Bharath Varma Gottumukkala

Resume

PERSONAL DETAILS

Birth	April 21, 1999
Address	Hyderabad, Telangana, India
Phone	+91 8712724948
Mail	gottumukkalab@iitbhilai.ac.in

EDUCATION

BTech. Computer Science and Education *IIT Bhilai*

- 2016 - 2020
- Completed 6^{th} semester
- CGPA - 9.09

Intermediate *Sri Chaitanya, Hyderabad*

- 2014 - 2016
- Telangana State Board
- Percentage - 98.3 %

INTERNSHIP EXPERIENCE

Code Reuse Attacks - 2019 Summer *Research Intern - ESY3, RBEI*

- Based on Buffer Overflow Vulnerabilities.
- Mainly focused on ARM architecture (Embedded devices).
- Worked on Return Oriented Programming, with proof of concept.
- Made exploits based on jump oriented approach.
- Exploited Heap overflow vulnerability to hijack control flow
- Research on improving the current security measures.
- And how to use current mitigation methods to prevent from intrusion.
- To create a tool to test for these vulnerabilities in other embedded devices.

Asset Tracking System - 2018 Summer *Innovation Team, TechMahindra*

- Based on Bluetooth Low Energy.
- Raspberry Pi Zero W is used as a BLE trans-receiver.
- Programmed it to scan for nearby BLE tags and report to the cloud.
- A secure channel for the devices to communicate.
- Encryption of data with AES-128 before broadcasting into the network.
- Fail-to-ban firewall to secure the devices.
- Blocked all unused ports to disable any malicious attempt for communication.

- Authentication of the device before its packet is processed by the cloud.
- Authentication through digital signatures on Serial number and MAC Address of the device.
- Apache Spark is used for Real Time processing of the data received by the cloud.
- A light-weight user interface to display the processed data.

PERSONAL PROJECTS

Tic-Tac-Toe Player

- An agent which can learn to play Tic-Tac-Toe board game using Reinforcement Learning.
- A Custom environment is made which is compatible with OpenAI's Gym environments.
- Q-Learning algorithm is used to train two agents who can play first player and second player respectively.
- Each agent excels to play as either player 1 or player 2 by playing 200,000 games with a random player.
- The training time is around 60-75 seconds per player.

Self Driving Car

- An Artificial Neural Net driving a car in GTA V.
- Used TensorFlow and scikit-learn modules.
- Input to the model is a processed pixel data and the output is a key-stroke.
- For collection and pre-processing, Open-CV has been used.
- The model turned out to be a rookie-driver at the start.
- Its performance slightly increased after a little parameter tuning.
- Increasing the training data also helped.

Smart House

- An IoT implementation to control electronic appliances in a house using a device.
- Raspberry Pi is used as the underlying hardware.
- Instructions are sent to the Pi over the internet through a mobile application that I developed.
- Python flask is used to create a server in the Pi.
- The Python Server is made to communicate with the Java Client in the mobile app.
- It is made robust enough for multiple users to operate it at the same time.

Security Pass

- Created for a convenient security check during "Tech-Maitry", a college event.
- For every new booking a pass is generated along with a QR code.
- The pass is automatically mailed to their mail ID.
- A mobile application is developed to scan and verify the QR code.
- On Scanning, the pass gives out the registered events of the individual and the payment status.
- A server to store the data is created and hosted inside the college domain.

Chappie

- A Bot responding to basic voice commands named Chappie.
- A highly specific bot for a personal computer.
- Natural Language Processing is extensively used for hassle-free use of instruction key-words.
- Chappie can run or open any program or file in a computer when asked for.
- It can also write a text file or a mail when given the command.
- MySQL database is used to map the commands to their actions.
- It greets you when you first switch on your PC.

SKILLS

Languages PYTHON, BASH, C++, HTML, MYSQL, LaTeX

REFERENCES

Available upon request