

Patrick Amadeus Irawan

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Research Summary

My research focus spans on **multimodal alignment** (architectural or test-time alignment, modality scarce / imbalance learning), **LLM (reasoning & knowledge enrichment via RAG and agentic systems)**, and **large-scale evaluations** (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** multiple peer-reviewed publications (***ACL**, **NAACL**, **EMNLP**, **COLING**, etc.). Per this resume version, my ongoing works relate to Vision Language Models (VLM), Unified Multimodal Models (any-to-any), and RL (DPO, GRPO).

Education

Ph.D. in Natural Language Processing — MBZUAI	<i>2025 - 2029</i>
· Advisors: Alham Fikri Aji and Yova Kementchedzhieva	
· <i>VLM; LLM; multimodal alignment & imbalanced learning; large-scale evaluations</i>	
Global Study Program — University of California, Davis	<i>Jul 2023 - Dec 2023</i>
· <i>computational cognitive neuroscience, tech management</i>	
B.Eng. in Computer Science — Institut Teknologi Bandung	<i>2020 - 2024</i>
· <i>visual question answering; synthetic data generation; LLM reasoning</i>	

Relevant Publications

Vision Language Models are Confused Tourists [Preprint]	<i>Preprint 2025</i>
<i>P. Irawan, I. Hanif, M. Kautsar, G. Winata, F. Koto, A. F. Aji</i>	
A Massive-Scale Multilingual Multi-Cultural Multimodal RAG [Preprint]	<i>Preprint 2025</i>
<i>D. Anugraha, P. Irawan, A. Singh, E. Lee, G. Winata</i>	
Entropy2Vec: Crosslingual Language Modeling Entropy as End-to-End Learnable Language Representations [Paper]	<i>MRL @ EMNLP 2025</i>
<i>P. Irawan*, R. Diandaru*, B. Jagad*, R. Suchrady*, A. F. Aji, G. Winata, F. Koto, S. Cahyawijaya*</i>	
Seeing Culture: A Benchmark for Visual Reasoning and Grounding [Paper/Code]	<i>EMNLP 2025</i>
<i>B. Satar, Z. Ma, P. Irawan, W. Mulyawan, J. Jiang, E. Lim, C.-W. Ngo</i>	
WorldCuisines: A Massive-Scale Benchmark for Multilingual and Multicultural VQA on Global Cuisines [Paper/Code]	<i>NAACL 2025</i>
<i>G. Winata*, F. Hudi*, P. Irawan*, D. Anugraha*, R. Putri*, (20+ authors), et al.</i>	<i>(Best Theme Paper 🏆)</i>
ProxyLM: Predicting Language Model Performance on Multilingual Tasks via Proxy Models [Paper]	<i>NAACL 2025</i>
<i>D. Anugraha, G. Winata, C. Li, P. Irawan, E. Lee</i>	
Towards Efficient and Robust VQA-NLE Data Generation with Large Vision-Language Models [Paper]	<i>COLING 2025</i>
<i>P. Irawan, G. Winata, S. Cahyawijaya, A. Purwarianti</i>	
Datasheets Aren't Enough: DataRubrics for Automated Quality Metrics and Accountability [Preprint]	<i>Preprint 2025</i>
<i>G. Winata*, D. Anugraha*, E. Liu*, A. Aji*, S. Hung, A. Parashar, P. Irawan, et al.</i>	
SEACrowd: A Multilingual Multimodal Data Hub and Benchmark Suite for Southeast Asian Languages [Paper]	<i>EMNLP 2024</i>
<i>H. Lovenia*, R. Mahendra*, S. Akbar*, L. Miranda*, (10+ authors), P. Irawan, et al.</i>	

Work Experience

Research Engineer

Singapore Management University

Singapore

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

IT Bauschmiede

Germany, Remote

Nov 2024 – Jul 2025

- Part a core logistics team involving development on real-time scheduling, automated invoicing, and geolocation features, serving 5+ enterprise clients.
- Migrated system-wide database and refactored backend MVC into microservices, reducing overall processing time by ~50% and enhancing reliability

Data Scientist Intern

Supertype

Jakarta, ID

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

Blibli

Jakarta, ID

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

Ruangguru

Jakarta, ID

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-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 Bachelor Tuition 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