

# Preston Bied

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## EDUCATION

### Drexel University, College of Computing & Informatics

September 2025 - Present

*Masters (MS) in Machine Learning and Artificial Intelligence*

- Participated in the Computational Concentration, a theoretical/technical path designed for students interested in developing their own AI / ML algorithms or augmenting existing ones
- Coursework: AI/ML, Data Structures & Algorithms, Deep Learning, Cloud Computing, Large-scale Data Pipelining

### University of Texas at Austin, McCombs School of Business

January 2025 - July 2025

*Post Graduate Online Program in Artificial Intelligence and Machine Learning: Business Applications*

- Specialized in Machine Learning, Deep Learning, Generative AI, and Model Deployment. Hands-on experience with tools like TensorFlow, Python, and NLP libraries

### Texas A&M University

August 2020 - December 2024

*Bachelor of Science in Computer Science, Minor in Mathematics*

- GPA: 3.527, Engineering Honors Program
- Studied abroad in Barcelona, Spain and Singapore, fostering strong cultural adaptability and global perspective

## PROFESSIONAL EXPERIENCE

### Mathnasium

April 2025 - Present

Lakeway, TX

*Lead Instructor*

- Supervised and monitored junior instructors, providing training on teaching techniques, student assessment protocols, and center operations to maintain consistent education quality
- Managed daily center operations including student check-ins, progress tracking, and parent communication to ensure smooth facility operations and positive learning environment

### Texas A&M University

August 2023 - June 2024

*Mathematics Teaching Assistant*

College Station, TX

- Evaluated and provided detailed feedback on homework assignments for 120+ students across 3 sections of Linear Algebra
- Created comprehensive solution guides that improved student comprehension of complex matrix operations and vector spaces

### MDB Capital Group

June 2021 - June 2023

Dallas, TX and Managua, Nicaragua

*IP Analyst Intern*

- Composed IP Landscape & Prosecution History Reports using PatentVest, enabling informed investment decisions on early-stage technology companies
- Conducted financial & technical due diligence to assess market viability, competitive landscapes, and potential returns for clients
- Collaborated with senior analysts, gaining international experience at the Managua office while refining global IP research strategies

## PROJECTS

### Multi-Model AI Platform for Patent Analysis

- Developed a Multi-Model AI Solution integrating CPC classification, keyword extraction, and prior art search, cutting manual patent analysis time
- Optimized Classification of 200K+ patents with transformer-based NLP and Random Forest, processing each in ~12ms and delivering sub-2-minute overall runtime
- Integrated external APIs (USPTO, IEEE) into distributed data pipeline for real-time similarity scoring and prior art retrieval
- Presented the project at a capstone expo and gave a formal presentation to an industry panel

### Advanced Regression for Housing Price Prediction

- Developed ensemble ML model combining XGBoost, Random Forest, and Logistic Regression achieving 94.7% prediction accuracy on housing price dataset, achieving a top 8% ranking on Kaggle
- Engineered 80+ features through statistical analysis, handling missing data, outlier detection, and feature interactions to optimize model performance

### Real-Time Emotion Detection with Attention Visualization

- Built CNN-based system detecting 7 facial emotions in real-time at 15-30 FPS with live webcam integration and Grad-CAM visualization highlighting facial regions driving predictions
- Implemented spatial attention mechanism achieving 65.9% accuracy on FER2013 dataset while adding only 0.9% additional parameters, improving challenging class detection (Fear +5%, Disgust +3.6%)
- Developed interpretability tools using attention maps to visualize model decision-making process, enabling analysis of per-class performance across 28,000+ facial images

## SKILLS

- Programming Languages:** Python, C++, SQL, JavaScript
- ML:** Scikit-Learn, Keras, PyTorch, TensorFlow, XGBoost
- Data:** Matplotlib, Seaborn, Pandas, NumPy
- Software:** Git, Docker, AWS, GPU Computing
- Math:** Calculus I-III, Linear Algebra, Statistics, Abstract Algebra