Thiago E. **Kalid**

Master's student at LASSIP

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Education

UTFPR (Federal University of Technology – Paraná) — *Curitiba, Brazil*

M.Sc. in Computer Science and Electrical Engineering — *Mar. 2025 - Present*

- Advisor: Thiago A. R. Passarin
- Research topics: Ultrasonic imaging, Beamforming, Acoustic lens, Non-destructive Testing (NDT)

UP (University of Porto) — *Porto, Portugal*

Undergraduate Exchange Student — *Aug. 2023 - Feb. 2024*

- Completed classes: Audio Signal Processing, Machine Learning, Forecasting.

UTFPR (Federal University of Technology – Paraná) — *Curitiba, Brazil*

B.Sc. in Electrical Engineering — *Mar. 2019 - Mar. 2025*

- Thesis title: Development of a Visual Odometry Method for Ultrasonic Immersion Inspection
- Summa cum laude (all-time overall top 0.1%)

Research Experience

LASSIP - Laboratory of Statistical Signal Processing & Inverse Problems — *Curitiba, Brazil*

Graduate Research Assistant — *Mar. 2025 - Present*

- ***Advisor: Thiago A. R. Passarin***
- 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. The technology was applied and is currently being patented by Petrobras.

LASSIP - Laboratory of Statistical Signal Processing & Inverse Problems — *Curitiba, Brazil*

Undergraduate Researcher — *Apr. 2021 - Aug. 2023*

- ***Advisor: Thiago A. R. Passarin***
- 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 — *Curitiba, Brazil*

Undergraduate Researcher — *Apr. 2019 - Mar. 2021*

- ***Advisor: Walter D. Sanchez***
- 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.

Research Output

Peer-review publications

[1] Pires, G. P†, **Kalid, T. E.**†, de A. Prado, T., Costa, V. L., Pereira, G. R., Passarin, T. A. R., & Pipa, D. R. (2025). *An acoustic lens for displacement-free sectorial inspection of pipes with ultrasonic phased arrays*. *NDT & E International*, 156, 103459. https://doi.org/10.1016/j.ndteint.2025.103459. († denotes equal contribution).

[2] **Kalid, T. E.**, Everton Trento Jr, Tatiana A. Prado, Gustavo P. Pires, Giovanni A. Guarneri, Thiago A. R. Passarin, & Daniel R. Pipa. (2023). *Virtual encoder: a two-dimension visual odometer for NDT*. *Research and Review Journal of Nondestructive Testing*, 1(1). https://doi.org/10.58286/28119

[3] Muller, M. Y., de Almeida Prado, T., **Kalid, T. E.**, Passarin, T. A. R., & Pipa, D. R. (2023). *Ultrasonic sectorial inspection in the presence of temperature gradients*. *Research and Review Journal of Nondestructive Testing*, 1(1). https://doi.org/10.58286/28122

Publications in preparation

Fellowships & Prizes

2025	**3rd Best Thesis**, Awarded by the Regional Council of Engineering (CREA-PR) for prominent electrical engineering thesis.	*Paraná, Brazil*
2025	**Best in Class Honor**, Recognized as the top-performing student in the 2019 class of B.Sc. in Electrical Engineering.	*Paraná, Brazil*
2025	**Petrobras Graduate R&D Fellowship**, Awarded by the Brazilian Petroleum Company (Petrobras) to support graduate research assistants at the R&D project AUSPEX.	*Paraná, Brazil*
2023	**PRH-ANP Undergraduate Fellowship**, 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	*Brazil*
2023	**Ranked 1st**, Scholarship selection for full tuition waiver	*Brazil*
2021	**Petrobras Undergraduate R&D Fellowship**, Awarded by the Brazilian Petroleum Company (Petrobras) to support undergraduate researchers at the R&D project AUSPEX	*Paraná, Brazil*

Skills

Programming & Computing	Python, MATLAB, C/C++, CUDA, NumPy, SciPy, Matplotlib, PyTorch
Tools & Platforms	Git, GitHub, Linux, LaTeX, AutoCAD, SolidWorks
Aditional Skills	Academic writing, Public speaking, 3D modelling and printing
Languages	Portuguese (Native), English (professional proficiency/C1), Spanish (B2)