Nicholas Bishop

POSTDOCTORAL RESEARCHER · UNIVERSITY OF OXFORD

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Research Interests

Agent-Based Modelling, Causal Abstraction, Online Learning, Machine Learning

Education

University of Southampton *United Kingdom*
PHD COMPUTER SCIENCE *2018 - 2022*
- Supervisors: Dr Enrico Gerding, Dr Long Tran-Thanh
- Examiners: Dr Adish Singla, Dr Alain Zemkoho

University of Southampton *United Kingdom*
MENG COMPUTER SCIENCE *2014 - 2018*
- Advisor: Dr Richard Watson
- First Class Honors
- Notable course marks:
    - Machine Learning (84/100)
    - Advanced Intelligent Agents (100/100)
    - Advanced Machine Learning (90/100)

Publications

Fabio Massimo Zennaro, Nicholas Bishop, Joel Dyer, Yorgos Felekis, Anisoara Calinescu, Michael Wooldridge, Theodoros Damoulas, Causally Abstracted Multi-armed Bandits. 40th Conference on Uncertainty in Artificial Intelligence (**UAI 2024**), 2024.

Joel Dyer, Arnau Quera-Bofarull, Nicholas Bishop, J. Doyne Farmer, Anisoara Calinescu, and Michael Wooldridge, Population synthesis as scenario generation for simulation-based planning under uncertainty. The 23rd International Conference on Autonomous Agents and Multiagent Systems (**AAMAS 2024**), 2024.

Nicholas Bishop, Hau Chan, Debmalya Mandal, and Long Tran-Thanh. Sequential Blocked Matching. 36th AAAI Conference on Artificial Intelligence (**AAAI-2022**). 2022.

David Bossens, Nicholas Bishop. Explicit, Explore, Exploit, or Escape (E^4): Near-Optimal Safety-Constrained Reinforcement Learning in Polynomial Time. **Mach Learn**. 2022

Nicholas Bishop, Le Cong Dinh, Long Tran-Thanh. How to Guide a Non-Cooperative Learner to Cooperate: Exploiting No-Regret Algorithms in System Design. The 20th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS - EA**). 2021.

Nicholas Bishop, Long Tran-Thanh, Enrico Gerding. Optimal Learning from Verified Training Data. 34th Conference on Neural Information Processing Systems (**NeurIPS**). 2020.

Nicholas Bishop, Hau Chan, Debmalya Mandal, Long Tran-Thanh. Adversarial Blocking Bandits. 34th Conference on Neural Information Processing Systems (**NeurIPS**). 2020.

Research Experience

University of Oxford *United Kingdom*
POSTDOCTORAL RESEARCHER IN AGENT-BASED MODELLING *2022-2025*
- Advisors: Michael Wooldridge, Ani Calinescu, Doyne Farmer
- Part of the large agent collider project at the University of Oxford, collaborating with the Department of Computer Science and the Institute for New Economic Thinking (INET).
- Research focus on designing rigorous methodologies for developing realistic agent-based models at scale and tackling issues such as ABM calibration, validation and verification using machine learning.

University of Southampton   *United Kingdom*
<small>Research Intern</small>   *2017*
- Advisors: Dr Jonathan Hare, Dr Kirk Martinez
- Worked on the visual recognition of ancient stone seals for the Oxford Natural History Museum.

Awards, Fellowships, & Grants

2018   **ESPRC Dotoral Studentship**, ESPRC
       Winton Capital Management Prize, University of Southampton
       British Computing Society Prize, British Computing Society

2016   **Netcraft Prize**, Netcraft

Teaching Experience

Fall 2022   **Compuational Game Theory**, Tutor
Fall 2022   **Data Structures (CSCI 2720)**, Tutor
Fall 2019   **Intelligent Agents (COMP6203)**, Teaching Assistant
Fall 2019   **Machine Learning Technologies (COMP6246)**, Teaching Assistant
Fall 2020   **Intelligent Agents (COMP6203)**, Teaching Assistant

Professional Development

<small>Workshops and Summer Schools</small>

Summer School on Game Theory and Social Choice, Hong Kong City University, 2021
Summer School on Optimisation, Big Data, and Applications, University of Florence, 2019
Multi-armed Bandit Workshop, Imperial College London 2019

<small>Service</small>

Program Committees and Reviewing: NeurIPS 2020, 2021, AMAS 2021, KDD 2021, AAAI 2021, AAMAS 2023, AAAI 2023, KDD 2023
Organising Committees: Workshop on AI for Agent-Based Modelling (AI4ABM 2024), Workshop on Learning with Strategic Agents at AAMAS 2022 (LSA 2022)

<small>Talks</small>

Causally Abstracted Multi-Armed Bandits. UAI oral presentation, July 2024.
Population synthesis as scenario generation. AAMAS oral presentation, May 2024.
Blocking Problems for Multi-Armed Bandits and Matching. Agents, Interaction and Complexity (AIC) Seminar Series, October 2022.
Sequential Blocked Matching. 36th AAAI Conference on Artificial Intelligence (AAAI-2022), Virtual, February 2022.
Strategic Least Squares Regression with Verified Training Data. DeepMind and ELLIS Seminar Series, Virtual, March 2021.