Joseph Thaliath

4A Mechanical Engineering (Mechatronics Option) Graduating Apr 21'

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Work Experience

AI/Computer Vision Intern | **EagleVision Systems** *Jan – Apr 20'*

- Developed an algorithm using **C++** and **OpenCV** to detect and classify the object based on color with a **76% accuracy**.
- Implemented a feature using C++ that enabled the operator to choose specific carts for pickup and release.
- Extracted cart velocity for data analysis and ensured proper application of zone checks for multi pickup.

Computer Vision Intern | **Ryerson University** *May - Aug 19'*

- Spearheaded the development of a Pulse Wave Velocity measurement tool to detect blood supply restrictions by applying image filtering and enhancing techniques on the data using **Python** and **OpenCV**.
- Utilized auto-correlation techniques to compare stored segments of data to find the Pulse Wave Velocity using **CUDA**.
- Developed a robust image acquisition interface using Qt and Basler API to speed up data collection and simultaneous processing by 20%.

Software Engineering Intern | **McAfee LLC** *Sept - Dec 18'*

- Created an automated tool using **Python** and **Zabbix API** to streamline incident response process by alerting relevant user groups about server issues in real-time.
- Increased workflow efficiency by 20% by developing a UI feature using **Qt** for customized data provision to specific groups on the IT service management web portal.
- Automated a complex-signing process using Python scripts to improve overall build deployment by saving time and manual effort by 10%.

Embedded Software Intern | **Evertz Microsystems** *Jan - Apr 18'*

- Improved the Twisted framework on the client application by utilizing Perspective Broker protocol to interact with the ORT and stream caption information for broadcast.
- Developed scripts to detect and correct anomalies in the audio stream by analyzing packet loss using **SciPy**.
- Decreased client application setup time by 15% by creating an application installer using **NSIS**.

Software Intern | **World Vision** *May - Aug 17'*

- Delivered a document library application on a **Raspberry Pi** to provide educational content for students of Grade 1-5.
- Increased in child-sponsorship webpage visits by 600users/month through an AR web application using **AR Toolkit** and **Unity 3D**.

Toolbox

Programing Skills: **Python, C++**, **HTML/CSS**, **JavaScript**, **MATLAB/Simulink**

Tools: **OpenCV**, **FastAI**, PyTorch, ROS, **NumPy**, SciPy, **SkLearn**, Qt, **CUDA**, Google Cloud, **AWS**, **Git**, Appium, **Jira**

Hardware: **Arduino**, **STM32**, **Jetson TX2**, **Raspberry Pi**, PLC (Siemens)

Design: **SolidWorks**, **AutoCAD**, Laser Cutting, 3D Printing, Machining

Side Projects

DigitRecognizer | **Python, FastAI**

- Trained a model to recognize digits from 0 - 9 using FastAI and Python.

PriceTrack | **Python, BeautifulSoup**

- Developed a script to track prices for specified items on websites and send an email notification if the price drops.

Autonomous RC Car | **Python, OpenCV**

- Built a self-driving RC car to detect stop signs, traffic lights and front collision avoidance using OpenCV and Python.

Design Teams

WATonomous | **SolidWorks, Machining**

- Implemented a new sensor mounting system to improve sensor cooling and performance.

Relevant Courses

- **ECE 457A** - Cooperative and Adaptive algorithms
- **ECE 481** - Digital Control Systems
- **ME 561** - Fluid Control Systems
- **MTE 325** - Microprocessor Systems and Interfacing

Interests

Music Producer, Soccer, Chess

Project Portfolio

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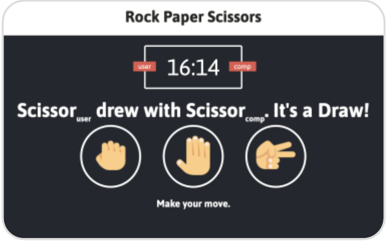
*Rock-Paper-Scissors**(Click Me)*** | **JavaScript, HTML, CSS**

Built a web-version of Rock Paper Scissors to learn about HTML,CSS and JavaScript.
Future Implementation: Make it a peer to peer online game.



Rock Paper Scissors

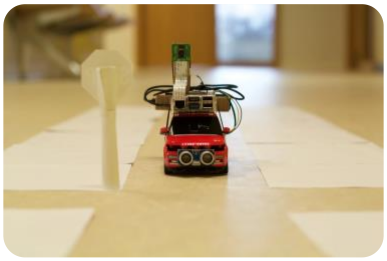
16:14

Scissor user drew with Scissor comp. It's a Draw!

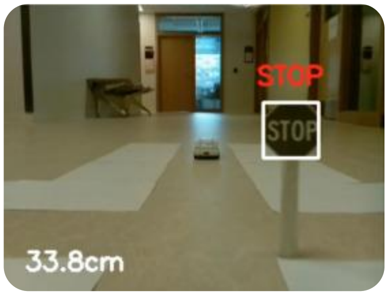
Make your move.

Autonomous RC Car (Click Me) | **Python, C++, OpenCV**

Built a self-driving RC car to detect stop signs, traffic lights and front collision avoidance using Raspberry Pi, Arduino, OpenCV, and Python. Attached a Raspberry Pi Camera on top of the RC car to capture the video stream. The video obtained from the stream was converted into grayscale and decoded into Numpy arrays. The data was used to train a model to recognize traffic lights and stop signs using Haar-Cascade Classifiers.

