# Carlos Miguel **Sayao**

Computer Science · Software Engineer

carlossayao@gmail.com | carsayao.github.io | carsayao | carsayao | msayao

## Education

**Portland State University** *Portland, OR*

B.S. in Computer Science with a Minor in Physics *2014 - 2020*

GPA: 3.01

## Technical Profile

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| **Programming** | Python, C/C++, Java, PHP, JavaScript, TypeScript, Bash, SQL, MIPS/x86, LaTeX, Object-Oriented Design |
| **Machine Learning** | Scikit-learn, Keras, Numpy, Pandas, NLTK, Matplotlib, Seaborn |
| **Web Development/Cloud** | Docker, Kubernetes, Node, Express, Flask, Django, React, RESTful APIs, Google GCE, AWS EC2, WordPress |
| **Platforms and Tools** | Git, Linux, Mac, Windows, Vim, VSCode, Jetbrains tools, PDB, GDB, Android Studio, Agile, Scrum, Jira, VMware, VirtualBox, New Relic, KCS |

## Experience

**New Relic** *Remote, Portland, OR*

Technical Support Engineer *May 2022 - June 2024*

As a New Relic Support Engineer, I assisted a variety of Enterprise customers through their never-seen-before technical issues using the cloud-based observability platform, mainly focusing on web applications built in **Java**, **PHP**, and **Node**. To be successful in a constantly evolving technical landscape, we emphasized training, knowledge, collaboration, and customer empathy.

- Collaborated with fellow Support Engineers to creatively and passionately investigate customer problems, while honing technical skills. Investigations often include reproducing applications under specific test conditions, and honing technical skills often involved pair programming sessions for enablement in new skills such as **AWS EC2**, **Docker**, and **Kubernetes**.
- Supported New Relic customers by solving complex installation, configuration, and data exploration requests.
- Advocated for customers to product engineers and product managers by providing feedback on feature requests and bugs to improve the customer experience. This includes identifying recurring or systemic problems in a monthly product review.
- Contributed to both internal and customer-facing documentation and **Knowledge Centered Support (KCS)**, including participation in our community forum.

**Reddit Post Scheduler** *https://github.com/carsayao/reddit-scheduler* *Milwaukie, OR*

Web Developer *Dec 2021 - February 2022*

A webapp in **Python Django** to create and post content, that can be cross-posted to other subreddits, at specified times all configured by the user.

- Used **SQLite** to store the User, Content, and Post data.
- Implemented Django's generic views for flexibility and brevity.
- Used the Reddit API to query and post to the website.
- Used **VSCode** to build website UI with Live Preview extension.

**Personal Client** *https://mwtxlawfirm.com* *Milwaukie, OR*

Website Developer *Sep 2021 - Oct 2021*

A basic **WordPress** site for displaying information including services offered, an about page, a blog page, and contact page.

- Migrated website to new host.
- Updated look of the website for modern feel and mobile functionality.

**Open Source Mobile City App** *https://github.com/jIdle/North-Plains-App* *Portland, OR*

Web Developer *June 2020 - July 2020*

Open source **Android** and **iOS** prototype app for a potential contract with the City of North Plains to translate their city home page into a mobile phone app. Designed by our team of four, we adopted Agile software development methods to manage the project. My main focus was selecting the framework and building out our workflow so that our team could develop and test concurrently on iOS and Android.

- Designed pages using **React** (Ionic React Framework) with **Typescript**. Used **React** for its consistency across different platforms, DOM manipulation, and state immutability; and chose the Ionic React Framework which allows for hybrid mobile app development.
- Pair programmed to learn a new framework and to learn basic app design with **Android Studio**.
- Built rudimentary **API** calls to fetch JSON and populate pages.

### Dual-Pi DJ Visual Assistant (Pi-Visualizer), PSU *https://gitlab.com/madelyea/team-visualizer* — *Portland, OR*

Software Engineer — *Sept 2019 - Mar 2020*

Pi-Vis is part of an art installation to be featured at Burning Man. Written in **Python** for a **Debian**-based OS, our team of seven adopted an Agile methodology to design and build an Object-Oriented multi-threaded program that makes extensive use of Socket programming and shell scripting to sync video playback between two Raspberry Pis.

