**Jia Lin Hau**

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| **EDUCATION** |  |
| **University of New Hampshire**, Advisor: Marek Petrik | 01/2019 - present |
| **M.S / Ph.D. in Computer Science** | GPA: 4.00 |
| **Relevant Coursework:** Reinforcement Learning, Advance Machine Learning, Mathematical Optimization, Algorithms, Computer Graphics,Assembly Language, System Programming, Formal Specification, Database System. | |
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| **University of New Hampshire**, Advisor: Linyuan Li | 09/2015 - 09/2018 |
| **B.S. in Applied Mathematics: Economics** | GPA: 3.89 |
| **Relevant Coursework:** Machine Learning, Forecasting Analysis, Numerical Methods, Multi-Dimensional Calculus, Econometrics, Probability Theory, Statistical Inference, Financial Mathematics. | |
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| **REVIEWING** |  |
| International Conference on Machine Learning 2022 (ICML) | |
| NeurIPS 2021 Workshop on Safe and Robust Control of Uncertain Systems | |
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| **EXPERIENCE** |  |
| **UNH Computer Science Department - *Research Assistant*** | 06/2020 - present |
| Research interest: Reinforcement learning, risk-averse optimization, machine learning, Bayesian method. | |
| **UNH Computer Science Department - *Teaching Assistant*** | 01/2019 - 05/2020 |
| Assembly Language and Machine Organization (CS 520), Scientific Programming in Python and C (CS 410P & C), Computer networks (CS 725) | |
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| **Boston Road Runner – *Data Analyst*** | 09/2018 - 12/2018 |
| * Preprocessed (handle missing values, duplicates, and apply consistent formatting) data of participants and sponsors. * Developed auto-regression time series models in R to predict future trends in the number of participants for upcoming races. * Design 3NF database schema using ERD and relation schema to reduce anomalies and improve data quality and integrity. * Created data visualizations using Tableau, which allow peers and sponsors easily interpret and understand data insights. | |
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| **Idea Math *- Junior Instructor/ Summer Camp Resident Assistant*** | 06/2018 - 08/2019 |
| * Enhance elementary school students' problem-solving skills for Mathematics competition. * Created study plans for the class and conducted group activities with students. * Structured activities and events for residential students. | |
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| **UNH International Student Organization (ISO) - *Vice President*** | 08/2017 - 06/2018 |
| * Collaborated with other organizations to spread culture awareness. * Allocated tasks for volunteers and executive members based on their unique advantages. | |
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| **UNH Mathematics Center - *Mathematics Center Tutor*** | 09/2017- 06/2018 |
| * Clarified Mathematics concepts and assisted students with their homework. * Organized a study plan and helped students to catch up with class content. * Conducted review sessions to help students prepare for quizzes and exams. | |
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| **UNH Residential Life - *Resident Assistant*** | 08/2016 – 08/2017 |
| * Structured social activities and created a safe/supportive environment for 500 residents. * Responsible for proper protocol involving responding to alcohol intoxication and roommate issues. | |
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| **RESEARCH PUBLICATIONS AND PREPRINTS** |  |
| **Entropic Risk Optimization in Discounted MDPs.** **Jia Lin Hau**, Marek Petrik, Mohammad Ghavamzadeh | AISTATS 2023 |
| * Contributed to advancing risk averse Markov decision processes (MDPs) by providing new theoretical results and practical algorithms. * Proposed new polynomial time MDPs algorithms for Entropic Risk Measure (ERM) and Entropic Value at Risk (EVaR) objectives. * Proved our algorithms return the optimal policy for finite horizon MDPs and delta-optimal policy for infinite horizon MDPs. * Implemented these algorithms and conducted extensive experimentation to evaluate their accuracy and efficiency using Julia and R. | |
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| **RASR: Risk-Averse Soft-Robust MDPs. Jia Lin Hau**, Marek Petrik, Mohammad Ghavamzadeh, Reazul Russel | ArXiv 2022 |
| * Proposed a novel framework to jointly model the epistemic and aleatory uncertainties in safe Reinforcement Learning (RL). * Proved that entropic risk-aversion can be solved optimally and efficiently in RASR setting with time-dependent dynamic program. | |
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| **Robust pest management using RL.** Talha Siddique, **Jia Lin Hau**, Shadi Atallah, Marek Petrik | RLDM 2019 |
| * Leveraged reinforcement learning techniques to develop a robust framework for risk-averse decision-making in pest management. * Applied natural splines regression model to predict pest growth and STAN Bayesian inference language to generate posterior datasets, which were used to compute the optimal Robust MDP policy. * Demonstrated the effectiveness of our framework by solving various domains including Cartpole (OpenAI) with limited data in Python | |
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| **OTHER ONGOING RESEARCH** |  |
| **Risk measure decompositions analysis** | 01/2023 - present |
| **Multi-Layered chemical diffusion 3D simulation** | 02/2023 - present |
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| **PROJECTS** |  |
| **EMOAI** Emotion recognition application to avoid depression **– *Developer and Use Case Finder*** | 02/2019 - 04/2019 |
| * Spearheaded Deep Learning (CNN) emotion recognition project with pre-trained models to accurately classify users’ facial expressions. * Proposed groundbreaking application of the use of facial and emotion recognition technology to identify and prevent depression. * Implemented active learning with PyTorch, enable personalized classification by allowing users to update labels of their own emotion. | |
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| **CRACC** A social application that connect people to play sports together **– *Analyst / Android Developer*** | 01/2017 – 01/2018 |
| * Collected data from various sources (API, Kaggle, BLS), analyzed and created data visualizations with Python. * Communicated effectively with the IOS team to ensure consistent UI (XML) and functionality (Java) using Android Studio. * Integrated with Firebase for users’ data, and developed features that query weathers and navigation data based on users’ location. | |
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| **SKILLS** |  |
| **Language**: Python, R, Julia, C/C++, SQL, MATLAB, HTML, CSS, JavaScript, XML, Java |  |
| **Tools**: OpenGL, PyTorch, Numpy, Scikit-learn, Caret, Git, Excel, ERDPlus, Tableau |  |
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| **OTHER ACHIEVEMENTS** |  |
| *Manchester City* **Marathon** by SNHU (1st in Co-ed Relay) | 2016 |
| *Seacoast* **Half Marathon** in Portsmouth (4th in division) | 2015 |
| Certified *PADI* Advanced Open Water **Scuba Diver** | 2013 |
| Certified *NAUI* Open Water **Scuba Diver** | 2019 |
| Passed **Actuarial Science** Exam P: Probability | 2018 |
| *Bloomberg Market Concepts* (**BMC**) Completion | 2018 |
| Member of *Pi Mu Epsilon* of National Honorary **Mathematics** Society | 2017 |
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