

Thomas Vaites Fontanari

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EDUCATION

Universidade Federal do Rio Grande do Sul (UFRGS)

Master of Science in Computer Science

- Final grade: 10/10

Porto Alegre, RS

Aug. 2021 – Nov. 2023

University of Kaiserslautern-Landau (RPTU)

Exchange Program

Kaiserslautern, Germany

Mar. 2019 – Mar. 2020

Universidade Federal do Rio Grande do Sul (UFRGS)

Bachelor of Engineering in Computer Engineering

- Final grade: 9.7/10 (*summa cum laude*)

Porto Alegre, RS

2015 – 2021

WORK EXPERIENCE

Data Scientist

Petrobras

Sep. 2023 - Present

Rio de Janeiro, RJ

- **Information Extraction Tool:** Responsible for the development of an LLM-based information extraction and analysis system to facilitate checking the validity of certain types of documents used internally.
- Development of Power BI reports.
- During the on-boarding data science course, I've practiced on existing problems including image segmentation and time-series regression

Software Developer (part-time, ~10h/week)

Wille Engineering

Sep. 2019 - Sep. 2023

Hattersheim am Main, Germany - Remote

- **DigiMuh:** I was responsible for the implementation of an ETL system for extracting data from multiple data sources and providing it in a more user-friendly format for a research project on animal welfare.
- **Smart Building Multisensor:** I implemented computer vision methods using thermal and RGB cameras for detecting various events in a room and also tracking humans using low-resolution thermal sensors. I also participated on the integration of ambient sensor devices. Main tools: Python, OpenCV, embedded software
- **Corona/COVID-19: Contactless Temperature Measurement:** I participated on the development of an embedded device for detecting faces and estimating body temperature using low-cost thermal sensors.

Undergraduate Assistant

Gtech.Edu at UFRGS

Jul. 2016 - Jul. 2017

Porto Alegre, RS

- Developed an Android application and a http server for [Sobek](#), a text mining software developed at the group.

RESEARCH EXPERIENCE

Research Assistant (MSc Student)

Informatics Institute at UFRGS

Aug. 2021 - Aug. 2023

Porto Alegre, RS

- **GNNs for Gene Expression tasks:** I reviewed previous works on ML methods for cancer genomics and designed, implemented and interpreted graph neural networks in gene expression classification tasks ([link to dissertation](#)). Grade: A. Main tools: Pytorch, Pytorch Geometric
- **Cross-validation for Imbalanced Datasets:** I worked together with an undergraduate student to implement various cross-validation strategies and evaluate them in hundreds of combinations of datasets and models. I reviewed previous work on the topic and designed and executed the experiments ([link to publication](#)). Main tools: Python and scikit-learn.
- **Feature Selection on Methylation Datasets:** Together with an undergraduate student, we used multiple feature selection methods, including ensemble approaches, to select important methylation probes for classification of thyroid tissue samples. Main tools: Python and scikit-learn.
- **Data Complexity Measures on Genomic Data:** I co-supervised a bachelor's of computer science thesis on complexity characterization of genomic data ([link to publication](#))
- **Performance of GNN Pooling Methods:** I co-supervised a bachelor's of computer science thesis on the computational cost (in terms of memory usage and execution time) used by pooling techniques for graph neural networks.
- Supervisor: Prof. Mariana Recamonde-Mendoza ([homepage](#))

Bachelor of Engineering Thesis

June 2020 - June 2021

Informatics Institute at UFRGS

Porto Alegre, RS

- **Subtle Color-change and Motion Magnification with Riesz Pyramids:** I've studied the previous literature on subtle signal magnification in videos and designed and implemented a video algorithm for simultaneous magnification of color changes and motion with the same data structure. I've also implemented parts of it in Android. Link to [code](#) and [publication](#). Main tools: OpenCV, Python, C++, Java, Android.
- Grade: A
- Supervisor: Prof. Manuel Menezes de Oliveira Neto ([homepage](#))

Undergraduate Research Assistant

Mar. 2019 - Mar. 2020

EIT at the University of Kaiserslautern-Landau

Kaiserslautern, Germany

- **CNNs for Package Inspection:** I've implemented and evaluated hundreds of neural network models for image similarity, including siamese networks. The end goal was to identify if the correct package was going through the production line by comparing it with a (sometime unknown) reference image. Main tools: OpenCV, Pytorch
- Supervisor: Prof. Norbert Wehn

Undergraduate Research Assistant

Mar. 2018 - Mar. 2019

Logic Circuit Synthesis Group at UFRGS

Porto Alegre, RS

- **Prunning Neural Networks for Energy Efficiency:** I empirically studied the effects of pruning the weights of neural networks on the model's accuracy and estimated its reduction in energy consumption. Main tools: PyTorch and Distiller. ([link to publication](#))
- **Adder-compressor Digital Circuits:** Studied the previous work of the group on adder-compressor digital circuits and designed and implemented new ones that performed better when wider operands were used. I've also executed experiments to compare the performance of different circuits in terms of area, power and time. Main tools: VHDL, Verilog.
- Supervisor: Prof. Sergio Bampi

HONORS AND AWARDS

Láurea Acadêmica (*summa cum laude*)

2021

Informatics Institute at UFRGS

Brazil

- Award conceded for achieving at least 80% of grades A in courses attended at UFRGS and graduating on schedule

Outstanding Student - Computer Engineering

2021

Brazilian Computer Society (SBC)

Brazil

- Award conceded for achieving the highest grade among the graduating students

Academic Merit - Computer Engineering

2021

CREA-RS

RS, Brazil

- Award conceded for achieving the highest grade among the graduating students

Honorable Mention

2015

Brazilian Olympiad of Informatics - University Level

Brazil

- 15th place nationwide

PUBLICATIONS

See all in my Google Scholar.

LANGUAGES

- **English:** advanced. TOEFL iBT 110/120 (R: 30, L: 29, S: 25, W:26); **German:** basic; **Portuguese:** native.