emmachalz745@outlook.com
Seoul, Korea

Portfolio
emmachalz.bugilabs.com

Github
github.com/Mkhgkk

Linkedin
https://www.linkedin.com/in/emma-chalz-9a7577192/

Languages

Swahili
Native speaker

English
Fluent / TOEFL IBT 97

Chinese
HSK Level 5

Emmanuel Charles Kimito
Software Engineer

Education

Chung-Ang University
Seoul, Korea
AUG 2023 -

Architectural engineering, Masters

Wuhan University
Wuhan, China
SEP 2018 - JULY 2022

Software engineering, Bachelor (Chinese medium)

Academic Achievements

Automation In Construction
UNDER REVIEW
First Author

Personalized Physical Fatigue Monitoring for Construction Workers: Incorporating Body Composition Data with Physiological Data

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5113431

Automation In Construction
DEC 2024
Second Author

Integrated Zero-Knowledge Proof and Blockchain System for Privacy-Preserving Near-Miss Reporting in Construction Projects

https://doi.org/10.1016/j.autcon.2024.105825

Journal of Information Technology in Construction
DEC 2024
Second Author

Extracting Information from Construction Safety Requirements Using Large Language Model

https://dx.doi.org/10.36680/j.itcon.2024.045

Experience

ConTi Lab
Research Assistant

AUG 2023 -

iSafe-guard
Principal Developer

FLASK, REACT, MONGODB, TENSORRT, SOCKETIO, ULTRALYTICS-YOLO , FFMPEG, GSTREAMER, DOCKER, MEDIAMTX

Worker safety monitoring platform for construction sites using computer vision for object detection.

- Led system architecture design for the monitoring system.
- Built a Python backend to manage multi-channel object detection.
- Configured Triton inferencing server.
- Built an auto-PTZ (pan-tilt-zoom) tracking feature to dynamically adjust camera angles based on detected objects.
- Built an intrusion area tracking system for PTZ cameras to maintain security perimeters automatically.
- Implemented REST API using flask.
- Built streaming server using GSTREAMER and MEDIAMTX for video transmission.
- Designed and developed the frontend using React, ensuring a responsive and user-friendly interface.

iSafe-Near Miss Reporting System
Principal Developer

REACT, WEB3, ZOKRATES, SOLIDITY

A blockchain-based near-miss reporting system for construction site workers that uses zero-knowledge proof (ZKP) for enhanced anonymity.

- Implemented ZKP logic using ZoKrates to ensure enhanced anonymity in reporting.
- Integrated ZoKrates-generated ZKPs into smart contracts using Solidity for secure and private verification.
- Developed a ZKP-based Chrome extension for secure login authentication.
- Designed and developed the frontend using React, ensuring a responsive and user-friendly interface.

Bugi Lab
Founder &
Teachnical Lead

JUL 2022 - JUL 2023

bugilabs.com

Bugi track
Technical Lead

REACT-NATIVE, MAPBOX, SOCKETIO, MONGODB, NODEJS, NGINX

bugitrack.bugilabs.com

A vehicle tracking system targeted at the African market.

- Led system architecture design and overall project development.
- Conducted market research to assess market fit and optimize product strategy.
- Built a nodejs backend for the platform
- Built a UDP server to handle real-time communication from GPS devices installed in vehicles.
- Built Android client app.
- Implemented real-time communication between the server and client using WebSockets.

Bugi vocha
Android Developer

ANDROID SDK, KOTLIN, MLKIT

play.google.com/store/apps/details?id=com.emmachalz.bugivocha

An Android application that uses MLKit to automatically recognize and input voucher numbers from photos. This application was developed with a focus on maximizing user convenience and has proven its usefulness with 27K+ downloads on the Google Play Store.

Thoughtworks, China
Job offered

Graduate Training Bootcamp

JAN 2022 - APR 2022

CLI, JAVA, SQL, CSS/HTML, JAVASCIPT, REACT, TDD

A coding bootcamp program for fresh graduates who are about to join Thoughtworks.

Open Source Contributions

python-onvif-zeep

JAN 2025

Enhanced the handling of XAddr port information to ensure correct connections over NAT configurations. This improvement addresses issues where previous implementations failed to include the port number in retrieved addresses, thereby enhancing the library's reliability in diverse network environments.

https://github.com/FalkTannhaeuser/python-onvif-zeep/pull/133

MediaMTX

JAN 2025

Resolved issues in the Dockerfile and docker run command for binary builds, addressing errors related to legacy ENV format and invalid volume specifications. This enhancement ensures compatibility with current Docker standards and streamlines the build process.

https://github.com/bluenviron/mediamtx/pull/3761

TeltonikaParser

MAY 2022

Implemented support for data sending parameter IDs from various Teltonika devices, enhancing the library's flexibility beyond the FMB640 model. This modification allows users to supply I/O elements data sending parameters ID for devices such as the FMB920.

https://github.com/TimeLord2010/TeltonikaParser/pull/6