.
- [4] Bruno Lacerda, Anna Gautier, Alex Rutherford, Alex Stephens, Charlie Street, and Nick Hawes. “Decision-Making under Uncertainty for Multi-Robot Systems”. In: *AI Communications* 35.4 (2022), pp. 433–441.

- [5] Charlie Street, Bruno Lacerda, Michal Staniaszek, Manuel Mühlig, and Nick Hawes. “Context-Aware Modelling for Multi-Robot Systems Under Uncertainty”. In: *Proceedings of the 21st International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2022.
- [6] Charlie Street, Sebastian Pütz, Manuel Mühlig, Nick Hawes, and Bruno Lacerda. “Congestion-Aware Policy Synthesis for Multirobot Systems”. In: *IEEE Transactions on Robotics* 38.1 (2022), pp. 262–280.
- [7] Charlie Street, Bruno Lacerda, Manuel Mühlig, and Nick Hawes. “Multi-Robot Planning Under Uncertainty with Congestion-Aware Models”. In: *Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2020.