DILLAN IMANS

AI RESEARCHER IN MEDICINE

Suwon, South Korea | dillanimansbusiness@gmail.com | https://github.com/DillanImans

RESEARCH INTEREST

I work at the intersection of medical imaging AI and multimodal learning, with experience in retinal fundus images, brain MRIs, and surgical vision. I am increasingly focused on computational biology, especially genomics and molecular-level modeling, and aim to develop AI methods that bridge clinical and molecular data.

RESEARCH EXPERIENCE

Undergraduate Research Intern @ Superintelligence Lab SKKU, South Korea **Oct 2024 - Present**

- Led a year-long first-author project on unsupervised domain adaptation for brain tumor segmentation, overseeing full research development from design to publication, culminating in **acceptance at IEEE BIBM 2025.**
- Collaborated with a graduate student on a glaucoma detection system, contributing to data preprocessing, model development, and integration into an interactive research demo.
- Contributed to an industry-aligned fundus optic-cup and vessel analysis pipeline by assisting with model development and adapting the system for real-world deployment.
- Initiated a new research direction on brain-eye shared embeddings, exploring cross-modality alignment between MRI and fundus images for joint risk prediction tasks.

Undergraduate Research Intern @ Labren CUHK, Hong Kong **Jun 2024 - Present**

- Contributed extensively to a large-scale surgical video dataset, including data collection, preprocessing, annotation design, and baseline experiments, forming the foundation of a **submission to a leading machine learning journal.**
- Helped build temporally structured samples for a benchmarking study on surgical action planning, contributing to a **submission to a top-tier computer vision conference.**
- Assisted in curating and annotating a multimodal surgical action dataset in collaboration with an international industry research group, contributing to a **submission to a second top-tier computer vision conference.**
- Maintained and optimized Python-based preprocessing and dataset-management pipelines, ensuring consistency and scalability across all projects while coordinating closely with senior researchers under tight deadlines.

Undergraduate Research Intern @ Infolab SKKU, South Korea **Feb 2024 - Oct 2024**

- Designed an explainable multi-layer ensemble model for depression detection and severity prediction using behavioral and observational features.
- **Published this work as first author in Diagnostics (Oct 2024)**, demonstrating potential for clinical decision support in mental health screening.

EDUCATION

Bachelor's of Computer Science and Engineering, Sungkyunkwan University, South Korea **Aug 2022 - Jun 2026**

- GPA: 4.07 / 4.5 (95.7 / 100)
- Honors: Dean's List (2023), Academic Excellence Scholarship

Relevant Coursework

- **AI/CS:** Deep Neural Networks, Big Data Analytics, Linear Algebra, Probability, Calculus
- **Biology:** Biological sciences I-II, Chemistry II, AI in Molecular Biology, Functional Genomics

PUBLICATIONS

- Imans, D., Abuhmed, T., Alharbi, M., & El-Sappagh, S. (2024). *Explainable Multi-Layer Dynamic Ensemble Framework Optimized for Depression Detection and Severity Assessment*. Diagnostics, 14(21), 2385. https://doi.org/10.3390/diagnostics14212385
- Imans, D. et al. *Unsupervised Domain Adaptation with SAM-RefiSeR for Enhanced Brain Tumor Segmentation*. Accepted at IEEE BIBM 2025.
- Xu, M., Huang, Z., Imans, D., Ye, Y., Zhang, X., Dou, Q. *SAP-Bench: Benchmarking Multimodal Large Language Models in Surgical Action Planning.* Preprint, under review at a leading AI conference. https://arxiv.org/abs/2506.07196
- Manuscript on surgical action understanding using vision models. Under review at a major machine learning journal.
- Manuscript on generative diffusion-based models for surgical automation. Under review at a major machine learning conference.

OTHER PROJECTS

Computational Modeling of Collagen Triple-Helix Mutations Using AlphaFold/ColabFold

Modeled COL1A1 triple-helix segments to investigate how Gly→Val substitutions disrupt structural stability. Predicted WT and mutant complexes using ColabFold, quantified helix distortion through RMSD analysis, and related structural defects to known mechanisms of osteogenesis imperfecta.

Tech: Python, ColabFold, PyMOL

Foodie App - AI-Powered Ingredient Recognition Mobile Application

Worked in a team to develop a cross-platform application that identifies ingredients from fridge photos using OpenAI's vision APIs and recommends recipes via integrated Spoonacular API search. Contributed to the Flask backend which includes user authentication, cloud storage, and personalized preference-based recommendations.

Tech: Flask, Firebase Firestore, OpenAI API, REST APIs, MVVM architecture

TECHNICAL SKILLS

Programming: Python, C/C++, Java, Javascript, React/Redux, Node.js, MongoDB, Git, Linux
ML/AI: PyTorch, MONAI, OpenCV, computer vision, multimodal learning
Computational Biology: Sequence analysis (BLAST, MSA), Structural modeling (AlphaFold/ColabFold)

ADDITIONAL INFORMATION

Languages
English & Indonesian (Fluent), Mandarin & Korean (Conversational), French (Beginner)
Interests
Quantitative Finance, Piano, Cooking, Basketball
References
Available upon request