Curriculum Vitae

Edward Zhang

Seeking: Doctor of Philosophy (Ph.D.) in Computer Science
Engineering

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SUMMARY

I am a Visual Computing and Entrepreneurship dual major, game development leader, student athlete, digital media enthusiast, and caring older brother. My vision is to spur the development of innovative and sustaining technologies that help humanity better harness the infinite power of visual computing in the fields of entertainment, manufacturing, education, healthcare, and beyond.

SKILLS

Languages

Programming	C++/C/C#, Python, Java, R, SQL, CUDA, Vulkan, Typescript, WebGPU
Spoken	English (Native), Chinese (Advanced), Spanish (Proficient)

Software

Technical	PyTorch, TensorFlow, OpenCV, PyRender, MediaPipe, Visual Studio, Google Colab, Unity, Unreal, RStudio, NSight
Business	Microsoft Office, Google Suite, MySQL
Creative	Adobe Suite, Autodesk Maya, Blender, Faceware, Krita, Motionbuilder, Shogun Post, iMovie

RESEARCH EXPERIENCE

Children's Hospital of Philadelphia - Researcher   January 2023 - Current

Managing and designing for an NIH funded project on developing an assent form that effectively tests for comprehension of terms in legal disclosures for experimental sleep studies by patients with Down's Syndrome utilizing an interactive component powered by a game engine. Project Supervisor: Dr. Andrea Kelly

Efficacy of Game-Based Learning - Wharton Honor Thesis   September 2022 - Apr 2023

Built game to teach students the concept of recursion using game engine technologies, conducted extensive literature review and preliminary experiments in said game's efficacy. This serves as a proof of concept for utilizing games technologies in an educational context beyond the traditional approaches of improved immersion and general competitive incentive structures. Playable here. Faculty Advisor: Ethan Mollick

Ego-Exo Music Data Collection - Researcher   October 2022 - Current

Leading the organization of logistics operations of a data collection project recording Ego and Exo videos of subjects playing piano, guitar, and violin. This dataset is being collected in collaboration between the University of Pennsylvania and Meta. Faculty Advisor: Jianbo Shi

SIG Center for Computer Graphics - Researcher   Jun 2022 - Apr 2023

Conducting funded research on the applications of full-body and facial motion capture to the fields of sign language processing and human computer interaction. This work resulted in an abstract submission and poster presentation at the 2022 Motion, Interaction and Games (MIG) conference. Faculty Advisor: Aline Normoyle, Norman Badler

Wharton World Research Assistantship Program - Research Assistant   May 2021 - Feb 2022

Led a research project taking a data-driven look at the performance of Chinese stocks listed on the U.S. market relative to the stock of the rest of the world using data scraped from SEC filings and Wharton search data services using Python and SQL. The results of this were presented at the 2022 Wharton Research Symposium. Faculty Advisor: John Zhang

Teaching Experience

Modern Datamining - Teaching Assistant   Jan 2023 - Current

Taught machine learning concepts, held office hours, and graded homeworks and exams at a Ph.D. level statistics course at the Wharton school using R and Python. Faculty Supervisor: Linda Zhao

Wharton Data Science Academy - Teaching Fellow   Jun 2022 - Jul 2022

Three weeks of teaching a highly selective class of 60+ high school students modern data mining practices and machine learning concepts through giving lecture, designing and grading homework, and leading small group workshops. Faculty Supervisor: Linda Zhao

Advanced Rendering - Teaching Assistant   Jan 2022 - May 2022

Taught upperclassmen and graduate students for the Advanced Rendering course at the University of Pennsylvania with teaching and grading. This course, CIS 4610, covers the foundations of path tracing, the light transport equation, and other rendering techniques and algorithms. Faculty Supervisor: Adam Mally

Engineering Summer Academy at Penn - Teaching Assistant   Jul 2021 - Aug 2021

Led a team of teaching assistants guiding a class of 30+ high school students through a college-level computer graphics summer program by holding office hours, moderating lectures, and organizing events. Faculty Supervisor: Mark Langeveld

Projects

Efficacy of Game-Based Learning In the Teaching of Abstract Concepts   [Code]

Developed a WebGL game in Unity to leverage the power of computer graphics and game engines to visual depict the concept of recursion in a visual manner. Playable game link, thesis, and more are detailed in the repo's readme.

Virtual Avatar Software Apparatus   [Code]

Developed a basic software package for running a 2D virtual avatar built off of OpenCV and MediaPipe that allows for anyone to take up the hobby of streaming under a virtual avatar as a Virtual Tuber or VTuber (VTUbing)

Bionic Traveler   [Steam Page]

Led a team of 30+ developers in UPenn's Game Development Club across departments of programming, art, sound, and writing to bring this action-RPG game from concept to publication onto the Steam Marketplace within a single year.

