

Colin Troisemaine

Research Engineer in Machine Learning

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EDUCATION

IMT Atlantique <i>Doctor of Philosophy in Computer Science</i>	Brest, France Oct. 2021 – Sept. 2024
Sherbrooke University <i>Master's Degree in Computer Science</i>	Sherbrooke, Canada Sept. 2020 – Aug. 2021
Polytech Tours <i>Engineering Degree in Computer Science</i>	Tours, France Sept. 2016 – Aug. 2021

EXPERIENCE

PhD in Machine Learning <i>IMT Atlantique / Orange Innovation</i>	Oct. 2021 – Sept. 2024 Lannion, France
<ul style="list-style-type: none">Developed 4 original techniques to discover novel classes in an unlabeled set of tabular dataPresented complex concepts to diverse audiences through accessible presentations at conferencesRealized an extensive state of the art on novel class discovery techniques, which received 10 citations in one yearCollected and curated a dataset of 500,000 real internet access faults and engineered 700 new features	
End-Of-Study Research Internship <i>Orange Innovation</i>	May 2021 – Sept. 2021 Lannion, France
<ul style="list-style-type: none">Designed a new way to create descriptive features to improve regression performanceDeveloped a parametric framework that can make use of 4 different classification models to generate features to improve the performance of 5 regression modelsPublished an analysis of the results along a positioning to the SOTA in a 12-page conference paper	
Engineering Student Internship <i>Worldline Global</i>	June 2020 – Aug. 2020 Tours, France
<ul style="list-style-type: none">Developed an interpretable log generation system to simplify troubleshootingPackaged an application in a Docker container and designed integration tests for the same project	

PROJECTS

Interactive Interface for Novel Class Discovery <i>Python, Flask, React, Plotly</i>	June 2021
<ul style="list-style-type: none">Developed a web application using Flask to serve a REST API with React as the frontendImplemented various clustering and novel class discovery algorithmsCreated data visualization functionalities with Plotly and PDF decision treesFeatured this work in a paper at the ECML PKDD 2023 Demo Track	
PracticalNCD <i>Python, PyTorch, Git, Wandb, Pandas</i>	Dec. 2023
<ul style="list-style-type: none">Designed a new state-of-the-art deep learning model for the discovery of novel classesOptimized the hyperparameters of 3 complex models on 7 datasets with a custom experiment tracking frameworkCompared 11 scores to estimate the number of clusters in an unlabeled set in different scenarios	

PUBLICATIONS

"A Practical Approach to Novel Class Discovery in Tabular Data", under review at ECML/PKDD journal track	2023
"Novel Class Discovery: an Introduction and Key Concepts", under review at Knowledge And Information Systems (KAIS) journal	2023
"A Method for Discovering Novel Classes in Tabular Data", IEEE International Conference on Knowledge Graph (ICKG)	2022
"Construction de variables à l'aide de classifieurs comme aide à la régression", Extraction et Gestion des Connaissances (EGC)	2022

TECHNICAL SKILLS

Foreign languages: French (native language), English (TOEIC level C1 - Expert, 965/990 points, 2018)
Programming languages: Python, SQL (Postgres, Bigquery), JavaScript, HTML/CSS, LaTeX
Frameworks: PyTorch, Pandas, Numpy, Scikit-learn, Jupyter, Matplotlib, Weights&Biases, React, Node.js, Express.js
Developer Tools: Git, Docker, Google Cloud Platform, PyCharm, IntelliJ, PhpStorm, Eclipse
Hobbies: Chess, guitar, 3D printing, FPV drone flight