Eduard Florin Hogea

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Education

West University of Timisoara, Timisoara – *Big Data Master's Degree*
September 2022 - June 2024

Universitat Autònoma de Barcelona, Barcelona - *Erasmus exchange student*
Computer Vision/Artificial Intelligence Master's Degree
September 2022 - June 2023

West University of Timisoara, Timisoara - *Computer Scientist Bachelors*
September 2019 - July 2022   **GPA** – 9,83/10
   Bachelor Thesis - *Hybrid Systems with Applications in Machine Learning*

Johannes Kepler University, Linz, Austria - *Erasmus exchange student*
Computer Science
September 2020 - February 2021

Work Experience

AI Software Developer – *Continental Automotive*
January 2024 – ongoing
   Worked on an AI assisted system to detect **anomalies** and **haptic events** (under brake, pedal kicks) during braking system development. The application is cross platform and uses **LSTMs** for **time-series** for predictions and **SHAP** for the **XAI**(explainable AI) part.

Junior Fellowship Researcher– *AI4Media*
March 2024 – May 2024 (predicted)
   Extended the research for the **state of the art** in Exemplar-Free Class **Incremental Learning** at **CEA List** research institute in Paris, France. My work contributed in understanding the effects of **feature-space manipulation** for class incremental learning and handling **catastrophic forgetting** with **statistical methods** and optimization methods via guided feature replacements.
Paper for Trans on NN and Learning Systems – **IF 10.4, IEEE.**

ML Engineer – *Forgenie (Freelance)*
June 2023 – Dec 2023
   Fine-tuned a **Large Language Model (GPT)** for generating **Solidity** smart contracts. Enriched the model's knowledge base with relevant documentation and smart contract examples. Implemented **Pinecone** for efficient knowledge **vectorization** and **querying**. Developed a system architecture for smart contract **generation** and **auditing**.

Research Intern - *West University of Timisoara*
January 2022 – July 2022
   AI and **XAI** project intern. Made a peer reviewed paper published in "**Applied Sciences- MDPI-**" about a neuro-symbolic **classifier**. It achieved impressive accuracy for cybersecurity attack types with the help of **Logic Tensor Networks** and **CNNs**.

Most Important Research – IF 11.245

- **Neuro-symbolic model for cantilever beams damage detection**
  Co-authored a paper in "**Computers in Industry-Elsevier-**", introducing a novel "**Logical Convolutional Neural Regression**" model. This method merges **Logic Tensor Networks** with **1D Convolution** for **damage detection** in cantilever beams and is the result of my research during my Master's Degree.

Programming Languages and Technologies

Good: Python, TensorFlow, Keras, LaTeX, git, Pandas, PyTorch

Medium: MATLAB, C, C++, Prolog, Jess, MySQL, C#, R

Beginner: JavaScript, Java, PL/SQL, Node.js, ReactJS, OpenGL, Unix, Spark

GitHub project referenced
Research intern project
Cantilever damage detection
Cyber-attacks classifier
Robust Class-IL
MLOps
Image Recognition - demo
Spotify Graphs

Journal/Conference
SYNASC 2022
Computers in Industry

Projects and notable experience

Conferences and Seminars

- **SYNASC 2022**, September 2022 – **Rank C**
  Held a presentation at **SYNASC** 2022 conference about "**Advantages of a neuro-symbolic solution for monitoring IT infrastructures alerts**". The presentation focused on the results from the research internship for an **IDS** and highlighted the benefits of combining **Symbolic AI** and **Deep Learning**. This concluded in a paper published by **IEEE.**

Notable Projects

- **Optimized Feature Translation for Robust Class-IL,** ongoing
  Currently developing an innovative approach with the help of **AI4Media** and **CEA France** by combining a fixed feature extractor with a pseudo-features generator. Integrated an advanced optimization method involving iterative feature replacement strategy. Will be published in **Transactions on Neural Networks and Learning Systems – IF 10.4, IEEE.**
- **MLOps for Document Classification**, October 2023 - January 2024
  Implemented a **Zero Shot Transformer** utilizing **HuggingFace** models for document classification tasks. Integrating additional linear classifiers like **Naive Bayes** and **SVC** to compare the model performance from a baseline. The works both locally and on the cloud, leveraging **AWS** services for scalable and efficient deployment. Full development process, with **CI/CD** can be found on my personal GitHub.
- **Spotify API Data Analysis and NetworkX,** October 2023
  Led a project utilizing the **Spotify API** for in-depth music data analysis. Implemented graph theory techniques using **NetworkX** to analyze correlations between popular genres and artists and their music.
- **Web based Image Recognition application,** March 2020
  Project done under the supervision of a lead engineer from **Nokia**. My contribution consisted of a **CNN** trained to **recognize traffic signs,** extracted with **OpenCV** from images and videos. In front-end development, **Django** was used. All the data was stored in a database to keep track of our algorithm's detection accuracy.
- Other projects referenced on **GitHub @eduardhogea**