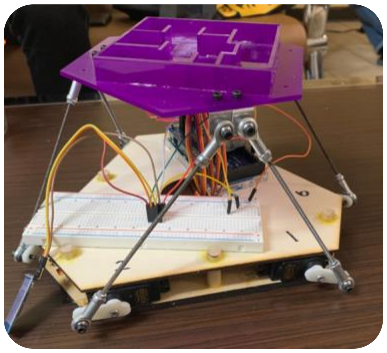


The neural network was trained in OpenCV using the Back-Propagation method, the trained model's weights are stored and reloaded to generate predictions. An, arduino board was used to simulate button-press actions.



Maze Solver Robot (Click Me) | **C++, Arduino**

(Click me for prototype video)

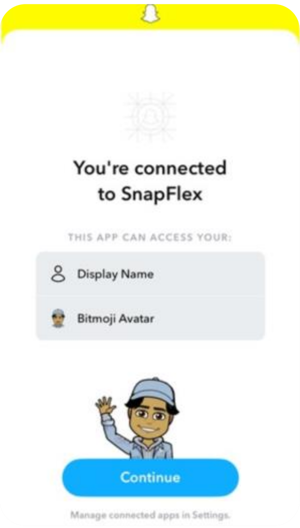


Re-engineered a six-degree of freedom Stewart-Gough platform to solve a marble maze.The robot was designed and developed to solve any given maze by controlling the maze platform using a phone via Bluetooth.

The maze platform's tilt and pan angles are determined by the phone's tilt and pan angles that are obtained via the accelerometer and the gyroscope on the phone.

SnapFlex *(Click Me)* | **Swift, StockX**

Built a useful platform using the StockX API and SnapChat SDK that provided streetwear lovers the ability to buy and sell their clothes and sell them efficiently. People are more willing to buy clothing from their friends, and this would be a great way for individuals who do not know what StockX is, to start getting into streetwear.

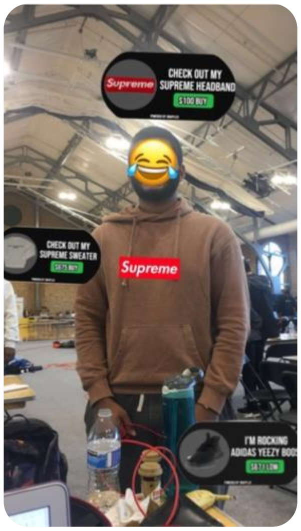


You're connected to SnapFlex

THIS APP CAN ACCESS YOUR:

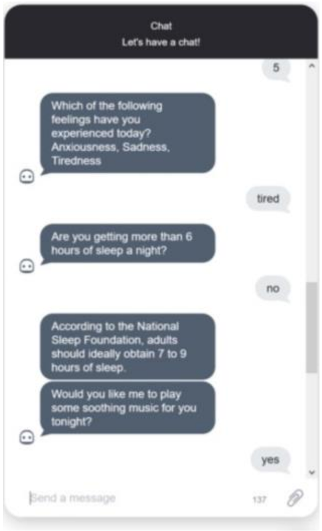
- Display Name
- Bitmoji Avatar

Manage connected apps in Settings.


Supreme
CHECK OUT MY SUPREME HEADBAND
$100 BUY
CHECK OUT MY SUPREME SWEATER
Supreme
I'M ROCKING ADIDAS YEEZY BOOS

A.M.Y *(Click Me)* | **Python, AWS, Flow.ai**

A.M.Y. (Assisting Mood in Youth) is an intelligent AI chatbot that helps you de-stress at the end of the day. A.M.Y. asks you a series of questions about your day, your mood, and helps you reflect and unwind. A machine learning model was trained using Flow.ai to detect key elements in user input, and return the appropriate response to the user.
A.M.Y is integrated chatbot to Facebook messenger, a standalone web chatbot, as well as Amazon Alexa. The Android app currently is not dynamically linked to a user's conversations, however the prototype demonstrates the reporting and tracking abilities of the app.



Chat
Let's have a chat!

5

Which of the following feelings have you experienced today? Anxiousness, Sadness, Tiredness

tired

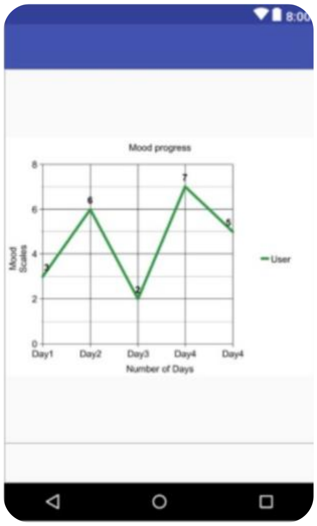
Are you getting more than 6 hours of sleep a night?

no

According to the National Sleep Foundation, adults should ideally obtain 7 to 9 hours of sleep.

Would you like me to play some soothing music for you tonight?

yes


8:00
Mood progress
Mood Scales
Day1
Day2
Day3
Day4
Day4
Number of Days
User