

# Charlie Street

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## Research

I am a postdoctoral research assistant in the Goal-Oriented Autonomous Long-Lived Systems (GOALS) Lab at the Oxford Robotics Institute, University of Oxford. My current research is focused on the robust continuous-time coordination of multi-robot systems under uncertainty. To achieve this, I apply planning, model checking, and task allocation techniques to continuous-time models of multi-robot behaviour.

### Research Interests

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

## Research Positions

- **Oxford Robotics Institute, University of Oxford**      **July 2022 - Present**
  - 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
  - Thesis Submitted. Date of Viva: 1st September 2022
- **MSci in Computer Science at the University of Birmingham**      **2014-2018**
  - Thesis: *IntelliJam: An Intelligent Agent for Musical Improvisation*
  - Supervisor: Peter Tino
  - Degree Class: First Class with Honours (Average: 92%)
  - Awarded Undergraduate Distinguished Dissertation Prize 2018
  - Awarded Best in Degree Programme 2014/15, 2015/16, 2016/17, and 2017/18
  - Awarded IBM Team Project Prize 2015/16
  - Awarded BCS Prize for Best in Year 2014/15

## Projects

- **First Fleet**      **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

### Fourth Year Projects

- **Alex Rutherford (with Bruno Lacerda and Nick Hawes)** **2021-2022**
  - Topic: *Multi-Agent Reinforcement Learning with a Model-Based Simulator*
- **Yifeng Wei (with Bruno Lacerda)** **2020-2021**
  - Topic: *Trial-Based Search for Generalised Stochastic Petri Nets*
- **James Wheadon (with Nick Hawes)** **2019-2020**
  - Topic: *Multi-Agent Path Finding in Continuous Time*
- **Han Zhou (with Bruno Lacerda)** **2018-2019**
  - Topic: *Auctioning for Multi-Robot Coordination*

### Internships

- **Tom Liu (with Nick Hawes)** **2021**
  - Topic: *Generalising Duration Distributions Across Topological Maps*
- **Clarissa Costen (with Nick 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**

## Publications

- [1] 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.
- [2] Charlie Street, Sebastian Pütz, Manuel Mühlig, Nick Hawes, and Bruno Lacerda. “Congestion-Aware Policy Synthesis for Multirobot Systems”. In: *IEEE Transactions on Robotics* (2021).
- [3] 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.