

Sabneet Bains

 Greater Philadelphia (U.S. Citizen | Eligible for DoD Security Clearance)

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PROFESSIONAL SUMMARY

Research-driven AI engineer with a strong foundation in algorithmic, probabilistic, and learning-based systems, translating theory into rigorously evaluated machine learning and simulation solutions that improve performance under real-world constraints.

AREAS OF EXPERTISE

- + **Perception:** Computer Vision • Feature Extraction • CNN-Based Classification • Multimodal Sensing • Human-Machine Interfaces
- + **Reasoning:** Symbolic AI • Planning & Search • Probabilistic Inference • Probabilistic Modeling • Reinforcement Learning • Deep Learning
- + **Evaluation:** Feature Engineering • Supervised & Unsupervised Learning • Model Selection • Bias–Variance Analysis • Cross-Validation • ROC-AUC • F1 • MAE
- + **Modeling:** Numerical Methods • Stochastic Processes • Monte Carlo Simulation • Optimization • Decision Theory

PROFESSIONAL EXPERIENCE



R&D Specialist

 Lockheed Martin

Mar 2017 – May 2018

Cherry Hill, NJ

- + **Re-engineered** a computational fluid-dynamics simulation from a FORTRAN prototype into a validated C++ implementation, achieving a 15× runtime reduction through profiling-driven optimization.
- + **Developed** and validated a machine-learning pipeline for airborne LiDAR data, using controlled experiments to assess model behavior and reliability.
- + **Designed** a low-latency voice interaction system integrating NLP with a legacy application under secure communication constraints, enabling hands-free control without UI modification.



Neuroscience Researcher

 Eli Lilly and Company

Apr 2016 – Jan 2017

Philadelphia, PA

- + **Strengthened** large-scale neuroimaging pipelines for late-stage clinical studies, improving MRI/PET reliability and interpretability through validated preprocessing and quality controls.
- + **Developed** custom analysis tooling to enforce consistent statistical workflows across heterogeneous datasets and cohorts.
- + **Automated** research pipelines with scheduled execution and integrated quality checks, reducing errors and accelerating analysis cycles by >70%.

ACADEMIC & RESEARCH EXPERIENCE



Graduate Researcher

Johns Hopkins University

Aug 2020 – Present

Baltimore, MD

- + **Built** a real-time computer vision system to detect and classify moving objects under variable lighting, using a custom CNN and controlled evaluation to improve accuracy by ~10%.
- + **Constructed** a stochastic SIQR simulation to analyze disease spread in a mid-sized population, comparing intervention strategies under explicit modeling assumptions.
- + **Implemented** quantum algorithms (QFT, Deutsch's algorithm) in simulation, analyzing numerical stability and decoherence across repeated executions.
- + **Led** development of an interactive system in Unity, coordinating asset optimization, gameplay logic, version control, and CI to improve delivery speed and software quality.



Undergraduate Researcher

Drexel University

Sep 2017 – Jun 2018

Philadelphia, PA

- + **Implemented** spiking neural network models to analyze neural synchrony, using controlled parameter sweeps to characterize phase-locking and coherence.
- + **Designed** a visualization technique for sparse graph structures to accelerate inspection of connectivity changes, formally documenting methodology, validation, and limitations in a 26-page thesis.

EDUCATION



Johns Hopkins University

Graduate Studies



M.S., Artificial Intelligence

May 2025 – Present



Artificial Intelligence • Applied Machine Learning •
Image Processing

Baltimore, MD

M.S., Computer Science

Aug 2020 – Jan 2023



Quantum Computation • Modeling and Simulation of
Complex Systems

Baltimore, MD



Drexel University

B.S., Physics

Sep 2013 – Jun 2018

Philadelphia, PA



Mathematical & Statistical Physics • Quantum Mechanics

LEADERSHIP, MERIT & COMMUNITY

- + Designed Arduino-based AP Physics labs and mentored peers in applied engineering; A.J. Drexel Merit Scholar; supported food security initiatives.