MATTHEW **CHEN**

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Software Developer at **IBM Cloud**, with experience in cloud computing technology, cloud software development, full-stack web development with REST APIs, machine learning implementation with Python, and Infrastructure-as-Code development (Terraform). Seeking full-time software developer positions. Also with experience working in **client-based engagements**, as well as **agile development** environments. Also with interest in both **cybersecurity risk and compliance**, and **cybersecurity-related development**.

WORK EXPERIENCE

AUGUST 2022 TO PRESENT

Software Developer, IBM

• Secure Landing Zone (React, Javascript, Terraform, TDD)

• Worked on the Terraform-based Cloud Infrastructure-as-Code automation project Secure Landing Zone (SLZ)

• Software development of the Graphical User Interface for SLZ - worked in a weekly-sprint development environment, used Carbon/ReactJS and Javascript to build, maintain, test, and debug components/forms of the UI, as well as backend components of the JSON

• Also wrote unit-tests with Mocha as well as worked with acceptance testing, using internally built testing framework TFXJS, contributed to public TFXJS repository, https://github.com/IBM/tfxjs

• Assisted with Terraform debugging of SLZ

• Gave a demo in multiple live presentations on how to use SLZ and the GUI to customize IBM Cloud environments, also demonstrated how to utilize SLZ with IBM Cloud Schematics

• Open-sourced the custom React UI components developed for the project here: https://github.com/IBM/icse-react-assets

• Project successfully reduced client onboarding time from ~7 weeks down to 1 week

• Incident Accuracy Reporting System Team (Python, Agile Scrum Master)

• IBM New Developer Jumpstart Program

• Served as Team Leader and Scrum Master for IARS, responsibilities: leading and scheduling meetings, creating and assigning tasks/distributing work, facilitating communication between team and technical mentors/sponsors of the project

• Team implemented audio comparison algorithm in Python, which finds converts audio files to spectrograms, then converts maxima fingerprint + time values into audio fingerprint hashes (saved in JSON files), then compares hashes between audios to find audio similarities

• Part of a larger Call For Code open source project dedicated to providing police departments with a more efficient way to sort/categorize video/audio evidence based on incidents

• Python libraries: matplotlib, noisereduce, numpy, scipy, hashlib, PIL

• BNP Paribas Engagement

• Worked in ongoing engagement with client **BNP Paribas**

• Co-hosted 2 weekly meetings with BNPP, during which we provided solutions to the client on their requests with various IBM Cloud technologies, including Cloud Automation with Terraform, Schematics and Blueprints, Red Hat Openshift and Kubernetes, Cloud Object Storage on both Classic and PaaS

• Zenfolio Engagement

• Worked in ongoing engagement with client **Zenfolio**

• Co-hosted 2 weekly meetings with Zenfolio

• Assisting Zenfolio with their migration of 19 Petabytes of data from IBM Classic Object Storage, to IBM PaaS Object Storage

• Worked with configuring Bare Metal Servers to use for testing purposes, ran various data migration tests from Classic Buckets to PaaS buckets using various data migration tools including Rclone, documented test results

• Created test datasets and provided valuable insight of ways to increase data migration efficiency to client

MAY 2021 TO AUGUST 2021

Software Developer Intern, IBM (SPACE TECH)

• PlasticNet Project (Python)

• Helped to initiate and implement IBM Space Tech's PlasticNet -> an open-source deep learning object detection machine learning project dedicated to detecting and identifying different types of plastic/trash in the ocean on real-time video, image, and satellite footage

• Labeled datasets using IBM Cloud Annotations, then using Darknet YOLOv4 and Tensorflow architectures, continuously trained and tested new PlasticNet object detection models using transfer learning via pretrained models such as Faster-RCNN, Efficient-DET, SSD-Resnet, YOLOv4, etc.

