

Akarsh Kumar



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Overview

- **Objective:** Internship that introduces me to industry-level software development or machine learning
- Excellent software engineering experience from programming for clients and businesses, as well as recreationally since 12 y/o
- **Strong Skills:** Java, C++, Python

Education

THE UNIVERSITY OF TEXAS AT AUSTIN | B. S. IN COMPUTER ENGINEERING AND PHYSICS | MAY 2022

- **Major GPA: 4.00**, Overall GPA: 3.97
- Notable courses: **Software Design I, Discrete Math**, Computing, Embedded Systems, Matrices, Vector Calculus, Circuits (I, II)
- Current courses: **Algorithms, Software Design II**, Probability, Linear Systems

ARKANSAS SCHOOL FOR MATH, SCIENCE, AND ARTS (ASMSA) | HIGH SCHOOL DIPLOMA | MAY 2018

- **GPA: 4.23, ACT: 35**
- Notable courses: Algorithms and Data Structures, Graphics Programming, AP Computer Science, Discrete Math, Number Theory

OTHER COURSES

- Coursera: Stanford Machine Learning, Neural Networks and Deep Learning, TensorFlow in Practice
- CodePath: Advanced Software Engineering, iOS University

Programming Projects

MACHINE LEARNING PROGRAMS | PERSONAL PROJECTS | APRIL 2018 – PRESENT

- Developed **neuroevolution** (NNs trained with a special genetic algorithm) from **scratch** to train AI to beat Flappy Bird and balance two poles on a cart without velocity/angular velocity information (**Java**)
- Coded abstract **deep NN** from **scratch** and trained it to recognize handwritten digits using stochastic gradient descent and created a neuron and weight visualization tool for it (**Java**)
- Created and tested **genetic algorithm** at TAMU Hackathon from scratch, and trained it to optimize keyboard layouts, reducing typo word collision by over 60%, while increasing typing speed by 10% (**Java**)

COMPUTER ALGEBRA SYSTEM + GRAPHING CALCULATOR | PERSONAL PROJECT | JAN 2015 – PRESENT

- Developed program to parse mathematical text into a logic tree from scratch (**Java**)
- Used this to evaluate expressions, calculate partial derivatives, and graph functions in Java Swing GUI

GAMES | 2015 – PRESENT

- [Ongoing] Creating a **chess engine** to reveal optimal moves given picture/video feed of a chessboard (**Python, OpenCV**)
- Developed **3D first-person shooter** zombie game from scratch for a CPU and memory constrained embedded system (**C++**)
- Resurrected the old game "Tactics Arena Online" into a personal strategy game Strategic Anomalies from scratch (**Java**)

IOS DEVELOPMENT | 2018 – 2019

- Produced crucial frontend screens of a bleacher report-like sports app for a **freelanced client (Swift)**
- **Instagram clone** (frontend + backend), UT News app, custom Twitter client, IMDb movie browsing app (**Swift**)

OTHER PROJECTS | 2012 – 2019

- LibAK: Comprehensive library including all ML, CAS, and GUI mentioned above to make future projects easier (**Java**)
- ASMSA Algorithms: maze generation/solving, pathfinding, hash tables, self-balancing binary search trees (**Java**)
- Graphics Programming: seam carving/expansion for images, personal QR code creation/detection, panorama creation (**Python**)
- Valentine's matchmaking algorithm (competition won), physics magnet simulation (**Java**)

Work Experience

PROLITFIC | CONSULTANT | JAN 2019 – MAY 2019

- Chosen for Texas Convergent's Startup Pods, an advanced build team to give students exposure to local startups
- Gave users accurate story ratings and blocked spam on Prolitfic.com by creating a backend **weighted review algorithm (Django)**

FREE GEEK, AR | CONSULTANT | AUG 2015 – FEB 2016

- Programmed a desktop application to track volunteer hours for the non-profit technology organization Free Geek (**Java**)

Activities

LEADERSHIP

- Lead VEX robotics team to 2nd place in nationals as the project manager, robot designer, and lead programmer
- Chosen as Community Leader to support students at ASMSA with academic and personal concerns and plan community activities

INTERESTS/HOBBIES

- Avid League of Legends player, pickup and intramural basketball player, ultimate frisbee player, and NBA fan
- Hackathons (TAMUHack), Fayetteville Programming Competition (1st place x2), Putnam Competition (math), Project Euler