

# CONOR F. HAYES

• Email: [c.hayes13@nuigalway.ie](mailto:c.hayes13@nuigalway.ie) • Google Scholar profile: <https://scholar.google.com/citations?user=p4-eiAkAAAAJhl=en> •

Personal website : <https://conorfhayes.info/> •

## RESEARCH INTERESTS

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Artificial Intelligence, Multi-Objective Decision Making, Reinforcement Learning, Machine Learning.

## EDUCATION

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### University of Galway

*Doctor of Philosophy (PhD) in Computer Science*

*Supervised by: Diederik M. Roijers, Enda Howley & Patrick Mannion*

Galway, Ireland

*Sept. 2019 – Present*

### University of Galway

*Master of Science (MSc) in Computer Science*

Galway, Ireland

*Sept. 2018 – Aug. 2019*

## PROFESSIONAL EXPERIENCE

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### University of Galway

*Teaching Assistant*

Galway, Ireland

*Sept. 2019 - Present*

- **Courses:** Machine Learning (Python), Programming for Data Analytics (R), Computer Systems (R), Agents, Multi-Agent Systems & Reinforcement Learning (Python), & Enterprise Java Programming (Java)

### TQS Integration

*Software Engineer*

San Francisco, CA

*May 2015 - Aug 2018*

- Designed, implemented and validated large-scale real-time data historian systems
- Consulted for Biotech industry and ran projects for Johnson & Johnson, Genentech, Shire
- Consulted for energy industry and ran projects for Pacific Gas & Electric (PG&E)

## SELECTED PUBLICATIONS

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**Hayes CF**, Verstraeten T, Roijers DM, Howley E, Mannion P. *Expected scalarised returns dominance: a new solution concept for multi-objective decision making*. Neural Computing and Applications. 2022.

**Hayes CF**, Rădulescu R, Bargiacchi E, Källström J, Macfarlane M, Reymond M, Verstraeten T, Zintgraf LM, Dazeley R, Heintz F, Howley E. *A practical guide to multi-objective reinforcement learning and planning*. Autonomous Agents and Multi-Agent Systems. 2022.

**Hayes CF**, Roijers DM, Howley E, Mannion P. *Decision-theoretic planning for the expected scalarised returns*. In Proceedings of the 21st International Conference on Autonomous Agents and Multiagent Systems 2022.

**Hayes CF**, Reymond M, Roijers DM, Howley E, Mannion P. *Distributional monte carlo tree search for risk-aware and multi-objective reinforcement learning*. In Proceedings of the 20th International Conference on Autonomous Agents and MultiAgent Systems 2021.

**Hayes CF**, Roijers DM, Howley E, Mannion P. *Multi-objective distributional value iteration*. Adaptive and Learning Agents Workshop at AAMAS. 2022.

**Hayes CF**, Verstraeten T, Roijers DM, Howley E, Mannion P. *Multi-objective coordination graphs for the expected scalarised returns with generative flow models*. European Workshop on Reinforcement Learning. 2022.

Vamplew P, Smith BJ, Källström J, Ramos G, Rădulescu R, Roijers DM, **Hayes CF**, Heintz F, Mannion P, Libin PJ, Dazeley R. *Scalar reward is not enough: A response to Silver, Singh, Precup and Sutton (2021)*. Autonomous Agents and Multi-Agent Systems. 2022.

## SCHOLARSHIPS & AWARDS

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### Hardiman Scholarship

2019 - Present

- Recipient of the highly competitive and prestigious Hardiman Scholarship awarded by the National University of Ireland Galway.

### Visionary Paper Award

2022

- *Multi-Objective Distributional Value Iteration* was awarded the *Visionary Paper Award* at the Adaptive and Learning Agents Workshop at AAMAS 2022.

## ACADEMIC EXPERIENCE

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### **Workshop Organisation**

*Adaptive & Learning Agents Workshop*

*2020 - Present*

*Multi-Objective Decision Making Workshop*

*2021 - Present*

### **Reviewing**

*Uncertainty in Artificial Intelligence*

*2022*

*European Conference on Machine Learning*

*2022*

*European Workshop on Reinforcement Learning*

*2022*

## PROGRAMMING SKILLS

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**Languages:** Python, Java, R

**Technologies:** Pytorch, Tensorflow, Numpy