Guiliang Liu

POSTDOCTORAL FELLOW · COMPUTER SCIENCE

David R. Cheriton School of Computer Science, University of Waterloo, Waterloo, ON, Canada

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Education

University of Waterloo & Vector Institute
POSTDOCTORAL FELLOW

Waterloo & Toronto, Canada
Otc. 2020 - Otc. 2022

- **Supervisor:** Pascal Poupart
- **Research Topic:** Reinforcement Learning.

Simon Fraser University (SFU)
PHD OF COMPUTER SCIENCE

Burnaby, Canada
Sept. 2016 - Sept. 2020

- **Supervisor:** Oliver Schulte, **GPA**: 3.92/4.3
- **Research Topic:** Reinforcement Learning.
- **Master Program Skipped:** Directly recruited as a PhD student.

South China University of Technology (SCUT)
BACHELOR OF ENGINEERING

Guangzhou, China
Sept. 2012 - July 2016

- **Major:** Computer Science, **GPA:** 3.72/4, **Rank:** 3/20
- Enrolled into the Taught-in-English elite student program.

Research Experience

University of Waterloo & Vector Institute
POSTDOCTORAL FELLOW

Waterloo & Toronto, Canada
Otc. 2020 - Otc. 2022

- **Supervisor:** Prof. Pascal Poupart
- **Research Topics**:
  - Object-Oriented Reinforcement Learning.
  - Constraint Inverse Reinforcement Learning.
- **Brief Intro**: A contract-based, research oriented post-doctoral position.

Structural Machine Learning Lab, Simon Fraser University
RESEARCH ASSISTANT

Burnaby, Canada
Sept. 2016 - Sept. 2020

- **Supervisor:** Prof. Oliver Schulte
- **Research Topics**:
  - Data-Driven Deep Reinforcement Learning for Player Evaluation.
  - Interpretable Policy Representation in Deep Reinforcement Learning.
- **Brief Intro**: Thesis work for the PhD degree.

SLiQ Lab, Sportlogiq
RESEARCH INTERN

Burnaby, Canada
Feb. 2020 - June 2020

- **Supervisor:** Prof. Oliver Schulte
- **Research Topics**: Multi-agent Modelling and Embedding
- **Brief Intro**: Industrial Internship at Sportlogiq.

Cognitive Computing Lab, Baidu Research
RESEARCH INTERN

Beijing, China
Aug. 2018 - Feb. 2019

- **Supervisor:** Prof. Ping Li
- **Research Topics**: Reinforcement Learning and Open Information Extraction
- **Brief Intro**: Industrial Internship at Baidu.

Publications

PREPRINTS

- **Guiliang Liu**, Ashutosh Adhikari, Amir-massoud Farahmand, Pascal Poupart. Learning International Conference on Learning Representations. submitted (ICLR 2022).
- Yudong Luo, **Guiliang Liu**, Haonan Duan, Pascal Poupart, Oliver Schulte. Distributional Reinforcement Learning with Monotonic Splines. submitted (ICLR 2022).
- Xiangyu Sun, **Guiliang Liu**, Pascal Poupart, Oliver Schulte. NTS-NOTEARS: Learning Nonparametric Temporal DAGs With Time-Series Data and Prior Knowledge. Arxiv and submitted (AAAI 2022).

Conference Papers

- **Guiliang Liu**, Xiangyu Sun, Oliver Schulte, Pascal Poupart. "Learning Tree Interpretation from Object Representation for Deep Reinforcement Learning". Neural Information Processing Systems (Neurips) 2021, **CCF-A**.
- **Guiliang Liu**, Oliver Schulte, Mike Rudd, Pascal Poupart, Mehrsan Javan. Learning Agent Representations for Ice Hockey. Neural Information Processing Systems (NeurIPS) 2020, **CCF-A**.
- Xiangyu Sun, Jack Davis, Oliver Schulte, **Guiliang Liu**. Cracking the Black Box: Distilling Deep Sports Analytics. ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2020, **CCF-A**.
- **Guiliang Liu**, Xu Li, Jiakang Wang, Mingming Sun, Ping Li. Extracting Knowledge from Web Text with Monte Carlo Tree Search. The World Wide Web Conference (WWW) 2020, **CCF-A**.
- **Guiliang Liu**, Xu Li, Mingming Sun, Ping Li. An Advantage Actor-Critic Algorithm with Confidence Exploration for Open Information Extraction. SIAM International Conference on Data Mining (SDM) 2020, **CCF-B**.
- **Guiliang Liu**, Oliver Schulte. Deep Reinforcement Learning in Ice Hockey for Context-Aware Player Evaluation. The 27th International Joint Conference on Artificial Intelligence (IJCAI) 2018, **CCF-A**.
- **Guiliang Liu**, Oliver Schulte, Wang Zhu, Qingcan Li. Toward Interpretable Deep Reinforcement Learning with Linear Model U-Trees. The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) 2018, **CCF-B**.

Journal Papers

- **Guiliang Liu**, Yudong Luo, Oliver Schulte, Tarak Kharrat. Deep soccer analytics: Learning an action-value function for evaluating soccer players. Data Mining and Knowledge Discovery (DMKD) 2020, **CCF-B**.

Workshop Papers

- **Guiliang Liu**, Oliver Schulte. Learning Contextualized Player Representations with A Variational Hierarchical Encoder. AI in Team sport (AIT) workshop, 2020, in the AAAI conference on artificial intelligence.
- **Guiliang Liu**, Wang Zhu, Oliver Schulte. Interpreting Deep Sports Analytics: Valuing Actions and Players in the NHL. The Machine Learning and Data Mining for Sports Analytics workshop (MLSA) workshop, 2018, in the The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD).

Scholarships and Grant

2021	**Government Scholarship**, Vector Institute Research Grant.	*Canada*
2020	**Government Scholarship**, MITACS Research Training Award.	*Canada*
2020	**Personal Scholarship**, Kaltenegger Family Scholarships.	*Canada*
2019	**Personal Scholarship**, Helmut & Hugo Eppich Family Scholarships.	*Canada*
2018	**Personal Scholarship**, HBackwater/Jost Scholarships.	*Canada*
201(6-9)	**School Scholarships**, Graduate Fellowships from SFU.	*Canada*
2015	**National Scholarship**, Outstanding student, Ministry of Education of China.	*China*
2014(15)	**Enterprise Scholarships**, Hong Ping Chang Qing Innovation Scholarship.	*China*
2015	**Enterprise Scholarship**, Tencent Innovation Scholarship.	*China*
2015	**School Scholarship**, Merit Student Honor from SCUT.	*China*