

Sebastian Prestia

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EDUCATION

Arizona State University – BS Data Science (Summa Cum Laude)

Mathematics and Statistics Track

Graduated May 2026 at 16 • GPA: 4.0 Major, 3.99 Overall

Coursework: Multivariable Calculus, Linear Algebra, Machine Learning, MLE, Bayesian Statistics, Probability, Statistical Computing

RESEARCH & PROJECTS

- **JEPA vs Autoencoders:** Made a Joint-Embedding Positional Architecture and compared its storage of information in the latent space to that of an Autoencoder's on visual data in CIFAR10 & 100.
 - **JEPA Facial Recognition:** Trained a Joint-Embedding Positional Architecture model to identify features of Celebrity faces and form a latent space based on similar ones.
 - **Financial Time-Series Pattern Recognition (In Progress):** Developing deep learning models for financial time-series pattern analysis, focusing on identifying recurring structural patterns and evaluating model performance using statistical validation and backtesting.
 - **Mole Detection (In Progress):** Training medical-imaging classifier with augmentation to improve sensitivity & precision.
 - **Movie Box Office Prediction (Ridge Regression):** Built a regularized linear model using log transformed predictors; analyzed multicollinearity and model performance.
 - **Syrian HDI War Impact Study (ANOVA + Regression):** Examined pre/post-war differences in HDI contributors with World Bank data.
 - **NYC Taxi Analysis:** Used Statistical Techniques such as Clustering and KDE Heatmaps to identify best neighborhoods in NYC for taxis.
 - **PM2.5 levels across US:** Analyzed PM2.5 levels across US and how factors such as Income and Urban Areas affect it.
 - **CIFAR-10 / CIFAR-100 CNNs:** Designed deeper convolutional models; analyzed generalization limits without pretraining.
 - **MNIST Digit Classifier (CNN):** Achieved 99% accuracy using convolutional architectures with dropout/batch norm.
 - **FashionMNIST Classifier (CNN):** Achieved 97% accuracy; studied generalization vs. MNIST.
 - **Custom Fish Dataset (CNN):** Built augmentation pipeline for small-data classification.
 - **NumPy Neural Network:** Implemented forward/backpropagation manually to understand gradient mechanics and optimization.
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EXPERIENCE

Hydra Capital Group — Statistical Machine Learning Intern

- Developing a pattern-recognition AI model to identify recurring structural patterns in financial timeseries data, such as local U-shapes, breakouts, and reversal formations, with out-of-sample evaluation to assess generalization.
- Conducted structured backtesting on historical market data to assess model stability and refine pattern-based predictive performance.

WaxMelters — Machine Learning & AI Intern

- Developed AI chatbot tools and optimized website performance using statistical analysis techniques and data-driven evaluation.

TECHNICAL SKILLS

Programming: Python (advanced), PyTorch, NumPy, Pandas, Matplotlib, R, SQL

Mathematical Tools: Optimization methods, vector calculus, matrix computations

Machine Learning: CNNs, ANNs, supervised learning, regularization techniques, model validation, data preprocessing, augmentation

ACCOMPLISHMENTS

- Bronze Medalist — Pan-American Youth Chess Championship 2017
- Represented USA at World Cadet Championship 2017
- Candidate Master in Chess
- Chess Expert (2000+ rating); 2x National Champ, #1 in U.S., #2 World for age group (multiple years)
- Entered university full-time at 12
- Summa Cum Laude Graduate