

RELEVANT PROJECTS & CERTIFICATES

- **Employee Monitoring in Office Environment:** Leveraging scikit-learn and Pytorch in order to classify behaviors from office footage with traditional ML and ResNet, while also using YOLOv8 for worker detection and tracking
- **Certifications:** DeepLearning Specialization Course; Codecademy Learning Journey Course; Scientific (Talks, Conferences, Webinars)
- **Amyloid-beta A4 potency prediction:** Predicting pIC50 values for Amyloid-beta A4 using traditional ML models (Optuna-optimized) and Hugging Face's ChemBERTa with LoRA fine-tuning, leveraging chemical descriptors, molecular fingerprints, and MLflow for experiment tracking
- **For more information on this and other sections, click on the cards at brunocastro.site**

EXPERIENCE/EDUCATION

- **MSc Thesis** FEUP & UNESP, (PT/BR)
Master's ML/DL Researcher 2023 – 2024
 - **Project Planning:** Did project planning and collaborated with clinicians and researchers to build a comprehensive Parkinson's Disease database, defining key diagnostic parameters.
 - **Workflow Development:** Developed workflows using various libraries (e.g., Pandas, Numpy, Scikit-learn, TensorFlow, Keras, PyTorch, SciPy, Matplotlib, Seaborn) for data preprocessing, feature engineering, model development, evaluation, and visualization.
 - **Machine Learning Model:** Implemented traditional machine learning classifiers through Scikit-learn (RF, KNN, SVM, KNN, DT, LR..) for binary diagnosis and multi class severity classification of Parkinson's Disease.
 - **Deep Learning Model:** Primarily utilizing TensorFlow, with some PyTorch, developed and experimented with various architectures, including CNNs, LSTMs, and hybrid CNN-LSTM models for classification tasks.
 - **Data Augmentation & Optimization:** Conducted a comparative analysis of data augmentation techniques, including timing relative to feature selection, achieving a F1-score of 0.94 for the binary case.
- **MSc in Biomedical Engineering** FEUP & ICBAS, PT
Master's Student 2022 – 2024
 - **Machine Learning & Deep Learning:** Solid foundation in ML/DL, and computer-assisted diagnostics. Hands-on experience in designing diagnostic systems and building predictive models.
 - **Healthcare Technology:** Expertise in digital health, health data analytics, and smart healthcare technologies. Ability to work with teams, drive innovation, and implement strategic management in healthcare settings.
 - **Human Anatomy & Biomaterials:** Foundation in human anatomical structures, tissue engineering, regenerative medicine, and biomaterials science. Practical experience in applying these concepts in laboratory environments.
- **Freelance Job** EXCO (Kreston), PT
IT Solutions 2022
 - **Infrastructure Implementation:** Development of digital infrastructure—including website development, cloud collaboration, domain and email integration—establishing an online ecosystem aligned with business goals.
 - **Digital Optimization:** Enhanced digital presence by 100% insuring operational efficiency by delivering a cohesive user experience, integrating industry best practices, and reinforcing the company's brand identity.
- **Internship** Specko, PT
Biochemical Researcher 2022
 - **Eco-Friendly Aerogel Engineering:** Developed cost-effective cellulose aerogels for targeted hormone adsorption, reducing material costs by 55%, in collaboration with cross-functional teams at CICECO and CESAM.
 - **Analytical Techniques:** Integrated expertise in analytical organic/bio-chemistry and materials science, leveraging techniques like PXRD, FTIR-ATR, zeta potential analysis, N2 isotherms, HPLC, NMR, TGA, elemental analysis, and electron microscopy for advanced material development.
- **Erasmus+ Biochemistry** University of Poznan, PL
Bachelor's Student 2021 - 2022
 - **Bioreactor Operations:** Hands-on experience operating Sartorius Biostat B Plus Benchtop Bioreactors—optimizing cell viability and purity (could be used for Biopharmaceutical applications.)

- **CourseWork:** Completed courses in Bioprocess Technology, Dietetics, Quality and Safety Management, Toxicology, Human Nutrition while developing strong communication skills in international environment.

- **BSc in Biochemistry**

University of Aveiro, PT

Bachelor's Student

2019 - 2022

- **Biology:** Solid foundation in Microbiology, Genetics, Cell Biology, General Physiology, and Molecular Biology.
- **Biochemistry:** Knowledge in Biochemistry, including Biochemistry I & II, Macromolecular Structure and Function, Metabolic Processes, Bioinformatics, Secondary Metabolism, and Molecular Pathology.
- **Chemistry:** Organic Chemistry I & II, Secondary Metabolism II, Instrumental Analysis Methods, Physical Biological Chemistry, with lab experience.
- **Physics/Maths:** Developed analytical and quantitative abilities through Calculus I–III, Numerical and Statistical Methods, General Physics, and computational methods.

TECH AND TOOLS I'VE WORK WITH

- Python, SQL, Numpy, Pandas, Scikit-learn, TensorFlow, Pytorch, Keras, Matplotlib, Hugging Face, ...