

# Muhammad Haekal Muhyidin Al-Araby

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github.com/muhhae

## Research Interest

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

- Coursework: Operating System (A), Computer Architecture (A), Embedded System (A), Data Structure (A), Computer Network (AB), Database (AB)

## Education

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### Sepuluh Nopember Institute Of Technology

Aug 2022 – Jul 2026

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 – Present

*Research Trainee*

- Top 50 students from Indonesia selected for this program.
- Analyzed 20+ Paper from OSDI, SOSP, FAST conferences.
- Reproduced key experiments from top-tier publications.
- Mentored by 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**  
*Teaching Assistant for Digital Circuit*

Jan 2024 – Jun 2024

- 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**  
*Teaching Assistant for Basic Programming*

Aug 2023 – Dec 2023

- Graded the Final Exam of 70+ students.

## Organization and Volunteer

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**Computer Engineering Student Organization**  
*Staff of Research and Profession*

Feb 2024 – Dec 2024

- Organized workshop in Game Development for GEMASTIK Participant from ITS.

## 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  
Associate Professor of Computer Science, University of Chicago*

*haryadi@cs.uchicago.edu*

**Surya Sumpeno**

*Operating System and Computer Security Lecturer  
Associate Professor of Computer Engineering, Sepuluh Nopember Institute of Technology*

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**I Ketut Eddy Purnama**

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