Gabriel Y. Arteaga

Personal Information

Date of birth: 1996-03-31
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Education

Uppsala University Uppsala
MSc in Data Science with specialization in Machine Learning and Statistics *2022-2024*

- Acquired extensive knowledge within Machine Learning, including supervised, unsupervised and probabilistic machine learning.
- Expanded my knowledge-base within mathematics and statistics, several courses had a strong emphasis in the theoretical understanding of data science and machine learning.

Mälardalen University Eskilstuna
Applied AI Program *2020-2022*

- A program in Computer Science with specialization in Applied AI which I studied for two years.
- Studied traditional AI topics including evolutionary algorithms, adversarial search, and constraint satisfaction problems.
- Covered a wide range of topics such as cloud computing, IoT, machine learning, security, and data analysis.

Mälardalen University Västerås
BSc in Business Administration *2018-2020*

- Studied a diverse range of subjects including management, marketing, accounting, economics, and international commercial law.
- Conducted research for the bachelor's thesis on the impact of the COVID-19 crisis on global value chains of multinational enterprises (MNEs), analyzing strategies and responses adopted by MNEs during the crisis. The thesis can be found here.

Experience

Doctoral Research Fellow Aug 2024 – Aug 2027
University of Oslo *Oslo*

- Improving training stability and effectiveness of self-supervised learning methods by leveraging high-level supervisory signals.

Master Thesis Worker Jan 2024 – Jun 2024
Uppsala University *Uppsala*

- Developed a memory efficient LLM ensemble
- Fine-tuning LLM ensemble members with pre-trained weights
- Utilizing uncertainty estimation to enable hallucination detection in extractive QA tasks.

Teaching Assistant - Statistical Machine Learning Jan 2024 – Present
Uppsala University *Uppsala*

- Provide guidance as a teaching assistant during project helpdesk sessions.
- Assist and evaluate students in our Deep Learning lab, covering tasks such as activation functions, optimizers, weight initialization, and convolutional neural networks.
- Grade projects and exams.

Teaching Assistant - Artificial Intelligence Aug 2023 – Oct 2023
Uppsala University *Uppsala*

- Provided support as a teaching assistant during help sessions.
- Assisted students with questions related to the A* algorithm and hidden Markov models for course labs.

Projects

Bayesian Neural Network Ensembling for Uncertainty Quantification Oct 2023 - Jan 2024
Project Course - Uppsala University *Uppsala*

- Implemented a novel neural network ensemble architecture in PyTorch, enabling both batched and memory-efficient training and inference.
- Incorporated a Bayesian framework for inference.
- Implemented uncertainty quantification, enabling the disentanglement of aleatoric and epistemic uncertainty.

Game Result Prediction using Probabilistic Machine Learning Aug 2023 - Oct 2023
Advanced Probabalistic Machine Learning - Uppsala University *Uppsala*

- Estimated team skill levels in the Italian Serie A using the Trueskill Bayesian ranking system.
- Developed a Bayesian model to predict game outcomes.
- Utilized assumed density filtering with Gibbs sampling to estimate team skills.
- Constructed a factor graph and implemented the message-passing algorithm for skill estimation.

Deep Q-Network for Pong Apr 2023 - Jun 2023
Reinforcement Learning - Uppsala University *Uppsala*

- Developed an autonomous agent capable of playing Pong without human intervention.
- Utilized convolutional layers to process high-dimensional pixel data and applied Q-learning to train the agent.

Distributed Data Processing and Analysis of Reddit Comments Jan 2023 - Mar 2023
Data Engineering - Uppsala University *Uppsala*

- Deployed a containerized Spark and Hadoop cluster for processing Reddit comments and conducting various types of analysis.
- Conducted computational experiments to determine the optimal number of worker nodes for data processing.

Gender Classification of Actors in Hollywood Movies Oct 2022 - Dec 2022
Statistical Machine Learning - Uppsala University *Uppsala*

- Conducted comprehensive data analysis to explore gender imbalances in Hollywood movies.
- Implemented data pre-processing and feature engineering techniques to extract valuable insights from the dataset.
- Fine-tuned and benchmarked four classification algorithms (Logistic Regression, Discriminant Analysis, kNN, and XGBoost) for binary gender classification.

Relevant Skills

Programming Languages: Python, C, Matlab
Libraries: PyTorch, NumPy, Huggingface, Pandas
Tools & Technologies: Linux, Git/GitHub LaTeX, Docker, Apptainer, Apache Spark, Slurm

Languages

Swedish: Advanced	Native language
English: Advanced	Speaking, reading, and writing
Spanish: Intermediate	Speaking, reading, and writing