Saahil Gupta

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Computer Science student passionate about discrete math and algorithms, web development, game design, virtual reality, and generative AI. Skilled programmer with 6+ years of programming experience in C++, Java, Rust, Unity, Go, JavaScript, and OCaml. Entrepreneurial fast learner with self taught abilities in a wide range of hardware and software tools and frameworks.

TECHNICAL SKILLS

Programming Languages: Java, C/C++, JavaScript, TypeScript, Python, HTML/CSS, SQL, OCaml, Rust, Go, Dart
Computational Graphics: Houdini, OpenGL, Vulkan, GLSL, HLSL, Nvidia SLANG, CUDA, Blender, Unity, Maya, Unreal Engine
Technologies: React, Node.js, Flask, Django, Electron, React Native, Flutter, Bootstrap 5, NumPy, Pandas, scikit-learn, Tensorflow, PostgreSQL, MySQL, Heroku, Railways, Digital Ocean, REST, AWS, Matlab, Angular, Firebase, Tauri, and various other frameworks and libraries
Project Management: Git, Jira, Confluence, Azure DevOps, Agile, and various other project tracking software

EDUCATION

BSE, Computer Science and Computational Graphics   Aug '23 - May '26
University of Pennsylvania, School of Engineering and Applied Sciences

Relevant Courses: Programming Languages and Techniques, Discrete Mathematics, Multivariable Calculus, Digital Design Culture, Computer Hardware Systems, Data Structures and Algorithms, Computational Linear Algebra, Human Computer Interaction, 3D Computer Modeling, Mechanical Design and CAD, Intro to Computational Graphics

Github: www.github.com/seabiscuit-iv
Website: www.saahil-gupta.com

Projects:

- **Won Best AI project at PrincetonHacks:** Programmed a reading and cognition improvement mobile app using React Native, Firebase, OpenAI GPT agents, and Modal semicomplete neural networks
- Built a generative AI model to generate thematic tweets based off scraped data from X.com using Python, Tensorflow for PennApps hackathon
- Built an 3D OpenGL path-tracing capable graphics engine in Java using the LWJGL graphics library
- Lead programmer for the UPGRADE game development studio: lead the production of multiple projects UPGRADE's minigame collection; designed and programmed the PennUPGRADE website: www.pennupgrade.com
- Built a fullstack check-in and authorization control platform used by over 30 makerspace locations using Svelte and Firebase
- Built a freeform based computer from scratch using an AMD 16K 8-bit microprocessor
- Built an open-source FC drone motor thrust tweaking and calibration software in Processing and C++
- Designed a tracking algorithm based on the CSRT algorithm focusing on tracker recovery and a photogrammetry calculator to estimate position and velocity data of high speed objects

WORK EXPERIENCE

NASA Software Engineering Intern, Marshall Space Flight Center (MSFC), Huntsville AL   Jun '24 - Aug '24
- Designed and produced multiple VR simulation in OpenXR applications for the NASA Artemis 2 Lunar missions
- Designed a procedural lunar landscape generation tool using lunar heightmap data
- Created photorealistic subsurface shader scripts for lunar terrain using light and surface composition data

- Designed a vector mosaic tile scale and rotation function to procedurally mix multiple textures and avoid tiling artifacts
- Wrote procedural 3D CAD model random-damaging scripts for damage assessment testing and training
- Spent entire term following strict government security practices and working in a high security environment

Researcher @ RADLab(Computational Neuroscience and AI Lab), SF State University May '22 - Aug '22
- Independent research under faculty advisor on measuring drivers of emotional and neural stimulation in VR
- In-depth analysis of state of flow experienced by users during virtual reality and other immersive experiences
- Performed subject tests to find driving factors of immersion and enjoyment in various forms of media

Software Engineering Intern, Concrete Software, Edina, MN May '21 - Aug '21
- Designed a new, more efficient system for automatically converting PGA map data into game-ready 3D models
- Helped maintain and debug flagship mobile game PGA golf tour with millions of players
- Rewrote legacy design patterns, optimizing the game to run 10-12% faster

Virtual Reality Research Intern, University of California Santa Cruz, CA May '20 - Aug '20
- Created interactive virtual reality experiences to assist developmentally disabled adults in the learning of social skills like conflict handling and self-confident assertiveness
- Recorded and improved experiences based on real test data from adult users

Software and Firmware Engineer, Wonder Workshop (Educational Robotics) May '19 - Aug '19
- Designed and engineered new attachments and firmware for leading robotic products
- Redesigned the compiler and code editor for the company's proprietary programming language
- Filmed, edited, and produced multiple product tutorial videos featured on the company website
- Designed multi-level challenges for annual robotics competition with 1K+ attendees

Indie Game Developer Aug '19 - Present
- Designed and produced multiple indie games with various original assets, scripts, mechanics, and music
- Participated in numerous game jams and game development conventions
- Nominated as judge for MelonJam, a three-day indie game jam with over 1000 participants
- Contributed to open-source project VR mod for the AAA game Red Dead Redemption 2

AI Student Developer, Inspirit AI Nov '20 - Feb '21
- Designed a neural network in Python & TensorFlow capable of identifying misleading news articles
- Developed a model with 89% accuracy rate denouncing the candor of many fake news articles

ACCOMPLISHMENTS

- USA Computing Olympiad (USACO) Gold Level Competitor
- 2x Hackathon Winner
- CodeForces Pre-Master Level Competitor
- 1st Place, 30th National Japan Bowl, 2nd Place, 31st National Japan Bowl
- Synopsys science fair honorable mention
- 8 years of guitar playing
- 7 years of Japanese language experience
- 7 years of 3D art and environment design

CLUB ACTIVITIES AND LEADERSHIP

- **Vice President**, UPGRADE Game Development Studio - Responsible for designing and creating the main infrastructure of large projects before transition to the entire team
- **Member,** UPenn SIGGRAPH Chapter - Created weekly blender 3D art projects for showcase and critique, and contributed to club-wide graphics projects
- **Captain,** Lynbrook High School Varsity Football Team - Member for 4 years, captain for 2 years
- **Co-President**, Japanese National Honors Society, Lynbrook - Led community, networking and speaker events
- **Volunteer Project Development Programmer -** Supported multiple small businesses by upgrading their website, setting up easy order and payment options