

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.

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.

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)

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.

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.
- Designed 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.

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.

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.

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.

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

OTHER ONGOING PROJECTS

Risk measure decompositions analysis 01/2023 - present

Multi-Layered chemical diffusion 3D simulation 02/2023 - present

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