- Assisted fellow team members with setup of their development environments. This included setting up **VMware** and **VirtualBox** on Windows, Mac, and Linux.
- Managed branches and supervised merges through use of **Git**.
- Specifically, I wrote the backend communication protocols while prioritizing reliability, redundancy, and speed.
- Designed architecture to withstand harsh environments, minimize probability for failure, and provide users with easy interface and deployment.

### Analysis of NEAT *https://github.com/cat-cuatro/NEATProgramming* — *Portland, OR*

Machine Learning Research — *Feb 2020 - Mar 2020*

An analysis of the genetic algorithm, NeuroEvolution of Augmenting Topologies (NEAT) developed by Ken Stanley in 2002 at UT Austin. **NumPy, OpenAI Gym, Matplotlib.**

- Explored and reported on the advantages of NEAT through ablation and comparison.
- Tested the validity of NEAT components, along with compared its performance to Q-Learning.
- Tested components in **OpenAI Gym** environments to test complex decision making.
- Found results consistent to author's claims in research paper.

### Food Delivery App *https://github.com/carsayao/food-delivery* — *Portland, OR*

Developer — *Jan 2020 - Mar 2020*

This **Java** app simulates a food delivery app backend, such as UberEats. My design held a list of orders in a doubly linked list. Each order held a linked list of special requests. The user could manually add or delete orders. The balanced tree was derived from a binary tree. Each restaurant was represented by a balanced tree populated with a list of drivers sorted by their proximity to the restaurant.

- Object oriented design ensures re-usability and code maintenance.
- Wrote own implementations for linked lists, doubly linked lists, binary trees, and balanced trees.
- Reads in a test file and populates data structures with contents.

### Analysis of Learning Algorithms *https://github.com/carsayao/titanic-learning/tree/master* — *Portland, OR*

Machine Learning — *Dec 2019 - Mar 2020*

Compared the results of a multilayer perceptron to the results of a support-vector machine utilizing Titanic-related data. Written in **Python** utilizing **NumPy**, **Pandas**, and **scikit-learn**.

- Used Pandas DataFrames to extract and clean data to feed into a Multilayer perceptron (MLP) in order to determine the likelihood of survival for any given passenger based on attributes like age, sex, cabin number, etc.
- In addition to the MLP we built, we tested the accuracy between several learning algorithms and their effectiveness using the **scikit-learn** library. These algorithms were a Support Vector Machine, Naive Bayes Classifiers (Bernoulli, Multinomial, and Gaussian), Single Layer Perceptron, and Decision Tree.

### Full-Stack Web Development — *Portland, OR*

Student Grader at PSU — *Sept 2019 - Mar 2020*

- Courses covered **HTML5, CSS, HTTP, JavaScript (ES6), Node, Express, React, Vue, Angular**, and other various libraries, frameworks, and APIs.
- Work focused on evaluating student assignments and projects with emphasis on design principles and style.
- Delivered constructive feedback and tips to students struggling with assignments.

### Naïve Bayes Classifier *https://github.com/carsayao/nb-classifier* — *Portland, OR*

Machine Learning — *Nov 2019*

Used Gaussian Naïve Bayes and Logistic Regression to classify the Spambase data from the UCI ML repository, which can be found here: https://archive.ics.uci.edu/ml/datasets/spambase.

- Using **NumPy**, I created the training and test set, a probabilistic model, and ran Naïve Bayes on the test data.

### Two-layer Neural Network *https://github.com/carsayao/MNIST-mlp* — *Portland, OR*

Machine Learning — *Oct 2019*

Implemented a two-layer neural network in **Python** and **NumPy** to perform handwritten digit recognition.

- Used MNIST dataset with 784 inputs, a hidden layer with variable units, and 10 output units.
- Observed and reported on the effect of varying hidden units, momentum value, and training examples.
- Debugged functions that involved complex mathematical functions and large numbers of inputs.

### Lonr *https://github.com/carsayao/lonr* — *Portland, OR*

Web Development/Machine Learning — *Jun 2019 - Aug 2019*

Built an experimental web-chat app and **RESTful API** to simulate conversation with notable comedians using Markov models generated from corpora of stand up transcripts.

- Originally written in **Node**, I rebuilt the frontend using **Python Flask**, HTML, CSS, and Bootstrap for clean, simple look.
- Built backend using Flask-SocketIO to establish low latency two-way communication between client and server.
- Learned to deploy to **Google Cloud Platform**.