

# Muhammad Haekal Muhyidin Al-Araby

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github.com/muhhae

## Research Interest

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Operating Systems and Computer Architecture, with a focus on fast and efficient cache management and process scheduling to enhance performance and sustainability in large-scale systems.

- Related Coursework: Operating Systems (A), Computer Architecture (A), Embedded Systems (A), Data Structure & Algorithm (A), Computer Security (A), Computer Network (AB), Databases (AB)

## Education

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### Sepuluh Nopember Institute Of Technology

Aug 2022 – Dec 2025

B.Eng. in Computer Engineering

(Expected)

- GPA: 3.65/4.0
- Major GPA: 3.8/4.0

## Research Experience

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### UChicago-Indonesia SYstem and AI Research Training

Jan 2025 – Jun 2025

*Research Trainee*

- Top 50 students from Indonesia are selected for this program.
- Covered 20+ papers from OSDI, SOSP, FAST conferences.
- Reproduced key experiments from top-tier publications.
- Instructor: Prof. Haryadi Gunawi from University of Chicago.

## Work Experience

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### Computer Engineering Department & Faculty of Medics, Sepuluh Nopember Institute of Technology

Sept 2024 – Jan 2025

*Backend Software Engineer*

- Designed, implemented, and deployed a system for efficiently storing digital images of cancer cells.
- Contributed 900+ LOC.
- Tools: Go, PostgreSQL, AWS S3, Docker

### Computer Engineering Department, Sepuluh Nopember Institute of Technology

July 2024 – Jan 2025

*Backend Software Engineer*

- Our app used by Directorate General of Digital Infrastructure(DGDI) under Indonesian Ministry of Communication and Digital Affair.
- Designed and implemented system for efficiently finding anomaly or wrong data in DGDI's database.
- Contributed 1000+ LOC.
- Tools: Go, PostgreSQL, Docker

### Computer Engineering Department, Sepuluh Nopember Institute of Technology

Aug 2024 – Jan 2025

*Teaching Assistant for Computer Security*

- Graded Mid-Term and Final Exam of 2 classes for the total of 70+ students.

### Computer Engineering Department, Sepuluh Nopember Institute of Technology

Aug 2024 – Dec 2024

*Teaching Assistant for Basic Programming*

- Oversaw 8 session of practicum consist of 25+ students each.
- Gave additional guidance for 6 groups consist of 5-6 students each.
- Graded the work of 30+ students.

## Computer Engineering Department, Sepuluh Nopember Institute of Technology

Jan 2024 – Jun 2024

### Teaching Assistant for Digital Circuit

- Oversaw 4 session of practicum consist of 30+ students each.
- Gave additional guidance for 9 groups consist of 3-4 students each.
- Graded the work of 27+ students.

## Computer Engineering Department, Sepuluh Nopember Institute of Technology

Aug 2023 – Dec 2023

### Teaching Assistant for Basic Programming

- Graded the Final Exam of 70+ students.

## Organization / Volunteering

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### Computer Engineering Student Organization

Feb 2024 – Dec 2024

#### Staff of Research and Profession

- Organized workshop in Game Development for GEMASTIK (Indonesian Biggest National IT Competiton) participants from Sepuluh Nopember Institute of Technology.

## Projects

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### Interpreted Programming Language

[github.com/muhhae/interpreted-lang-py](https://github.com/muhhae/interpreted-lang-py)

- Implemented core programming language feature such as variable, arithmetic, function, and class.
- Designed and implemented custom IDE with working syntax highlighting and interactive shell.
- Contributed 1600+ LOC.
- Tools Used: Python, CustomTKinter.

### Tetromania Castle

[github.com/muhhae/tetromania-castle](https://github.com/muhhae/tetromania-castle)

- Gothic themed tetromino game.
- Implemented 2D collision detection.
- Contributed 1000+ LOC.
- Tools Used: C++, SFML, Premake5.

### ESP32 PingPong Game

[github.com/muhhae/esp32-pingpong](https://github.com/muhhae/esp32-pingpong)

- PingPong Game written in C++ for ESP32 and dotmatrix display.
- Implemented how dotmatrix displays every frame in the game.
- Implemented music player using buzzer.
- Contributed 700+ LOC.
- Tools Used: C++, PlatformIO, ESP32.

### Lorem Ipsum

[github.com/muhhae/lorem-ipsum](https://github.com/muhhae/lorem-ipsum)

- Web application for sharing random image.
- Contributed 2000+ LOC.
- Tools Used: Go, MongoDB, Echo, Templ, HTMX, TailwindCSS.

## Technical Skill

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**Languages:** C, Python, Javascript, C++, Go, C#, Shell, Lua

**Framework:** Tensorflow, Keras, React, Echo

**Database:** PostgreSQL, MongoDB

**Tools:** Linux, Neovim, Git, GitHub, Docker

**Misc:** AWS EC2, AWS S3, Arduino, PlatformIO, ESP32, Unity3D

## References

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**Haryadi S. Gunawi**

*Uchicago-Indonesia SYstem and AI Research Instructor  
Professor of Computer Science, University of Chicago*

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**Surya Sumpeno**

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