YouTube Channels   [A Sleepy Insomniac] | [Personal]

My *A Sleepy Insomniac* channel boasts over 2.3K subscribers where I script, record, and edit essays about the film, animation, and the technology and business that surrounds these mediums. My person channel is where I post award winning scholarship video essays, school projects, and miscellaneous movies

CUDA Pathtracer   [Link to Demo]

Implemented a pathtracer directly onto the GPU using Cuda. This path tracer features arbitrary mesh loading, a multitude of material properties, depth of field approximations, anti-aliasing, as well as run time acceleration features using stream compaction, memory coalescence, and ray caching.

EDUCATION

2019 - 2023	**University of Pennsylvania - School of Engineering and Applied Science**	
	BSE - Digital Media Design	(GPA: 3.71/4.0)
2019 - 2023	**University of Pennsylvania - Wharton School of Business**	
	BS - Entrepreneurship & Innovation	(GPA: 3.71/4.0)

(GPA: 3.71/4.0)

Coursework:

Engineering: CIS660 Advanced Topics in Computer Graphics CIS580 Machine Perception CIS565 GPU Programming and Architecture, CIS581 Computer Vision and Computation Photography, CIS568 Game Design Practicum, CI562/462 Computer Animation, STAT471 Modern Data Mining, CIS561/461 Advanced Rendering, CIS262 Theory of Computation, CIS320 Algorithms, MATH114e Multivariable Calculus, NETS213 Human Computing and Crowd Sourcing, CIS240 Computer Systems, CIS560/460 Interactive Computer Graphics, ESE301 Engineering Probability, CIS120+CIS121 Programming Languages and Data Structures I & II, EAS205 Scientific Computing, CIS160 Mathematical Foundations of Computer Science

Business: FNCE251 Mergers and Acquisitions WH299 Wharton Honors Thesis, MGMT264 Venture Capital, BEPP284 Applied Game Theory, ACCT101 Accounting and Financial Reporting, FNCE100 Corporate Finance, FNCE101 Monetary Economics, MKTG211 Consumer Behavior, MKGT350/850 Consumer Neuroscience, MKTG221 New Product Management, FNCE232/732 International Banking, MGMT229 Intellectual Property Strategy, MGMT230 Entrepreneurship, MGMT267 Entrepreneurship and Tech Innovation, OIDD290 Decision Processes, MGMT301 Teamwork and Interpersonal Influence, WH201 Business Communication, LGST101 Law and Social Values, BEPP250 Managerial Economics, MGMT101 Management, MKTG101 Marketing, ECON001 Microeconomics, ECON002 Macroeconomics

Other: BIOL140 Humans and the Environment, CIS106 Visualizing the Past, CHIN231+CHIN232 Intermediate Chinese I & II, WRIT025 Writing Seminar, FNAR280 Figure Drawing, CIMS223 Storytelling in Africa

SAT Cumulative: 1570 | Math: 800 | Reading and Writing: 770
SAT Subject Tests: Math II: 800 | Physics: 800 | World History: 760

INVITED TALKS

An Overview of Neural Radiance Fields	CIS 6600 Advanced Topics in Graphics	Apr 2023
Ventures in Visual Computing	Huawei Cloud	Mar 2023
Bootstrapping a Game Dev Organization	Hyper Elk Global Game Jam	Feb 2023
What's Up? Gas Prices!	Women In Data Science @ Penn Conference	Feb 2023
Neural Networks at a High Level	Vista Del Lago High School ML Club	Dec 2022
Open-Body-Fit	ACM SIGGRAPH Conference on Motion, Interaction, and Graphics (MIG)	Nov 2022
A Data-Driven Look at the China Dream	Wharton Research Symposium	Feb 2022

Awards

National Merit Scholarship Winner	2019
Live Más Scholarship $10,000 Winner	[Link](#) 2019
Live Más Scholarship $2,500 Winner	[Link](#) 2020

Extracurricular Achievements

UPenn Game Research and Development Environment - President   Sep 2019 - Present

[Grew from 2 to 100+] Leading a club of 100+ members and 30+ active developers that works to introduce members video game development pipeline through hands-on experience coding, playtesting, marketing, and launching games to market. The club also works to introduce the games industry at large by hosting guest speakers, competing in game jams, and attending industry conferences. Check out [this documentary](#) on our most recent hackathon!

Penn Sprint Football - Varsity Player   Sep 2019 - May 2022

Defensive Lineman on the University of Pennsylvania Sprint Football team; practicing, lifting, and traveling for games take up to 20 hours per week.