Patrick Amadeus Irawan

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Research Summary

My research focus spans on **multimodal alignment** (imbalance learning, training or test-time alignment), **LLM** (**reasoning** & knowledge enrichment via **RAG** and **agentic** systems), and **large-scale evaluation designs** (primarily in **multilingual** and multimodal settings). My pre-doctoral background includes academic and industrial experience in above topics, featuring involvement in **best paper award** and **grant-winning** projects and multiple published works (***ACL, NAACL, EMNLP, COLING**, etc.). Per this resume version, my active academic work also relates to Vision Language Models (VLM) and Unified Multimodal Models (any-to-any).

Education

Ph.D. in Natural Language Processing — **MBZUAI** *2025 - 2029*
· Advisors: Alham Fikri Aji and Yova Kementchedjhieva
· *VLM; LLM; multimodal alignment & imbalanced learning; large-scale evaluations*

Global Study Program — **University of California, Davis** *Jul 2023 - Dec 2023*
· *Computational Cognitive Neuroscience, Tech Management*

B.Eng. in Computer Science — **Institut Teknologi Bandung** *2020 - 2024*
· *visual question answering; synthetic data generation; reasoning; explainability*

Publications

Seeing Culture: A Benchmark for Visual Reasoning and Grounding [Paper/Code] — EMNLP 2025
B. Satar, Z. Ma, P. Irawan, W. Mulyawan, J. Jiang, E. Lim, C.-W. Ngo

WorldCuisines: A Massive-Scale Benchmark for Multilingual and Multicultural VQA on Global Cuisines [Paper/Code] — NAACL 2025 (Best Theme Paper 🏆)
G. Winata, F. Hudi*, P. Irawan*, D. Anugraha*, R. Putri*, (20+ authors), et al.*

ProxyLM: Predicting Language Model Performance on Multilingual Tasks via Proxy Models [Paper] — NAACL 2025
D. Anugraha, G. Winata, C. Li, P. Irawan, E. Lee

Towards Efficient and Robust VQA-NLE Data Generation with Large Vision-Language Models [Paper] — COLING 2025
P. Irawan, G. Winata, S. Cahyawijaya, A. Purwarianti

Entropy2Vec: Crosslingual Language Modeling Entropy as End-to-End Learnable Language Representations [Paper] — MRL @ EMNLP 2025
P. Irawan, R. Diandaru*, B. Jagad*, R. Suchrady*, A. F. Aji, G. Winata, F. Koto, S. Cahyawijaya**

Datasheets Aren't Enough: DataRubrics for Automated Quality Metrics and Accountability [Paper] — *Preprint* 2025
G. Winata, D. Anugraha*, E. Liu*, A. Aji*, S. Hung, A. Parashar, P. Irawan, et al.*

Leveraging IoT and Machine Learning for Efficient Rice Stock Monitoring and Prediction [Paper] — APSIPA ASC 2024
N. Sutisna, A. Nugroho, C. Jeffrey, P. Irawan, et al.

SEACrowd: A Multilingual Multimodal Data Hub and Benchmark Suite for Southeast Asian Languages [Paper] — EMNLP 2024
H. Lovenia, R. Mahendra*, S. Akbar*, L. Miranda*, (10+ authors), P. Irawan, et al.*

Work Experience

Research Engineer *Singapore*
Singapore Management University ***Feb 2025 – Sep 2025***

- Led a large-scale evaluation multimodal reasoning project, managing 5 collaborators (junior researchers, externals).
- Authored an EMNLP-accepted paper on segmentation methods for cultural and masked images.
- Continuing research on fine-grained novel video instance segmentation and moment localization in a large-scale, multicultural domain.

Software Engineer *Germany, Remote*
IT Bauschmiede ***Nov 2024 – Jul 2025***

- Part a core logistics team involving development on real-time scheduling, automated invoicing, and geolocation features, serving 5+ enterprise clients.
- Implemente system-wide database migration code and backend controller component, reducing overall processing time by ∼50% and enhancing reliability

Data Scientist Intern *Jakarta, ID*
Supertype ***Jan – Jul 2023***

- Designed & implemented topic extraction pipeline in conjunction with sentiment & semantic analysis, improving processing speed by 5x and reducing extracted topics' redundancy & inaccuracies by 33%
- Optimized Django REST + GCP backend via code refactoring, ensuring ∼95%+ uptime and increased throughput

Software Engineer Intern *Jakarta, ID*
Blibli ***Jun – Dec 2022***

- Expanded 4 commerce checkout services coverage via BDD, producing 150+ novel or improved QA cases in 6 months
- Optimized Kafka pipeline by implementing distributed programming, boosting test efficiency by 2x

Software Engineer Intern *Jakarta, ID*
Ruangguru ***Jan – Apr 2022***

- Developed a coding judge software for 1k+ users using Golang, whose smart scheduling & reminder features boosted task completion rate by ∼15% compared to legacy tool
- Eliminated code smell and enforced updated design pattern via Golang semantics & templates

Achievement & Awards

OpenAI x MBZUAI Micro Grant Award **Grantee**	*2025*
NAACL Best Theme Paper Award **Winner**	*2025*
BCG SEA Emeralds Case Competition **Winner**	*2024*
Indonesian International Student Mobility Awards @ UC Davis **Awardee**	*2023*
DOMO Higher Education Case Competition **Finalist**	*2023*
CSLeaders Full Education Scholarship **Awardee**	*2022*
Gemastik XV Data Mining Division **Finalist**	*2022*

Technical Skills

Core Research: Python, PyTorch, Huggingface, OpenCV, CUDA, Langchain, Langsmith
Engineering & Infrastructure: Golang, Java, TypeScript, FastAPI, Django, REST, Flask, Gin, Echo, GCP
Supporting Tools / Frameworks: Looker Studio, Tableau, PowerBI, Data Analysis Library (Pandas, Numpy, Seaborn, etc.), Slurm, Bash