THIAGO E. **KALID**

Master's student at LASSIP

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RESEARCH INTEREST

Signal Processing; Inverse Problems; Ultrasonic Imaging; Raytracing; Beamforming; Optimization Modeling and Solving; Simulation; Non-Destructive Testing (NDT).

EDUCATION

Federal University of Technology – Paraná **2025–Present**
M.Sc. in Computer Science and Electrical Engineering
Research focus: Imaging and beamforming methods for ultrasonic imaging of subsea pipelines using acoustic lenses

University of Porto **2023–2024**
Exchange student, Department of Electrical and Computer Engineering

Federal University of Technology – Paraná **2019–2025**
B.Sc. in Electrical Engineering
Summa cum laude (top 0.1%)
Thesis: *Development of a Visual Odometry Method for Ultrasonic Immersion Inspection*

EXPERIENCE

LASSIP - Laboratory of Statistical Signal Processing & Inverse Problems Feb. 2024 - Present
Graduate Research Assistant (Advisor: Thiago A. R. Passarin) *Curitiba, Brazil*

- Developed a Python-based ray-tracing Spatial Impulse Response (SIR) ultrasound simulator to support and optimize acoustic lens design.
- Designed and implemented a machine learning–based anomaly detection framework using PyOD for flaw detection in ultrasonic non-destructive testing of pipes.
- Designed an acoustic lens capable of statically inspecting large pipe sections (e.g., 90°), significantly reducing inspection time in subsea inspections, and adopted by Petrobras.

LASSIP - Laboratory of Statistical Signal Processing & Inverse Problems Apr. 2021 - Aug. 2023
Undergraduate Researcher (Advisor: Thiago A. R. Passarin) *Curitiba, Brazil*

- Developed an image-processing-based system for underwater 2-D position estimation using a Raspberry Pi.
- Formulated and solved an optimization problem to compensate for ultrasound image distortions caused by temperature gradients in weld bead inspections.
- Implemented a parametric model to estimate acoustic refraction profiles between heterogeneous media using ultrasonic data.
- Implemented and evaluated multiple ultrasonic image reconstruction algorithms for non-destructive testing applications.

Laboratory of Electronic Control of Electrical Machines Apr. 2019 - Mar. 2021
Undergraduate Researcher (Advisor: Walter D. Sanchez) *Curitiba, Brazil*

- Implemented numerical methods in MATLAB for electrical engineering applications, including power flow analysis and electrical machine modeling.
- Programmed, deployed, and tested electrical machine controllers (e.g., soft starters and PLCs) for industrial applications using WEG equipment.

PEER-REVIEWED PUBLICATIONS

* denotes equal contribution

[1] Pires, Gustavo P*. **Kalid, Thiago E.***, A. Prado, Tatiana, Costa, Vinícius L. Pereira, Gabriela R. Passarin, Thiago A. R. Pipa, Daniel R. "An acoustic lens for displacement-free sectorial inspection of pipes with ultrasonic phased arrays". In: *NDT & E International* 156 (Dec. 2025), p. 103459. ISSN: 0963-8695. DOI: 10.1016/j.ndteint.2025.103459.

[2] **Kalid, Thiago E.** Everton Trento Jr, Tatiana A. Prado, Gustavo P. Pires, Giovanni A. Guarneri, Thiago A. R. Passarin, Daniel R. Pipa, "Virtual encoder: a two-dimension visual odometer for NDT". en. In: *Research and Review Journal of Nondestructive Testing* 1.1 (Aug. 2023). ISSN: 2941-4989. DOI: 10.58286/28119.

[3] Muller, Mateus Yamada, Almeida Prado, Tatiana, **Kalid, Thiago E.** Passarin, Thiago Alberto Rigo, Pipa, Daniel Rodrigues. "Ultrasonic sectorial inspection in the presence of temperature gradients". en. In: *Research and Review Journal of Nondestructive Testing* 1.1 (Aug. 2023). ISSN: 2941-4989. DOI: 10.58286/28122.

FELLOWSHIPS & PRIZES

3rd Best Thesis (Electrical Engineering) 2025
Awarded by the Regional Council of Engineering (CREA-PR) for the third-best undergraduate thesis over the entire state of Paraná, Brazil.

Best in Class Honor 2025
Recognized as the top-performing student in the BSc in Electrical Engineering program.

Petrobras Graduate R&D Fellowship 2025–Present
Awarded by the Brazilian Petroleum Company (Petrobras) to support graduate research assistants at the R&D project AUSPEX.

PRH-ANP Undergraduate Fellowship 2023–2025
Awarded by the Brazilian National Agency of Petroleum, Natural Gas and Biofuels (ANP) to students with high academic performance and research potential in the energy sector.

Petrobras Undergraduate R&D Fellowship 2021–2025
Awarded by the Brazilian Petroleum Company (Petrobras) to support undergraduate researchers at the R&D project AUSPEX.

SKILLS

Programming & Computing	Python, MATLAB, C, C++, CUDA; NumPy, SciPy, Matplotlib, PyTorch
Tools & Platforms	Git, GitHub, Linux, LaTeX; AutoCAD, SolidWorks
Additional Skills	Academic writing, public speaking, 3D modeling and printing

LANGUAGES

Portuguese: Native – English: C1 – Spanish: B2 – French: A1