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 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 T-RO; IEEE RA-L.
- **Conference Programme Committee:** AAAI - 2023, 2024; AAMAS - 2023.
- **Conference Reviewing:** AAAI - 2020; AAMAS - 2020, 2021; IJCAI - 2019; ICAPS - 2020-2022; NeurIPS - 2020, 2021; ICRA - 2020, 2024; IROS - 2021-2023; KR - 2021; ECMR - 2019; ACS - 2020; RSS - 2023.
- **Workshop Programme Committee:** 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.