DONG HYEUN LEE

Full Stack Developer

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Summary

Full Stack Developer with over 4 years of experience in software engineering and biotechnology, specializing in Java, Python and machine learning. Key achievements include developing a dynamic AI-powered web application leveraging cutting-edge AI and machine learning models, and designing methodologies for defect characterization of nanopore wafer chips.

Education

University of Texas at Austin - Austin, TX

Post Graduate Program in Artificial Intelligence & Machine Learning: Business Applications — 06/2024 - Present

- Gained comprehensive knowledge in AI and machine learning, including data analysis, algorithm development, and model deployment, with a focus on real-world applications and practical problem-solving skills.
- Further technical focus in Python, NLP, and Generative AI training

HiMedia Academy - Seoul, South Korea

AI and Full Stack Development in Java Bootcamp — 03/2024 - 10/2024

- The course provided in-depth knowledge of IT infrastructure management, including system design, network security, and data management, with a focus on optimizing performance and ensuring reliability in enterprise environments.
- Training included SQL database management, frontend and backend development in Python and Java, and a final project developing an AI service application.

Sogang University - Seoul, South Korea

Masters of Chemistry — 02/2018 - 02/2020

- *Thesis: Characterization and Optimization of DNA Binding Fluorescent Protein for Acquisition of High SNR Fluorescent Microscope Images*

SUNY Buffalo State University - Buffalo, NY

Masters of Science in Biomedical Engineering — 09/2016 - 06/2018

Hong Kong University of Science and Technology - Clearwater Bay, Hong Kong

Bachelor of Science in Chemical and Bioproduct Engineering — 09/2010 - 05/2013

Experience

Proteina Inc. — Seoul, South Korea

Production and Process Development Senior Researcher — 07/2021 - 02/2024

Biotechnology company focused on advancing innovative protein-based products and solutions for healthcare, agriculture, and industrial applications.

- Developed and optimized thin film deposition, biochemical functionalization, and anti-fouling processes for microarray chip production
- Led the design and testing of microarray chip assembly processes, including jet dispensing and non-destructive QC for 96/384 well platforms
- Contributed to pharmaceutical drug assessment, assay optimization, and developed Python-based tools for ELISA/QC/Manufacturing Big Data Analysis

Palogen LLC — Seoul, South Korea

Research And Development Engineer — 08/2020 - 07/2021

Biotechnology company developing cutting-edge nanoelectronic sensor platforms for advanced diagnostics and sequencing in healthcare and life sciences.

- Designed and implemented methodologies for defect characterization of nanopore wafer chips using Python data analysis and established quality control protocols for manufactured nanopore microarray chips
- Developed production methods for chip bio-conjugation, including vapor deposition, biomarker dotting via liquid handlers, and stability enhancement through freeze-drying techniques
- Contributed to ISO13485 compliance for molecular diagnostic GMP facilities, prepared IRB for clinical testing of COVID microarray chips, and participated in clinical studies.

Skills

Global Languages: English (TOEIC certified 2019) · Korean (Fluent/Native) · Japanese (Conversational) · Mandarin Chinese (Conversational)

Programming Languages: Java · Flask · Python · SQL · C++ · HTML · REACT. JS

Technologies:
GIT · Neural Language Processing · Machine Learning · Generative AI Training · Database Management · Microsoft Office · SOLIDWORKS

Projects

Prevention of "Lonely Death" Web App

Donguk University, Seoul, South Korea
10/2024

"Lonely deaths" in South Korea, also called "godoksa" in Korean, refer to people who die in social isolation, often without anyone noticing for a significant period of time, highlighting a growing problem of social disconnect in the country. This project aimed to develop a multi-functional AI-powered Flask web application integrating user authentication, emotion detection, voice recording and analysis using modern AI and machine learning models.

- Developed a dynamic AI-powered web application using React.js, integrating AI technologies, data processing, and web development frameworks to deliver an engaging user experience
- **I**mplemented a robust user authentication system with JWT tokens, password hashing, email verification (via Flask-Mail), and MySQL database management for secure account handling
- Integrated AI emotion recognition models (RAVDESS and FER) for analyzing emotions in images and audio, visualizing results through Matplotlib and Seaborn, and processing audio data to generate CSV outputs and graphical reports

Book Management System Term Project

HiMedia Academy
06/2024

For this project, I collaborated in a team of four to develop a Java-based Inventory Management System using Spring Boot, streamlining workflows for managing stocks, orders, and user data with secure APIs and user role permissions.

- Designed and implemented calendar-based CRUD functionality for summarizing and modifying book order data, enabling users to leave memos and record cause-effect notes
- Built backend logic using Spring Boot within the Model-View-Controller (MVC) architecture to handle inventory management tasks efficiently
- Contributed to secure API endpoint development and role-based access control to ensure data security and appropriate permissions for different user roles.