
Joshu Leonardy

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I am a researcher in the field of Computer Vision, AI, Optical Fiber Sensor, and Instrumentation Electronics Development. I am known as a person who is committed to working as a collaborative and positive team member. I am used to working in large teams with interdisciplinary backgrounds. I am curious and enjoy learning something new. I enjoy looking at other possibilities for learning outside my area of expertise.

INTERN AND WORK EXPERIENCE

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| PT. ALITA & INSTITUT TEKNOLOGI SEPULUH NOVEMBER (ITS) Student Intern (01 August 2021 – 08 December 2021) | West Jakarta, DKI Jakarta 2021 |
| • GPS Module-Based Delivery Drone Using ESP8266 | |
| NATIONAL RESEARCH AND INNOVATION AGENCY REPUCBLIC INDONESIA Student Intern (28 June 2023 – 04 September 2023) | Serpong, Banten 2023 |
| • Arduino Nano Microcontroller-Based Optical Power Meter Development | |
| UNIVERSITI TEKNOLOGI MALAYSIA – FACULTY OF ELECTRICAL ENGINEERING Project Associate (September 2023) | Johor Bahru, Malaysia 2023 |
| • Simulating A Waveguide-Based Glucose Sensor with Surface Plasmon Resonance (SPR) Method Using Beamprop | |
| EDUPRIVATE Tutor (August 2022 – 2024) | Semarang, Indonesia 2022 -2024 |
| Mathematics, Physics, and Chemistry Tutor | |
| DEPARTMENT OF PHYSICS, UNIVERSITAS NEGERI SEMARANG | Semarang, Indonesia 2022 -2024 |
| • Research Assistant Lecture “Photonic Research Group”, January 2022 – March 2024 | |
| • Assistant Lecture Microcontroller, August 2022 – September 2023 | |
| • Assistant Lecture Instrumentation System Programming, August 2022 – September 2023 | |
| • Assistant Lecture Computer Programming, January 2024 – April 2024 | |
| PT. BORINE TECHNOLOGY INDONESIA RnD Engineer in PCB Department | Semarang, Indonesia April 2024 – August 2024 |
| • Research Assistant at Research Center for Photonics | |
| • Development of Smart Weapon by Using IR Lens for Scope and Object Detection Algorithm based-on YOLOv11 - Current Research | |
| ROCKETRY TEAM UNIVERSITY OF TECHONOLOGY MALAYSIA | Johor Bahru, Malaysia August 2025 – Now |
| • PCB Designer and CAD in Avionics Rocket Part | |
| KDSE UTM RESEARCHER FOR STEM MODULE | Johor Bahru, Malaysia March 2025 – Now |
| • Physics STEM Module Researcher | |

EDUCATION

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| UNIVERSITAS NEGERI SEMARANG DEGREE (UNDERGRADUATE) - PHYSICS (ELECTRONICS INSTRUMENTATION) | Semarang, Central Java 2020-2024 |
| • Final Project : S-Bend Waveguide-Based Temperature Sensor with Error Statistics Analysis Using Artificial Neural Network | |

- GPA 3.55 / 4.00
- 1st Place Outstanding Student of Physics Department (2022)
- 2nd Place Outstanding Student of Physics Department (2021)
- 1st Place in Scientific Writing National Competition at Bangka Belitung University (September 2023)
- 1st Place in ESSAY Writing National Competition at Universitas Negeri Semarang (October 2023)
- 3rd Place in ESSAY Writing National Competition at Universitas Negeri Semarang (October 2022)

- Grand Finalist in Scientific Writing National Competition at Lampung State University (August 2022)
- Indonesian Flying Robot Contest 2021 (KRTI 2021) at Universitas Sebelas Maret (August 2021)
- Training Course Drone Mapping – Indonesia Mapping Community at Cendrawasih University (June 2022)
- Data Science Summer School Course at Hertie School (Online) (June – August 2023)

UNIVERSITI TEKNOLOGI MALAYSIA

MASTER DEGREE IN ELECTRICAL ENGINEERING

Johor Bahru, Malaysia

2024-Now

- Graduate Lecture Assistant at Photonics Research Center
- Training Course Deep Learning Primer: A Hands-on Approach – Faculty of Artificial Intelligence UTM
- Workshop Robotics and Applied Machine Learning - Faculty of Electrical Engineering UTM
- Electrical Vehicles Design and Simulation Workshop - Faculty of Electrical Engineering UTM
- Workshop Wave Optics Simulation for Integrated Photonics using COMSOL – Universiti Sains Malaysia

