

LUCAS SAECHAO

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Experienced iOS Developer with with a Passion for Machine Learning and Virtual Reality,
Seeking Greater Challenges to Drive Career Growth and Deliver High-Value Impact

WORK EXPERIENCE

ITRDP iOS Software Engineer — Asset Management Inspect Core

November 2021 - Current

Pacific Gas and Electric Company - San Francisco, CA

- Worked on PG&E's Inspect Core iOS application for PGE&E's field employees to safely and accurately provide vital inspection and maintenance to gas and electric infrastructure **throughout the entire state of California**.
- Implemented a bounding-box map marker filter algorithm that would specifically filter and render ArcGIS map markers based on latitude and longitude of the device's viewport location, **reducing memory load on app by 35% on average and improving the speed of the network call by over 89%, reducing the completion time for the network call from 47 seconds to approximately 8 seconds**.
- Improved uptime on map marker rendering by 99% by optimizing the technique used to fetch and render new ArcGIS markers, **reducing render times from 55+ seconds to near instantaneous**.
- Implemented an asynchronous document purging technique that dynamically removes stale or unused documents from the user's device **improving application performance by 31%**.
- Helped lead development over PGEMedia framework, a photo management framework used by the application to provide image caching, fetching and publishing services to AWS S3, whilst also decoupling the application from third party frameworks like Kingfisher and much older internal frameworks, and improving build performance and codebase maintainability. **App CPU load was reduced from 56%-62% to less than 19% on average, and memory usage was reduced by 57%**.

PROJECTS

Capstone Project — Virtual Reality Driving Simulator (<https://pastachefs.github.io/trafficsim>)

September 2020 - May 2021

- As project lead, lead an 8-person team in the development of a virtual reality simulator designed to model driver behavior, **reducing research costs from over \$45,000 per unit to ~\$2,500 per research unit**.
- The application supports level creation, driving simulation, statistic logging, NPC driver behavior, collision and interaction, scenario creation, real-time traffic simulator.

Machine Learning CIFAR-10 Image Classification Models (<https://github.com/saechaol/cifar>)

April 2021

- Built two computer vision models to predict a series of images from the CIFAR-10 dataset, the first model trained directly using CIFAR-10, and the second utilizing transfer learning based off of the VGG16 model trained from ImageNet.
- Feature extraction is performed using a convolutional neural network (CNN) architecture, with 10 possible outputs.
- The CNN is comprised of multiple hidden layers with a 3x3 convolution kernel with strides 1 and 2, using relu activation, several 2x2 max pooling layers, dropout layers, and compiled with categorical crossentropy and the adam optimizer.
- The CIFAR-10 based model achieves a 76% accuracy rate, outperforming the transfer learning VGG16-based model, which achieved a 71% accuracy rate.

VRcade - HackReality Entertainment Prize Winner (<https://devpost.com/software/vrcade-6fn5vt>)

March 2021

- **Winner of 3rd place prize for "Best use of AR/VR for Entertainment/Games" at HackReality.**
- The project is made with Unity, with Unity Collab as a version control system, and the game's logic is primarily developed in C#, using the Oculus Integration Package and Microsoft's Mixed Reality Tool Kit (MRTK).
- The game provides several VR experiences, such as Billiards, Air Hockey, Table Tennis, and supports real-world object placement. The user can scan a real-world table and bring it into the virtual world for use in anchoring themselves in gameplay. The table is fully tracked in virtual space using Oculus VR, improving realism of the experience by 100%.

AWS EC2 Mobile Learning Application (<https://github.com/saechaol/learning-app>)

September 2020 - December 2020

- Implemented an Android app that interfaces with a .NET web service developed with C++ with an available REST API endpoint, hosted on a T2 micro EC2 instance, with an RDS database backend. The frontend directly interacts with the web service using the implemented API controllers.
- The application allows for user registration for three distinct roles (admins, instructors, students), student enrollment, task assignment, scheduling and course viewing through the RESTful web API, as well as supports transaction processing, SSL encryption, and AWS load balancing.

EDUCATION

California State University, Sacramento

August 2016 - May 2021

Bachelors of Science in Computer Science

- *Dean's List Fall 2020*

RELEVANT COURSEWORK

- Advanced Computer Graphics (OpenGL, AR, VR)
- Cloud and Mobile Computing Pragmatics (AWS, .NET)
- Database Management Systems
- Computer Game Architecture and Implementation
- Intelligent Systems (ML, TensorFlow, Keras)
- 3D Computer Modeling (Maya 3D, Blender)
- Data Structures and Algorithm Analysis
- Software Engineering (Agile/Scrum, Jira)
- Computer Architecture and Organization
- Computer Networks and Internet (REST API)

TECHNICAL SKILLS SUMMARY

Languages: Java, C++, C#, C, Python 3, Swift 5, PHP 7.3, JavaScript, SQL, HTML, CSS, GraphQL

Database Management: MySQL, PostgreSQL, MongoDB, Couchbase

Tools: Github, Docker, Jira, Trello, Eclipse, Atom, PHP Storm, Xdebug, VS Code, Xcode, Apache Server, Jupyter Notebook

Other Technologies and Frameworks: Unity, Unreal Engine, OpenGL, Virtual Reality, XR, Drupal, Vue.js, Google Cloud Platform, AWS, .NET, REST API, Anaconda, TensorFlow, Keras, Scikit-Learn