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

- Multi-Robot Coordination

- Planning Under Uncertainty

- 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
  – 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.