Aarya Bookseller

aaryab.work@gmail.com | +1 (774) 701-2002 | College Station, TX
Linkedin: aarya-bookseller

Education

Texas A&M University Expected Dec 2026
***B.S. Computer Science**; Minors: Physics & Statistics* *College Station, TX*

- Relevant Coursework: Advanced Data Structures and Algorithms, Machine Learning, Modern Topics in Deep Learning and Large Language Models

Experience

Research Assistant — Deep Learning Research Group Jan 2025 – Present
Texas A&M University *College Station, TX*

- Designed and implemented gradient-based **bilevel optimization algorithms** for principal–agent models using **implicit differentiation**, **Hessian-vector products**, and **conjugate gradient methods**.
- Improved training robustness with structured **learning-rate schedules**, **regularization strategies**, and automated pipelines for large-scale sweeps, logging, and publication-quality plots.
- Built and optimized **self-supervised learning pipelines (SimCLR/MoCo)** in PyTorch; trained on **A100 GPUs** with extensive augmentations and achieved superior transfer performance on downstream tasks.

Founder & Lead Engineer — NaviAI Jan 2025 – Present
AI Maritime Logistics Platform / ***Semi-finalist, Mays Business School AI Competition (2024)*** *Remote*

- Developed a **graph-based routing engine** with dynamic weighting for transit time, fuel cost, and real-time risk.
- Integrated **Transformer-based sentiment analysis** of maritime news to drive risk-aware route optimization.
- Built a **Streamlit platform** presenting fastest, cheapest, and safest routes with **LLM-generated explanations**.

Data Analyst Intern — Stochastic Geomechanics Laboratory Jan 2024 – Aug 2024
Texas A&M University *College Station, TX*

- Consolidated and standardized datasets spanning **200+ variables**; implemented automated data-cleaning workflows in **Python/Dataiku**, increasing efficiency by **30%**.
- Developed and maintained **SQL pipelines**; produced weekly analytical reports with visualizations to improve research accessibility and cross-team collaboration.

Publications

Gradient-Based Bilevel Optimization for Principal-Agent Contract Design
***A. Bookseller (first author)**, T. Galanti, K. Ray* / *Under Review — NeurIPS 2025*

- **First author** — proposed and implemented bilevel optimization algorithms using implicit differentiation (HVPs, CG) for principal–agent models at the ML–economics interface.
- Led large-scale PyTorch experiments with automated sweeps, results tracking, and publication-quality figures; contributed to theoretical formulation and manuscript preparation.

Projects

Risk Analysis App
Python/C++ Hybrid *Remote*

- Developed a **portfolio risk engine** implementing VaR, CVaR, Sharpe ratio, and Monte Carlo–based simulations.
- Designed interactive **Dash/Plotly dashboards** for backtesting, scenario analysis, and performance visualization.
- Engineered modular components enabling seamless integration of custom trading strategies into risk evaluation workflows.

Style Converter
PyTorch / Streamlit *Remote*

- Built a **neural style transfer system** to render content images in the artistic style of reference images.
- Implemented configurable **PyTorch pipelines** with tunable content–style weighting and optimization schedules.
- Deployed an interactive **Streamlit interface** for image upload, real-time visualization, and export of styled outputs.

Skills

Languages: Python, C/C++, Java, JavaScript, HTML/CSS
ML/AI: PyTorch, scikit-learn, Hugging Face Transformers, TensorFlow, NumPy, pandas
Systems: Docker, Git, Linux, SLURM, REST APIs
Data: MongoDB, PostgreSQL, Dataiku, Excel, data pipelines
Tools: Streamlit, React, Plotly/Matplotlib, LaTeX