KAUSHAL PRASATH

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Education

Liberty High School, Frisco ISD | Aug 2021 - May 2025
Unweighted GPA (3.628/4.0) | Weighted GPA 4.517 | SAT - 1480(M: 760; R: 720)
Relevant coursework:

- Computer Science Pathway: Computer Science 1 Honors, AP Computer Science A
- Related Courses: AP Calculus BC, AP Physics 1, AP Seminar

Member of School International Science Fair Club (ISEF)

Skills

Programming: Java, Python
Data Analysis/ML: Pandas, NumPy, MatPlotLib, ROS 2, NLTK, Beautifulsoup, Corpus, WordNet, Tokenizer, Toolbox
Robotics: Embedded Sensors/Circuitry, Fabrication, Power Tools, CAD Design, Mechanical Systems, Transmission Systems, Electrical Systems, Drive Train, Gearboxes, Motors
Athletics: Tae Kwon Doe (Black Belt), Cricket (All Rounder, Trainer), Football (Offense, Defence, Special Teams), Track & Field (Sprinter, Relay Sprinter)
Languages: English (Native), Tamil (Working Proficiency), French (Working Proficiency)

Professional Experience

Industrial Technology Analytics Intern

Ausweg | June 2023 - September 2023

- Analyzed diverse datasets to identify key parameters aligning with OEE (Overall Equipment Effectiveness) Criteria to improve efficiency in industrial machines
- Developed classification frameworks to categorize data in accordance with OEE standards to assist industrial managers in knowing the efficiency of the machines
- Implemented machine learning algorithms to automate the classification process along with making it more accurate and efficient
- Collaborated with multiple teams to confirm the classification systems met the requirements while generating detailed reports outlining the created systems and their results

Career Related Activities

FIRST Robotics Competition

Mech /Electrical Lead 2021, Captain 2022 | Team 8055, EGM Robotics | 12 hrs/wk, 30 wks/yr

- Initiated the design of an engineering design journal detailing every part of our season journey (design, programming, electrical board, mechanical components, etc.) for newer members to present to judges explaining our mechanical thought process.
- Participated and led workshops about CAD design, mechanical systems and parts, electrical systems, and game strategy.

- Brainstormed and fabricated the robot design involving rack & pinion intake system, turret shooter with adjustable hood, and telescoping climbing arms.
- Led groups in constructing a competition-ready robot.
- Created an electrical and sensor system to power, control, and communicated with the robot

Captain (11th) | Team 9407, Heatwave Robotics | 10 hrs/wk, 40 wks/yr

- Created an official team with FIRST Robotics and formed a 501(c)3 non-profit dedicated to spreading robotics knowledge across Frisco.
- Coordinated and organized all member activities and meetings
- Recruited new members and conducted interviews to grow and strengthen the team
- Created programming and version control software workshops to help educate 15+ members and enable subsequent collaboration
- Scanned WPILib (Library for standard robot code) for all documentation and capitalized on their simulator to prototype code when corresponding robot parts had not yet been built helping to improve workflow.
- Taught CAD design to members and designed robots, referencing the designs when assisting members in cutting and other dangerous work requiring oversight.
- Examined the entire electrical board, including robot radio, RoboRIO (brain), power distribution panes, motor controllers and motors, CANBUS, battery attachments, and wire connections/crimping, making sure there are no issues before the robot is ready to compete.
- Raised over $15,000 in grants from companies
- Fundraised over $5000 through teaching Lego robotics for K-8 kids.

Founder, Mechanical & Electrical Captain (12th) | Team 10032, Singularity Robotics | 20 hrs/wk, 40 wks/yr

- Founded and led an official team with FIRST Robotics Competition with over 35 members and formed a 501(c)3 non-profit dedicated to spreading robotics knowledge across the Dallas-Fort Worth area.
- Coordinated and organized all member activities and meetings
- Recruited new members and conducted interviews to grow and strengthen the team
- Led workshops teaching members mechanical and electrical skills
- Fostered communication between former team to acquire $40000 worth of tools necessary for optimal team functioning
- Wrote a sponsorship packet that attracted potential sponsors
- Taught CAD design to members and designed robots, referencing the designs when assisting members in cutting and other dangerous work requiring oversight.
- Examined the entire electrical board, including robot radio, RoboRIO (brain), power distribution panes, motor controllers and motors, CANBUS, battery attachments, and wire connections/crimping, making sure there are no issues before the robot is ready to compete.
- Worked with a local STEM organization to help coach their FIRST Lego League teams

Natural Language Processing With Python

University of Texas at Dallas 2023 | 4 hrs/wk, 12 wks/yr

- Explored Python NLTK data package and pulled data out of HTML and XML files to classify/parse using the Beautifulsoup library, making it easier to look for certain terms.