• Built a fully functional **PlasticNet** machine learning pipeline (accessible through the PlasticNet command line client) that can be easily used to train and test object detection models via transfer learning using publicly available pretrained models, but also our own PlasticNet pretrained models

• Provided a set of publicly available pre-trained PlasticNet models that can be utilized for future development and improvement via transfer learning

• Open-sourced project to the public for further development, **check out IBM Tech for Good PlasticNet open source project here: https://github.com/IBM/PlasticNet**

• CubeSat Website Project (Node.js, MongoDB, React, Python)

• Developed a "Join The Mission" publicity website for CubeSat, an IBM satellite launching in fall 2021

• Backend Development (Python Flask): Developed a REST API to send pass data from backend to frontend, implemented REST API to be connected to MongoDB database, website will take information a user inputs on the front end and then generate a "boarding pass" CubeSat space launch, personalized for the user

• Implemented unique ID querying system for obtaining from backend, and API documentation and error logging using swagger.ui

• UI/UX: Helped to design the boarding pass "ticket" design, created basic design/layout for the website

MAY 2019 TO AUGUST 2019

Software Engineer Intern (C++), TEXAS A&M COMPUTER SCIENCE RESEARCH LAB

• Worked in team under Dr. Shaoming Huang on the UFO project, a C++ based project funded by Google focused on improving Google Chrome browser security by detecting potential memory vulnerabilities in multithreaded programming

• Utilized Linux terminal to test UFO tool on various benchmarks/programs and find new Use After-Free (UAF) memory vulnerabilities

• Ran tests with other existing memory detecting tools (such as ThreadSanitizer, AddressSanitizer, etc.) to compare performance to the UFO tool

• Created C++ test files with various explicit memory errors to be used for testing

• Studied various algorithms focused on finding uses of memory space after it has been deallocated or "freed"

SOFTWARE/PERSONAL PROJECTS

OCTOBER 2020 TO DECEMBER 2020

Web Application Back End Development (Node.js, React)

• Getzz Project: Web Application developed for creating a universal interface for browsing and finding

restaurants where data can be trusted and compared, results found immediately and conveniently, and an order can be placed all in one application, combining restaurant searching, review/ratings, menu, and delivery into one seamless web application

• Used Node.js in order to create servers to send and receive data requests

• Worked with JSON data from Google Places API, Yelp API, Grubhub API, Google GeoCode API, Doordash

OCTOBER 2017 TO MARCH 2018

Cybersecurity Capstone Research Project

• Conducted year-long research project during senior year of high school focusing on the causes and growing prevalence of cybersecurity weaknesses found in Internet-Of-Things (IoT) devices

• Studied under professional mentor (IT Security manager of Kinder Morgan in Houston, Texas)

• Gained valuable experience working with various networking/cyber defense tools (Kali Linux, Wireshark, etc.), and conducted live demonstrations of the exploitation of different cybersecurity weaknesses in various IoT devices purchased from Best Buy Presented research to group of professionals working in related fields

EDUCATION

AUGUST 2018 TO MAY 2022

Computer Science (B.S.) TEXAS A&M UNIVERSITY

- 2018 PSAT National Merit Finalist 2018
- Texas A&M President's Endowed Scholarship
- 2018 Texas A&M National Merit Recognition Award
- Engineering Honors Program (2018-2019)
- GPA: 3.5/4.0
- Relevant Coursework: **Data Structures and Algorithms (CSCE 221), Programming Languages (CSCE 314), Computer Organization (CSCE 312), Discrete Structures for Computing (CSCE 222), Operating Systems (CSCE 313), Programming Studio (CSCE 315), Design and Analysis of Algorithms (CSCE 411)**
- Cybersecurity Coursework: **Cybersecurity Risk (CSCE 477)** and **Law and Policy in Cybersecurity (CSCE 402)**

SKILLS/TECHNOLOGIES

- Terraform/Infrastructure-as-Code
- Schematics/Blueprints
- **Python**
- Cloud Object Storage
- Virtual Private Cloud
- Object-Oriented Programming
- Kubernetes/Red Hat Openshift
- Portworx
- Bare Metal Servers
- **Javascript**
- **HTML**
- **CSS**
- ReactJS/Carbon
- Java
- **C++**
- Machine Learning/Deep Learning
- Linux Terminal/Ubuntu
- Tensorflow
- Object Detection
- Keras
- Jupyter Notebook
- Google Colab
- NodeJS
- **Full-Stack Development**
- MongoDB/SQL
- Convolutional Neural Networks

- Unit Testing/Test-Driven Development
- **Cybersecurity Risk/Law and Policy Analysis**
- **NIST Frameworks**