William **Pozzolini**

Bioengineer

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Summary

Biomedical Engineer, currently in my final year of master's degree at the University of Padova (Italy), specializing in data analysis and modeling. I have practical experience using software such as COMSOL Multiphysics for simulation and Python for Machine Learning / Deep Learning. Native speaker of Italian with multilingual skills, including certified proficiency in English (Cambridge CAE) and academic proficiency in French and German.

Education

UniPd (University of Padova) — *Padova, Italy*

M.S.c. in Bioengineering — *Sept. 2024 - Oct 2026 (Expected)*

- Curriculum: Biomedical Data Analysis and Modeling.
- Key Courses: Neurorobotics, Biosensors, Deep Learning, Signal Processing, Bioimaging, Machine Learning

UniCh (University of Pescara) — *Pescara, Italy*

B.S. in Biomedical Engineering — *Sept. 2021 - July. 2024*

Thesis work: Finite Element Modeling and Analysis of a Lumbar Vertebra: Comparison Between Healthy and Pathological Cases

- Key Courses: Computational Mechanics, Biomaterials and Biodevices, Mechanics of Biological Tissues, Biomedical Instrumentation.

Projects

Machine Learning project — *Github*

Project Lead — *August. 2025 - September 2025*

- Developed an end-to-end machine learning pipeline using **Python** (Scikit-learn, Pandas) to predict diabetes from patient health data, achieving 75% sensitivity and 78% specificity on an imbalanced dataset.
- Implemented hyperparameter tuning with GridSearchCV and enhanced model interpretability using advanced techniques such as SHAP, Permutation Importance, and Partial Dependence Plots.
- Validated model reliability with learning and calibration curves and prototyped a deployment-ready API endpoint using FastAPI
- The full project, including code and analysis, is documented on GitHub: `github.com/WPozz/diabetes-prediction-project`..

Clinical NLP - Medical Transcription Classification project — *Github*

Project Lead — *August. 2025 - September 2025*

- Engineered an end-to-end NLP pipeline using PyTorch and Transformers (Bio-ClinicalBERT) to perform multi-class classification of medical transcriptions into 13+ distinct specialties.
- Implemented a custom "FocaLoss" function and differential learning rates to combat severe class imbalance with class weighting strategies.
- Optimized the training loop with mixed-precision (AMP) on CUDA using "GradScaler" and "autocast" and performed a rigorous evaluation using normalized confusion matrices and multi-class Precision-Recall curves.
- The full project, including code and analysis, is documented on GitHub: `https://github.com/WPozz/Multi-class-classification-using-Trasformers-for-medical-text-`..

Skills

Coding Skills

- **Python** (NumPy, TensorFlow, Scikit-learn): Applied in independent projects for data analysis and machine learning, available on my GitHub.
- **R** (Caret,GBM) used for Machine learning and data analysis.

Software

- **COMSOL Multiphysics** (FEA modeling and Biomechanics) with thesis work.
- **ITK-SNAP** (Medical Image segmentation).
- **MATLAB** (data analysis and signal processing)
- **Robot Operating System** (ROS)