

Arthur Thuy

PHD RESEARCHER AT GHENT UNIVERSITY

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Personal Profile

I am a PhD researcher in machine learning at the Faculty of Economics at Ghent University and at the CVAMO core lab at Flanders Make. I explore techniques for uncertainty estimation in neural networks, aiming to enhance their applicability in business decision-making by communicating when a model's output should (not) be trusted. I work primarily on applications in the manufacturing and educational domain.

Academic Experience

Ghent University

Ph.D., Data Analytics cluster of Business Economics

Ghent, Belgium

Aug 2021 – Present

- Research Foundation Flanders (FWO) fellowship project: “Semantic graphs for personalized intelligent tutoring systems”
- Supporting business decision-making with uncertainty estimation in neural networks
- Dissertation supervisor: Prof. dr. Dries F. Benoit

Ghent University

M.Sc., Business Engineering: Data Analytics

Ghent, Belgium

Sep 2019 – Jul 2021

- Grade: Summa Cum Laude
- Dissertation title: “Bayesian Deep Knowledge Tracing: Towards Uncertainty Estimation”
- Dissertation supervisor: Prof. dr. Dries F. Benoit

Ghent University

B.Sc., Business Engineering

Ghent, Belgium

Sep 2016 – Jul 2019

- Grade: Magna Cum Laude

Professional Experience

Everest Analytics

Machine Learning Engineer, part-time internship

Ghent, Belgium

Sep 2020 – Nov 2020

- Non-profit organization connecting students with a passion for data science to social impact organizations.
- Collaborated with a six-person team to develop models for predictive building control.
- Built neural network forecasting models with TensorFlow and Keras.

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Data Engineer, summer internship

Brussels, Belgium

Jun 2020 – Aug 2020

- Python web scraping of e-commerce websites.
- Microsoft Azure Data Storage and DevOps CI/CD.
- PySpark pipeline to extract, transform, and load (ETL) raw web data into clean data.
- Apache Airflow scheduling and orchestration of the workflow.

Skills

Programming Python (Pandas, PyTorch, TensorFlow, Keras, NumPy, Scikit-learn., Matplotlib, etc.), R (ggplot2), SQL, Julia.

Miscellaneous Linux, Shell (Bash/Zsh), \LaTeX , Git, Microsoft Office.

Soft Skills Time Management, Teamwork, Problem-solving, Presenting, Report Writing.

Languages Dutch (native), English (fluent), French (intermediate), German (intermediate).

Honors & Awards

Nov 2021 **PhD fellowship**, Research Foundation Flanders (FWO)

Brussels, Belgium

Oct 2021 **Sofico Award**, Best student in Business Engineering – main subject Data Analytics

Ghent, Belgium

Publications

JOURNAL ARTICLES

Fast and reliable uncertainty quantification with neural network ensembles for industrial image classification

Arthur Thuy, Dries F Benoit

Annals of Operations Research pp. 1–27. Springer, 2024

Active Learning to Guide Labeling Efforts for Question Difficulty Estimation

Arthur Thuy, Ekaterina Loginova, Dries F Benoit

Communications in Computer and Information Science. Springer, 2024

Explainability through uncertainty: Trustworthy decision-making with neural networks

Arthur Thuy, Dries F Benoit

European Journal of Operational Research. Elsevier, 2023

Conference & Workshop Presentations

Jan 2025 **ORBEL39**, Annual Conference of the Belgian Operational Research Society

Maastricht,

Netherlands

Sep 2024 **ECML-PKDD 2024**, European Conference on Machine Learning and Data Mining

Vilnius, Lithuania

Jun 2024 **EURO 2024**, European Conference on Operational Research

Copenhagen,

Denmark

Mar 2024 **Flanders Make Symposium 2024**, Annual Scientific Conference of the Flanders Make research centre

Kortrijk, Belgium

Feb 2024 **ORBEL38**, Annual Conference of the Belgian Operational Research Society

Antwerp, Belgium

Mar 2023 **Flanders Make Symposium 2023**, Annual Scientific Conference of the Flanders Make research centre

Antwerp, Belgium

Jul 2022 **EURO 2022**, European Conference on Operational Research

Helsinki, Finland

Teaching Experience

Supervisor master theses

Responsible for the supervision of master theses in Business Engineering

2021 – present

Teaching assistant

Responsible for the courses Data Mining (F000759) and Machine Learning (F000942)

Aug 2021 – Feb 2022

Interests

Cooking

I love exploring Asian cuisine as it offers opportunities to express creativity and master new cooking techniques.

Motorcycles

Riding motorcycles brings me both a feeling of freedom and a strong sense of community with fellow riders.

Running

I enjoy running outdoors to clear my head and maintain overall fitness.