Farhan Sadeek

farhansadeek.com | farhan@farhansadeek.com | 617-939-9262

EDUCATION

DARTMOUTH COLLEGE
B.E. EECS & M.Eng EECS
A.B. in Math & Physics
Jun 2029 | Hanover, NH
Cum. GPA: 4.0 / 4.0
Discrete Mathematics
Data Structures and Algorithms
Deep Learning
Computer Vision
Machine Learning
Biological Circuit Engineering
Honors Real Analysis
Complex Analysis
Point-Set Topology
Mathematical Cryptography

THE OHIO STATE UNIVERSITY
Dual Enrollment in HS
Math/Stat, Physics, CS, ECE
May 2025 | Columbus, OH
Cum. GPA: 3.7 / 4.0
Number Theory
Abstract Algebra
Real Analysis
Mathematical Statistics
Relativity/Quantum Mechanics
Probability Theory
Classical Mechanics
Mathematical Logic and Proofs
Ordinary Differential Equations
Partial Differential Equations
Linear Algebra
Multi-variable Calculus
Discrete Mathematics
Data Structures
Object-Oriented Programming
Software Dev and Design

LINKS

Github: **SadeekFarhan21**
LinkedIn: **farhansadeekde110**

SKILLS

PROGRAMMING
Over 5000 lines:
Java • C++ • Python • Javascript
HTML • CSS • LaTeX
Over 1000 lines:
C • R • CSS • • MySQL

TOOLS & FRAMEWORKS
Data Analysis & Visualization:
Tableau • Tidyverse • Pandas • Plotly
Machine Learning:
Scikit-learn • TensorFlow • PyTorch
Keras • Pandas • NumPy • Matplotlib
Seaborn • OpenCV • Airflow
Web & Frontend:
TypeScript • React • Next.js
React Native • Tailwind CSS
Backend & Deployment:
Node.js • FastAPI • Flask • REST APIs
GraphQL • Kubernetes • AWS
Data Engineering & Big Data:
Apache Spark • Kafka
BigQuery • Delta Lake • Airflow
Embedded & Hardware:
Arduino • Raspberry Pi • FPGA
CUDA • OpenCL
Tools & CAD:
Git • Onshape • Jupyter • Postman

AWARDS

2025
'Most Innovative' at Makeathon
ASA DataFest Finalist
2nd place at SIAM2I Quantathon
HackAI Winner
AIME Qualifier
2024
High School I/O Hackathon Winner
USA Computing Olympiad Gold
Gates Scholarship Semifinalist
2023
High School I/O Winner
2022
AP Scholar with Distinction
Ohio State Hackathon Winner
2021
Physics Olympiad Semifinalist
Chemistry Olympiad Semifinalist

ACTIVITIES

Competitive Programming Club
Big Data and Analytics Association
Artificial Intelligence Club
Google Developer's Club

EXPERIENCE

JANE STREET | Academy of Mathematics and Programming
June 2025 – Aug 2025 | New York, NY
- Selected as one of **80** students out of **10,000** nationwide for this intensive summer program in mathematics and programming.
- Studied number theory and combinatorics in depth, and collaborated with classmates on complex problems.
- Learnt object-oriented programming principles, algorithms, and data structures, graph theory, and applied them in weekly take-home projects.

THE OHIO STATE UNIVERSITY | Student Assistant Instructor
Jan 2025 – May 2025 | Columbus, OH
- Assisted in teaching CSE 2231: Software Development and Design, providing guidance on object-oriented programming principles, design patterns, and software engineering best practices.
- Conducted lab sessions and office hours to support students in understanding course material, debugging code, and completing assignments.

EXPEDIA GROUP | Software Engineer
June 2024 – Aug 2024 | Seattle, WA
- Developed machine learning models to analyze travel data and identify growth opportunities, leading to an **18%** increase in customer retention and a **22%** boost in booking accuracy.
- Streamlined competitor benchmarking by automating data aggregation processes, reducing analysis time by **40%** and improving actionable insights delivery by **30%**.
- Collaborated with engineering and product teams to integrate market intelligence into platform enhancements, resulting in a **25%** improvement in user experience scores and a **15%** reduction in customer churn.

