

Judicaël POUMAY

Ph.D. in
Artificial
Intelligence

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Available in the following cities:
Liège, Namur, Brussels, Leuven, Maastricht, and Aachen.

About me

I have a **Ph.D. in Artificial Intelligence**, specialized in Natural Language Processing, and a Master's in Data Science.

I have worked for various companies, **building & deploying LLM-based applications**, Topic Modeling for Trend Analysis, and producing research on Word Embeddings, Which Was published in the **2nd-best conference in NLP**.

I have experience with many programming languages, starting at the age of 11 with C and Java. I have also worked with HTML, CSS, PHP, and JavaScript, and currently, I mostly work with **Python**.

Moreover, I am a **French** native speaker and an advanced **English** speaker. During my Ph.D. I also had the chance to sharpen my **public speaking skills** through seminars, practical sessions, and theoretical lectures.

Additionally, my research and interests led me to develop **strong mathematical skills** in the study of linear algebra through embedded knowledge representation, stochastic modeling using Bayesian models, and topology through the study of neural networks' latent spaces.

Freelance Clients

Belfius / Generative AI & ML Engineer - Brussels
September 2024 - ...

At Belfius, I specialize in **MLOps**, designing and deploying **infrastructure on Azure**, and building **frameworks for AI applications**. I excel at streamlining workflows and bridging knowledge gaps through clear, **thorough documentation**. My experience also includes implementing **disaster recovery systems**, as well as recent work with **MCP** servers and **agentic AI**.

Neocognition / NLP Engineer - Lyon
February 2023 - ...

I have developed and still maintain **LLM-based Chatbots** for coaching and psychological therapy using **Python**, **LangChain**, and the **OpenAI API**. Those Chatbots have been designed using an underlying **Finite-State Machine**. Designing these chatbots required **Complex Prompt Engineering** methods as well as **hallucination mitigation techniques**. Additionally, we are also doing research on the **explainability of LLM** through **statistical analysis**.

HEAJ / AI Professor - Namur

September 2023 - December 2024

I **teach AI** in video games and transmedia to bachelor's and master's students. Through my lectures, I aim to **demystify Artificial Intelligence** and related concepts such as **Prompt Engineering** and **Ethics in AI**. I also teach programming in **C#** for **AI Behavior in Games with Unity**.

HEAJ / AI Executive Education - