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# 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 NOVENBER (ITS)** **West Jakarta, DKI Jakarta**  
**Student Intern (01 August 2021 – 08 December 2021)** **2021**

- GPS Module-Based Delivery Drone Using ESP8266

**NATIONAL RESEARCH AND INNOVATION AGENCY REPUBLIC INDONESIA** **Serpong, Banten**  
**Student Intern (28 June 2023 – 04 September 2023)** **2023**

- Arduino Nano Microcontroller-Based Optical Power Meter Development

**UNIVERSITI TEKNOLOGI MALAYSIA – FACULTY OF ELECTRICAL ENGINEERING** **Johor Bahru, Malaysia**  
**Project Associate (September 2023)** **2023**

- Simulating A Waveguide-Based Glucose Sensor with Surface Plasmon Resonance (SPR) Method Using Beamprop

**EDUPRIVATE** **Semarang, Indonesia**  
**Tutor (August 2022 – 2024)** **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** **Semarang, Indonesia**  
**RnD Engineer in PCB Department** **April 2024 – August 2024**

**NATIONAL RESEARCH AND INNOVATION AGENCY REPUBLIC INDONESIA (BRIN)** **Serpong, Indonesia**  
**September 2024 – Now**

- 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 TECHNOLOGY 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** **Semarang, Central Java**  
**DEGREE (UNDERGRADUATE) - PHYSICS ( ELECTRONICS INSTRUMENTATION )** **2020-2024**

- Final Project : S-Bend Waveguide-Based Temperature Sensor with Error Statistics Analysis Using Artificial Neural Network

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

<b>BASICS SKILLS:</b>	
<ul style="list-style-type: none"> <li>• Python (Image Processing, Computer Vision, and AI)</li> <li>• C++ (IoT)</li> <li>• MATLAB (Image Processing)</li> <li>• Assembly Language</li> </ul>	<b>HARDWARE SKILLS:</b> <ul style="list-style-type: none"> <li>• Assembly Electronics Circuit, Design, and Wiring</li> <li>• Optical Fiber Sensor Fabrication</li> <li>• CNC Machine</li> </ul>
<b>SOFTWARE SKILLS:</b>	
<ul style="list-style-type: none"> <li>• Microsoft Office (Word, Excel, Power Point)</li> <li>• Corel Draw</li> <li>• KiCAD</li> <li>• ZW3DCAD</li> <li>• Autodesk Inventor</li> <li>• ANSYS Lumerical FDTD</li> <li>• COMSOL Multiphysics</li> <li>• Beamprop</li> </ul>	<b>DESIGN AND ANALYSIS SKILLS:</b> <ul style="list-style-type: none"> <li>• 3D Design, Simulation, and Analysis</li> <li>• PCB Design</li> <li>• Photonics Analysis &amp; Simulation</li> </ul>
<b>LANGUAGES:</b>	
<ul style="list-style-type: none"> <li>• Indonesia (Native Language)</li> <li>• Hakka (Native Language)</li> <li>• English (Intermediate)</li> <li>• Mandarin (Beginner)</li> </ul>	

**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

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- 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 Spawing (**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 Prooject, 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)**