SKILLS

BASICS SKILLS:

- Python (Image Processing, Computer Vision, and AI)
- C++ (IoT)
- MATLAB (Image Processing)
- Assembly Language

HARDWARE SKILLS:

- Assembly Electronics Circuit, Design, and Wiring
- Optical Fiber Sensor Fabrication
- CNC Machine

SOFTWARE SKILLS:

- Microsoft Office (Word, Excel, Power Point)
- Corel Draw
- KiCAD
- ZW3DCAD
- Autodesk Inventor
- ANSYS Lumerical FDTD
- COMSOL Multiphysics
- Beamprop

DESIGN AND ANALYSIS SKILLS:

- 3D Design, Simulation, and Analysis
- PCB Design
- Photonics Analysis & Simulation

LANGUAGES:

- Indonesia (Native Language)
- Hakka (Native Language)
- English (Intermediate)
- Mandarin (Beginner)

PUBLICATIONS & PATENT

- Development of Color Detection Based on Camera Infrared Filter with Python Image Processing (**IEEE Scopus, 2024 – Best Paper Award**)
- Optimized selectivity in no-core fiber sensors for high refractive index detection (**Q2 WoS, 2025**)
- Optimizing Convolutional Layer in YOLOv8: Enhancing Accuracy and Efficiency for Camouflaged Object Detection in Complex Environments (**IEEE Scopus, 2025**)
- Effect of Surrounding Refractive Index Changes on Amplitude Response in MMI-Based Fiber Optic Sensors (**IEEE Scopus, 2025**)
- Design and Characterization of a Simple Temperature Sensor based-on a Polymer Sine S-Bend Optical Waveguide Structure (**Q2 WoS, 2025**)

- Fabrication and Characterization of Low-Cost Optical Waveguides Using Recycled Expanded Polystyrene (EPS) as Core Material (**Q4, 2025**)
- Peran Fisikawan Indonesia Dalam Pengembangan Ilmu Pendidikan, Sains, dan Teknologi Sebagai Upaya Membangun Sumber Daya Manusia Yang Berkualitas di Era Society 5.0 (**ISBN, 2023**)
- Design and Characterization of Low Cost-Visible Light Optical Power Meter (LC-VLOPM) (**Patent, 2023**)
- Code for Optical Power Meter Measurement (**Patent, 2023**)
- Augmented Segmentation Utility (ASU) for Object Segmentation Software (**Patent, 2026**)

PROJECTS

- Fixed-Wing Drone – **Indonesian Flying Robot Contents (KRTI), 2021**
- Design of Smart Hydroponics Using Temperature Sensor Based on Waveguide with Solar Panel Energy Source (**Research Project, 2022**)
- Analysis of S-Bend Structure for Sensitivity Enhancement of Optical Waveguide-Based Temperature Sensor with Unsaturated Polyester Resin Core Material (**Research Project, 2022**)
- Internet of Things-Based Temperature and Humidity Monitoring Tool for Mung Bean Seed Spawning (**Robotic Project, 2023**)
- Effect of Nitrogen Gas Pressure Variation on Absorbance and Transmittance Value of ZnO Thin Film (**Courses Project, 2023**)
- Innovation of PVA-Strach-Based Antioxidant Films Incorporated with Coconut Shell Extract and Clay for Active Food Packaging Applications (**PKM, 2023**)
- Recycled Expanded Polystyrene Waste-Based Waveguide with Hydrogel Coating for Glucose Sensor Application (**Research Project, 2023**)
- S-Bend Waveguide-Based Temperature Sensor with Error Statistics Analysis Using Artificial Neural Network (**Thesis, 2023**)
- Detection And Treatment of Heavy Metals in Tin Mining Wastewater Using an Environmentally Friendly Method Based on Machine Learning and Smart Sensors (**Pendanaan Kemendiktisaintek BIMA, 2025**)
- Integration of Artificial Intelligence Systems in Surface Plasmon Resonance (SPR) Sensors for Accurate Gelatin Identification and Halal Licensing (**Pendanaan Kemendiktisaintek BIMA, 2025**)
- Development of Smart Sniper by Using IR Lens for Scope and Object Detection Algorithm based-on YOLOv11 - **Current Research (BRIN, 2025)**