SPECTRUM | Technical Solutions Engineer
June 2023 – April 2024 | Columbus, OH
- Advised over **200** clients monthly on network solutions, including VoIP, MPLS, and SIP technologies, contributing to a **12%** increase in long-term contract renewals and a **20%** reduction in support tickets.
- Designed and presented technical proposals tailored to client needs, achieving a **25%** rise in sales conversions and a **30%** increase in customer engagement metrics.
- Collaborated with sales teams to provide technical insights, leading to a **15%** improvement in team productivity and boosting client satisfaction scores by **18%**.

NETSTEADY | Automation Programmer
May 2024 — Aug 2024 | Hilliard, OH
- Designed and implemented automated testing frameworks and scripts, achieving a **35%** reduction in manual testing efforts and a **20%** increase in bug detection rates, alongside a **30%** decrease in system outages due to proactive monitoring.
- Created custom automation solutions for data processing and system integration, increasing operational efficiency by **40%**, reducing system downtime by **15%**, and leading to a **20%** improvement in team productivity through comprehensive documentation and training.

PROJECTS

MOVIELENS — **github.com/sadeekfarhan21/movielens**
- Developed a comprehensive movie recommendation system using matrix factorization and neural collaborative filtering on the MovieLens dataset.
- Implemented both PyTorch and from-scratch NumPy versions with user adaptation algorithms for personalized recommendations and cold-start handling.
- Created an interactive Streamlit web application with real-time rating collection and recommendation generation using advanced embedding techniques.

QUANTIFYAI — **github.com/sadeekfarhan21/quantifyai**
- Conducted a comprehensive analysis of financial data from 2007 to 2022, using data from 2007 to 2018 for training a predictive model and data from 2019 to 2022 for testing.
- Developed and implemented a machine learning model to forecast stock prices, achieving a Sharpe ratio of 1.1, which indicates a significantly higher return per unit of risk compared to the S&P 500 benchmark.
- Utilized Python libraries such as Pandas, NumPy, Scikit-learn, TensorFlow, Matplotlib, and Seaborn for data preprocessing, feature engineering, model training, evaluation, and generating detailed performance reports and visualizations.

SIGNIFYAI — **github.com/sadeekfarhan21/signifyai**
- Developed a real-time emotion detection system that parses the entire screen of a laptop and runs a machine learning model locally to predict emotions.
- Implemented an assistive speech detection feature for individuals with speaking disabilities, enhancing accessibility and communication.
- Achieved efficient machine learning inference by optimizing computational workflows, balancing algorithmic complexity with the limitations of embedded systems.

DIFFSENSE — **github.com/sadeekfarhan21/diffsense**
- Developed a differential sensing system using Python and OpenCV to detect subtle changes in environmental data, such as temperature or motion variations.
- Implemented machine learning algorithms for anomaly detection, achieving 95% accuracy in identifying irregularities in real-time data streams.
- Created a user-friendly dashboard with Plotly for visualizing sensor data and alerts, enabling proactive monitoring and decision-making.

PILLIFYAI — **github.com/sadeekfarhan21/pillifyai**
- Designed and built an IoT-enabled automatic pill dispenser using Arduino and Raspberry Pi, with scheduling and reminder features for medication adherence.
- Integrated sensors and actuators for precise dispensing, reducing errors by 80% compared to manual methods, and included a mobile app for remote monitoring.
- Ensured security and reliability through encrypted communication and fail-safe mechanisms, promoting better health outcomes for users with chronic conditions.

DIVVY BIKE ANALYSIS — **divvy.farhansadeek.com**
- Built a complete Divvy bike-share analytics workflow in R, cleaning and unifying millions of ride records with tidyverse tooling.
- Produced interactive Quarto dashboards to surface trends across ride types, rider segments, and station demand.
- Deployed the site on Netlify so stakeholders can explore key metrics and download supporting visuals on demand.

COLLEGE NOTES — **notes.farhansadeek.com**
- Created detailed LaTeX notes for Physics, Math, and CS classes, including equations, diagrams, and code snippets for clarity.
- Organized notes by semester and subject for easy reference, continuously updating them based on lectures.

PERSONAL PHOTOGRAPHY — **photos.farhansadeek.com**
- Used a pre-built `react` template to efficiently create a dynamic portfolio website showcasing photography projects.
- Integrated a user-friendly interface with smooth animations and a responsive design to attract and engage visitors effectively.