Pavankumar Gali

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Education

University of Houston   Graduation: May 2027
BS Honors Computer Science | Minor Finance & Math   GPA: 3.920, Major GPA: 4.0

Experience

Software Engineering Internship, Infoshare Systems   June 2025 – Aug 2025
- Developed a web-based inventory management system using ASP.NET MVC & SQL Server for 1,500+ SKUs
- Implemented full CRUD functionality & a responsive UI using Bootstrap boosting efficiency by 50%
- Tailored the backend model & handled integration with a relational database for tracking inventory at 5+ sites

Undergraduate Research, University of Houston   March 2025 – Present
- Began analysis of 5+ peer-reviewed papers focused on ray tracing & rendering
- Collaborating with Dr. Gouning Chen & Lei Si on research, contributing 10+ hours/week to algorithm analysis
- Connected with 2+ active researchers to explore applications ray tracing in computational geometry & modeling

Research Chair, IEEE-NSM | University of Houston   Feb 2025 – Present
- Organizing research colloquiums with 6+ grad students, founding a research sector, & recruiting students
- Planning undergraduate research opportunities by matching 20+ students with professors based on their needs
- Preparing to mentor students in 5+ core research skills, from literature reviews to publication practices

Computer Science Tutor, CougarCS | University of Houston   Feb 2025 – Present
- Tutoring 30+ students in Computer Architecture & Data Structures, improving test scores by 15% on average
- Created 10+ visual aids & code templates for 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

Projects

Ray Tracing Renderer | C++, Vulkan, Git   github.com/Douqt/Render
- Optimized ray traversal using BVH acceleration structures, reducing render times 10x from 30s to 3s per frame
- Integrated GPU acceleration with Vulkan, lowering frame render time from 2.5s on CPU to 40ms on GPU
- Applied vector math, linear algebra, & optics to simulate light transport in 100k+ polygon scenes

HackMisso Hackathon Goob Fitness App | JavaScript, Node.js, Express, MongoDB   github.com/Douqt/GoobFit
- Used Express.js & MongoDB to create user authentication, 200+ posts, 500+ comments with JWT & bcrypt
- Implemented MongoDB integration, optimizing queries to reduce average data retrieval time by 40%

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 & 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, & competitive standard user interface

Skills

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