

## EDUCATION

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- **Universidade Federal do Rio Grande do Sul (UFRGS)** Porto Alegre, RS, Brazil  
*Bachelor in Physics* *Mar/2018 – (Exp.) Dec/2022*
- **Universidade Federal de Santa Catarina (UFSC)** Florianópolis, SC, Brazil  
*Fundamentals of Machine Learning (54 h)* *Jan/2021*
- **deeplearning.ai** Coursera  
*Deep Learning Specialization* *Jun/2020*

## EXPERIENCE

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- **UFRGS** Porto Alegre, RS, Brazil  
*Research Intern* *Jan/2020 - Present*
  - **Deepfuse:** Created and is leading the development of an automatic pipeline that detects and classifies Low Surface Brightness Galaxies (LSBGs) using a **DBSCAN based algorithm and Convolutional Neural Networks (CNNs)**.
  - **About:** Deepfuse can segment large astronomical images and detect objects that are LSBG candidates, extracting cutouts of these objects. These cutouts are evaluated by a CNN that was **trained with 40'000 images of LSBGs and non-LSBGs that were fetched from an online database**. The CNN has an **accuracy of over 90%**, beating other state of the art methods in the field. It can also be **used in images from different sources**. A scientific paper that describes Deepfuse is currently under production.
  - **What I did:** Both **planned and developed the whole project** from the ground up. **Read lots of academic papers** and discussed with different astronomy professors to learn the most important features of the galaxies and how to detect them. Built the detection system based on papers and optimized it to process large astronomical images. **Fine-tuned the detector by analysing the characteristics of detected objects and changing the thresholds**. Created a system for fetching data for a neural network, processing it, and training networks with transfer learning. **Tested different network architectures and hyperparameters in order to find the best models**. Created an ensemble of the best models to achieve a higher accuracy.
  - **Implementation:** The project was built entirely in Python, using NumPy, pandas, Matplotlib, PyTorch, scikit-learn, AstroPy and the standard Python library.
- **UFRGS** Porto Alegre, RS, Brazil  
*Information Technology Intern* *Jul/2019 - Dec/2019*
  - **ROODA:** An online learning platform for UFRGS' students, where it is possible to create classes with videos, images, texts and forums. All integrated with the student's ID.
  - **What I did:** Added features that let both professors and students interact with the website more easily, such as drag-and-drop functionalities for organizing classes, and a rework on the website's layout.
  - **Implementation:** Used Ruby on Rails for the back end and JavaScript, CSS and HTML for the front end.

## PROJECTS AND PARTICIPATION

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- **GFC (Grupo de Física Computacional):** Founded a student group that, through meetings, discussions, article reviews and open classes, aims to teach physics students about computer science concepts.
- **Royal Astronomical Society Early Career Poster Exhibition:** Made a poster explaining how an early version of *Deepfuse* works ([link](#)).
- **Star Data Analysis:** Used pandas, NumPy and Matplotlib to analyse and get insights from star evolution data ([link](#)).

## TECHNICAL SKILLS

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- **Languages and Technologies:** Python (NumPy, pandas, Matplotlib, PyTorch, TensorFlow, keras, scikit-learn, AstroPy, SciPy), C, SQL, git, Excel, Java, L<sup>A</sup>T<sub>E</sub>X.
- **Technical Knowledge:** Data Analysis, Machine Learning, Deep Learning, Astronomical Data Analysis, Data Structures, Object Oriented Programming, Relational Databases, Scientific Computing.

## LANGUAGES

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- **Portuguese:** Native.
- **English:** C1, verified by TOEFL ITP.
- **Spanish:** Conversational level.
- **Mandarin:** HSK 1.