Randy Fan

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Education

University of California, Berkeley *Class of 2020*

Computer Science and Economics; 3.92 GPA

Relevant Coursework:

Computer Graphics, Artificial Intelligence, Linear Algebra and Differential Equations, Discrete Math and Probability Theory, Data Structures, Data Science, Structure and Interpretation of Computer Programs, Probability in Data Science

Plano West Senior High School *Class of 2016*

Class Rank: 3 out of 1389; SAT: 2320 / 2400; ACT: 36 / 36; SAT II – Math II: 800; National AP Scholar

Projects

Snow Simulation – C++

- Built a snow simulator capable of simulating falling snow, compact snowball collision, and other effects.

Pathtracer – C++

- Implemented a physically based renderer using a ray tracing algorithm, incorporating ray-scene intersection, acceleration structures, physically based lighting, complex materials, environment lighting, and depth of field effects.

Machine Learning – Python

- Implemented a machine learning tool using perceptrons and neural networks to classify digits and identify the language of a text.

Cloth Simulator – C++

- Created a real-time cloth simulator using a mass and spring system, calculating forces using numerical integration and handling collisions with other objects (e.g. spheres) and self-collisions to prevent cloth slipping.

Mesh Edit – C++

- Built a mesh editor that allows you to load and edit basic COLLADA mesh files. Used de Casteljau's algorithm to build Bezier curves/surfaces, half-edge data structure to manipulate meshes, and included an implementation of Loop subdivision.

Work Experience

Undergraduate Graphics Researcher (with Professor Carlo Séquin) *Jan 2019 – Present*

Department of Electrical Engineering & Computer Science, University of California, Berkeley

- Conducted research in cellular automaton, random walks, and interactive CAD software.
- Developed 3D turtle graphics in a body-centered cubic system to construct complex geometries.
- Implemented self-avoiding random walks and created sensor heuristics that led to exponential increases in path length.
- Explored ant colony simulation, maze generation, fire simulation, Perlin noise on torus terrain, and pixel array patterns.

Financial Business Intelligence Intern *May 2019 – Present*

Microsoft, Redmond, WA

- Automating business rhythms, cognitive visual learning, and machine learning forecasts.

Financial Data Analyst Intern *May 2018 – Aug 2018*

Microsoft, Redmond, WA

- Developed and introduced a weighted scoring system for inefficient expense accounts that was adopted by the Financial Data Management (FDM) team, significantly reducing the amount of manual account repurposing work needed.
- Integrated the scoring system into an automated PowerBI dashboard.
- Published a 20+ page handbook detailing my scoring system.
- Implemented SQL queries directly connected to Microsoft's P&L database to generate large data sets (~75 million rows) containing financial transaction details.
- Identified over 700 expense accounts in Microsoft's Chart of Accounts (CoA) that could be blocked.
- Synthetized findings from CoA analysis into an article detailing CoA optimization efforts, read by over 5000 Microsoft employees with 100% positive feedback.
- Specified a CoA design framework that will be used in future Microsoft CoA designs.
- Drafted a user guide, adopted by the FDM team as a template, detailing how Localization accounts capture costs.
- Built a new SharePoint site used by Microsoft for improved processes, resources, and communication of all budget-related information, including restatements.

Software Developer - erth.io – *Live at http://erth.io* *March 2018 – Present*

- Implemented new frontend visuals, including integration with backend code.
- Managed server deployments across 8 dedicated Linux servers.
- Fine-tuned custom physics engine and developed new gameplay features that were pushed to production.
- Marketed the game, reaching 300,000+ unique new visitors and obtaining sponsorship from Addicting Games, Inc.

Undergraduate Researcher (with Professor Clayton Critcher) *Feb 2017 – Aug 2018*

Haas School of Business, University of California, Berkeley

- Conducted over 300 hundred research experiments in the Behavioral Lab on consumer behavior and assisted in developing 11 research reports (e.g., product star ratings, base rate neglect, prevalent fallacy).

Skills

Experienced: Python, Matplotlib, NumPy, Excel, PowerBI, SharePoint

Familiar: Java, SQL, Bloomberg terminal, C++