- Learned how to examine data retrieval methods, parsing large documents and addressing challenges in error handling, ensuring seamless data transfer, with minimal data loss, across multiple units
- Read the dataset given in the NLTK library to find relationships between words and phrases by incorporating the Corpus and WordNet packages
- Divided strings into substrings as well as found specific words and punctuations that are present in a body of text using the Tokenizer package
- Read and processed standard format and numbered the amount of times a certain word or phrase appears based on the input provided by the user, making it easier to scan documents for certain keywords, by utilizing the Toolbox class

Deep Dive AI Research Internship

University of Texas at Dallas 2024 | 40 hrs/wk, 8 wks/yr

- Explored Pandas, Torch, Torchvision, Numpy, Tensorflow, Pyplot, and Seaborn Libraries to create a Osteoarthritis Detection Software
- Scanned over 1500 MRI scans of knees with varying severity of osteoarthritis in the knee
- Utilized Convulational Neural Networks to look through KL Grading levels, Osteophytes, and Joint Space Narrowing (JSN) as signs of osteoarthritis
- Created a website that allows users to upload an MRI of their knee
- Trained a model that will grade the severity of the osteoarthritis with a 97% accuracy, and send back the grading as an output back to the patient
- Wrote a research papers that outlined the study and the results found during the project
- Presented project to UTD students and Faculty

Distracted Drivers

Summer Research Intern - InspiritAI 2022 | 40 hrs/wk, 2 wks/yr

- Created an AI system that recognizes when a driver is distracted and alerts them, to promote increased road safety
- Explored the use of convolutional neural networks on the data on images of distracted drivers, classifying them into four categories (attentive, drinking, changing radio, and looking in the mirror) to calibrate the system into knowing instances of when a driver is distracted.
- Examined saliency maps to recognize the pixel contribution from different convolutional layers to properly analyze the body positioning of a driver, noting them as either distracted or attentive..
- Created a confusion matrix that was then used to display our AI's findings and how the system works in detection of distracted drivers.
- Built a Python code to categorize images and data sets of various instances of distracted drivers.

Enhancing Road Safety Through Inter-Vehicle Communication

Independent Research Project 2022-present day | 4 hrs/wk, 52 wks/yr

Mentor - Emily Sheetz, PhD candidate in CSE, University of Michigan

- Creating a system for inter-vehicle communication to improve road safety by using AI provided solutions to find alternate routes and alert drivers of others' location.
- Utilized traffic suggestions in the use of SLAM (Simultaneuous Localization and Mapping) visions and detection systems to automatically create a shared, continuously updated road map
- Created a system of connected cars that alerts drivers to potential hazardous traffic occurrences utilizing ROS 2 (Robot Operating System 2)

- Messages can be sent quickly and efficiently by using the radio's of nearby vehicles. This assists in delivering messages to recipients who are too far away to be reached directly
- Demonstrated and showcased findings of enhanced road safety due to intervehicle communication using CARLA simulator
- Presented project at DRSEF to various judges
- Wrote a research paper, that was sent to IJHSR for publication, discussing the experiment and its findings

LearnEV3

Founder 2022-present | weekly, 52 wks/yr

- Created courses on robot building and programming using EV3 and Spike Prime robot control centers, to easily explain the basics of robotics
    - Created videos documenting teachings of how to code and demonstrations.
    - Taught how to code an EV3 in three different stages of difficulty.
    - Taught the different parts of a robot (EV3 brick, Spike Prime Brick, sensors, motors, etc.)

Invention-Shield

Founder 2024-present | weekly, 52 wks/yr

- Created a website using React JSX that markets patent writing services to companies looking for assistance in writing patents
- Worked with a client, JOGO Health, to write patents on Electromyography (EMG) Biofeedback for Migraine Treatment

Extracurricular Activities

Football

JV Captain (10th), Varsity (11th) | 15 hrs/wk, 13 wks/yr

- Starter on offense, defense, and special teams
- Adapted to the needs of the team, playing positions necessary for team success (wide receiver, tight end, H-back, running back, cornerback, safety, kick returner, punt return, Punt, PAT, PAT block)

Track

JV (9th, 10th), Varsity (11th) | 15 hrs/wk, 15 wks/yr

- 100m sprinter and member of 4x100 relay team
- Coached JV members to become stronger athletes and competitors

Boy Scouts of America

Life Scout (expecting Eagle) | 3 hrs/wk, 35 wks/yr

- Developed relationships with community leaders, organizations, and businesses to support volunteer efforts
- Created a clear, efficient system to improve tracking of all troop records, including dues, attendance, and budget reports
- Created and delivered presentations to mentor younger scouts in various essential life habits and skills during weekly meetings
- Organized and led scouts in an Eagle Project, to create a mobile battery cart, improving efficiency during robotics competition

Volunteering

FIRST Lego League

Team Mentor 2021-present | 3 hrs/wk, 8 wks/yr

- Taught essential programming and mechanical concepts using block coding and legos.
- Designed an outdoor litter-cleaning robot prototype for Park Rangers in New Jersey

Cricket Training For Special Needs Children

Trainer 2023-present | 2 hrs/wk, 35 wks/yr

- Coaching special needs children in Cricket to provide them a space of self expression through sport
- Convinced district to provide safe indoor and outdoor practice spaces

Writing Projects

Run For Life: Unleashing The Power Of Running For Fitness And Wellness (in progress)

Author (11th) | 3 hrs/wk, 12 wks/yr

- Wrote a book about the basics and importance of running

Awards

FIRST Lego League Awards

- Awarded 2nd place at state championship with team 25663.

FIRST Robotics Competition Awards

- Won Mahalo (Gracious Professionalism) Award; was District Finalist with team 747.
- Texas state qualifier (1 out of 80 teams) on team 8055.
- Won District Engineering Inspiration Award at state championships with team 8055,
- Won Quality Award and Innovation in Control Award in at district event with team 8055
- Won Rookie Inspiration and district finalist with Texas State Qualifier with team 9407

Certifications

- Certified Entry-Level Python Programmer (PCEP-30-02) - Certification Code: 0HR6.kHsO.5hh6