

Lucky Susanto

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RESEARCH INTERESTS

Natural Language Processing, Machine Translation, Computer Vision, Robotics, Machine Learning

EDUCATION

University of Indonesia | #1 Best University in Indonesia

Expected January 2024

S.Kom. in Computer Science

GPA: 3.7/4.0

Advisor: Adila Alfa Krisnadhi, S.Kom., M.Sc., Ph.D

Thesis: Developing a Standardized Translation Benchmark for Low Resource Local Languages in Indonesia

PUBLICATIONS

- [1] **"Replicable Benchmarking of Neural Machine Translation (NMT) on Low-Resource Local Languages in Indonesia"**.
Lucky Susanto, Ryandito Diandaru, Adila Krisnadhi, Ayu Purwarianti, Derry Wijaya. *In the First Workshop in South East Asian Language Processing (SEALP), 2023.*
- [2] **"Upper-bound Translation Performance of Llama-2 Under Idealized Setup"**.
Lucky Susanto, Ryandito Diandaru, Adila Krisnadhi, Ayu Purwarianti, Derry Wijaya. -, *Under Revision (Draft Available).*
- [3] **"What Linguistic Features and Languages are Important in LLM Translation?"**.
Ryandito Diandaru, Lucky Susanto, Zilu Tang, Ayu Purwarianti, Derry Wijaya. *In The 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING), Under Submission.*

EXPERIENCES

Monash University Indonesia | Research Assistant

Feb 2024

- Train and Evaluate various models to detect texts in various contexts: texts related to the Indonesian 2024 General Election, hate speech, and polarization; Where the results are featured in news stations.
- Gathering sentiment on the culture of "mudik" (going home) during the Eid al-Fitr Holiday season from Indonesians online and getting the results featured in news stations.
- Handling various undergoing projects.

Collaboration with Prof Derry Wijaya from Boston University - 1 | Research Collaborator

Dec 2022 - Jul 2023

- Recognized the urgent problem of the absence of replicable benchmarks for low-resource Neural Machine Translation (NMT). Highlighting that existing benchmarks in NMT often consist of billions of parameters, well outside the reach of many researchers.
- **Led the Development of Replicable Low-Resource NMT Benchmarks**, creating and advocating for the use of accessible yet robust evaluation tools for the Indonesian research community. Achieved by establishing a replicable NMT benchmark for four low-resource local languages in Indonesia, providing a template for future works.

Collaboration with Prof Derry Wijaya from Boston University - 2 | Research Collaborator

Jul 2023 - Dec 2023

- Identified that LLMs do not perform well for both high-resource and low-resource translation tasks. Drawing attention that the State-of-the-art in NMT is held by a supervised NMT model, comparatively smaller in parameter size and orders of magnitude smaller in GPU training time than LLMs such as Llama-2.
- **Contributed to the field of NMT by showing the upper-bound performance of LLaMa-2 models on translation** from English to an artificial language we created. Our findings reveal that their performance falls short of supervised NMT models, **suggesting that scaling up LLMs does not efficiently help translation performance.**
- Investigated multiple variables such as information ordering and word-type availability during prompting. Not having noun translations and shuffling the word-level translations in the prompt degrades the model most. Meanwhile, masking other word types does not significantly affect the model.

Collaboration with Prof Derry Wijaya from Boston University - 3 | Research Collaborator

Jul 2023 - Dec 2023

- Recognized that LLMs are multilingual, impacting their translation performance. Exploring the diverse attributes of languages and their influence on LLMs' translation performance.

- **Contributed to the future development of NMT systems** by identifying **which linguistic features and languages have a high impact on the model's translation performance, aiming to improve the performance of low-resource language translation by strategically utilizing and selecting higher-resource languages.**

Kata.ai | *AI Research Intern*

Feb 2022 - Jul 2022

- Developed various training curricula not tested before and evaluated their impact on BERT's performance for the GLUE benchmark.
- Conducted in-depth evaluations of multiple progressive stacking techniques to enhance the efficiency of BERT pre-training.
- Created a pipeline for pre-training BERT models utilizing both training curriculum and progressive stacking which **potentially increases BERT's pre-training convergence rate by 4% while reducing compute requirements by 12%.**

University of Indonesia | *Teaching Assistant for Design and Analysis of Algorithms Course*

Aug 2021 - Jan 2022

- Tutoring students on **analyzing the time complexity, memory complexity, and the correctness of various algorithms.**
- **Guiding some students in writing papers** for the course's final assignment.

University of Indonesia | *Teaching Assistant for Database Course*

Feb 2021 - Jul 2021

- Tutoring students on **Database Modeling** and **PostgreSQL** basics.
- Evaluating and providing personalized feedback to students on their assignments.

HONORS

Crack The Case: Data Analysis Competition | *1st Place*

Sep 2021

- Processing a large and unclean dataset consisting of the 9 Pillars of prosperity index of all countries in the world across multiple years.
- Discovering trends and uncovering insights from the dataset is not feasible due to its size.
- We clean the dataset and perform multiple stages of analysis. Utilizing Multilayer Perceptron, we uncover that countries scoring high in the Social Capital index tend to have a higher Prosperity Index in general. We report on this trend alongside various insights for other pillars

National Science Olympiad in Informatics | *Finalist*

Jul 2018

- Represented my province in a highly contested, yearly nation-wide competition in Informatics which includes mathematics, algorithms, and programming.

VOLUNTEER

IJCNLP-AAACL 2023 | *Bali, Indonesia*

Nov 2023

- Ensuring all the equipment and software were ready for the majority of the venues
- Actively moderated and facilitated the flow of proceedings at two workshop venues

TECHNICAL SKILL

Programming Languages:

Python, Java, Shell, PostgreSQL

AI Toolkit:

PyTorch, Huggingface, WandB

Cloud Computing:

Amazon Web Service, Google Cloud Service