

Swayam Bansal

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WORK EXPERIENCE

De-Bias (LinkedIn)

Remote

Data Analyst Intern

Feb 2025 – June 2025

- Built and optimized regression models on high-dimensional datasets (50+ features), reducing prediction error (RMSE) through feature engineering and hyperparameter tuning
- Performed exploratory data analysis across large datasets, generating visualizations to identify trends, anomalies, and key drivers of model performance
- Communicated findings to stakeholders through structured reports and presentations, translating analytical results into actionable recommendations

Penn State University

University Park, PA

Math Tutor

Aug 2023 - Dec 2024

- Led 50+ tutoring sessions focused on advanced mathematics topics (e.g., linear algebra, calculus), improving student comprehension and performance
- Collaborated with a team of tutors to design structured review sessions and problem-solving strategies for large student groups
- Developed instructional materials to simplify complex concepts, helping students improve course outcomes by up to two letter grades

Pennsylvania State University

Harrisburg, PA

Research Assistant

May 2023 - Aug 2023

- Redesigned a particle collision system for simulation environments, reducing computational latency and enabling near real-time processing for large particle sets
- Evaluated multiple collision approximation strategies to balance computational efficiency with physically realistic behavior
- Produced interactive reports analyzing simulation performance and outcomes to support research decisions

PROJECT EXPERIENCE

SpringBoard – Mentorship and Project Matching Platform | Github

November 2025

- Built a matching engine using Sentence-BERT embeddings and cosine similarity to evaluate compatibility between users and projects
- Integrated rule-based constraints with semantic similarity scoring to improve relevance of matches
- Designed a flexible matching framework supporting multiple entity types (students, mentors, projects)

Keyzzz – The Air Piano | Github

April 2025

- Designed a real-time vision-to-audio pipeline using OpenCV and MediaPipe for hand tracking and key detection
- Achieved 40–60 FPS performance on a webcam-only system through efficient frame processing and optimized detection logic
- Built marker-based calibration for consistent key detection across varying camera angles and environments
- Implemented a multi-channel audio system to support simultaneous key presses without latency degradation

Ensemble Object Detection Model | Github

Oct 2024

- Developed a multi-model inference pipeline combining YOLO, Faster R-CNN, and DETR for robust object detection
- Implemented parallel execution and weighted box fusion to aggregate predictions across models
- Improved detection consistency across complex scenes by leveraging complementary strengths of different architectures

EDUCATION

Pennsylvania State University

University Park, PA

Bachelor of Science in Computer Science

GPA: 3.50

SKILLS

Skills: C/C++, Java, Python, SQL

Machine Learning: PyTorch, TensorFlow, scikit-learn

Certifications: AWS Certified Solutions Architect - Associate