

Pavankumar Gali

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Education

University of Houston

BS Honors Computer Science | Minor Finance & Math

Graduation: May 2027

GPA: 3.920, Major GPA: 4.0

Experience

Undergraduate Research, University of Houston

March 2025 – Present

- Began analysis of 5+ peer-reviewed papers focused on ray tracing and rendering
- Collaborating under guidance of Dr. Gouning Chen's research group on potential future contributions
- Connected with 2+ active researchers to involve ray tracing in computational geometry and modeling

Research Chair, IEEE-NSM | University of Houston

Feb 2025 – Present

- Organizing research colloquiums with 6+ graduate/PhD students, founding a research sector, bringing students
- Planning undergraduate research opportunities by matching students with professors based on their needs
- Preparing to mentor students in research fundamentals, from literature reviews to best practices in publication

Computer Science Tutor, CougarCS | University of Houston

Feb 2025 – Present

- Tutoring 30+ students in Computer Architecture and Data Structures, improving test scores by 15% on average
- Created 10+ visual aids and code templates for challenging concepts (e.g., cache mapping, graph traversals, ARM assembly pipelining)
- Earned Top 10 tutor designation by completing 15+ hours in first 8 weeks, ranking among most active tutors

Vision Systems Lead, Golden Warriors Robotics (FIRST Robotics Competition)

Aug 2023 – May 2024

- Developed a live object detection system using Java and PhotonVision, achieving 97.5% accuracy in competition
- Applied vision fundamentals (grayscale conversion, adaptive thresholding, contour analysis) boosting reliability
- Trained 5 junior members in computer vision fundamentals, with 3 continuing with similar competitions

Projects

HackMisso Hackathon Goob Fitness App | JavaScript, Node.js, Express, MongoDB github.com/Douqt/GoobFit

- Used Express.js and MongoDB to create user authentication, posts, and comments with JWT and bcrypt
- Implemented MongoDB database integration, optimizing queries and ensuring efficient data retrieval

Chess AI | C#, .NET, Unity

github.com/Douqt/Chess-AI

- Developed competitive chess AI rated 1600 ELO on Lichess, outperforming 65% of human players
- Engineered a competitive Chess AI implementing advanced algorithms (alpha-beta pruning, mini-max, Zobrist hashing, move ordering, iterative deepening) achieving 12-ply search depth
- Optimized performance using bitboard representations and transposition tables, improving move calculation time by 100x (2000ms → 20ms)

B.O.B. (Battle of Businesses) | C#, .NET, Unity

github.com/Douqt/BOB

- Earned 5th place among 50+ Texas teams, qualifying FBLA Nationals with my business simulation game
- Designed complete Unity / C# systems including a branching narrative engine (25+ decision paths), intricate demonstration of stock market mechanics, and competitive standard user interface

DAAS MCC (Minecraft Server) | Minecraft, Java, Git

- Managed a 25-person team across building, art, coding, and social media to run a popular Minecraft server
- Led a 5-person development team to design engaging game experiences and optimize performance
- Organized weekly tournaments for 200+ active players, fostering a strong community

Skills

- **Languages:** C#, C++, Java, JavaScript, TypeScript, HTML & CSS, R
- **Tools/Frameworks:** .NET, Git, Unity, React, Node.js, Express, MongoDB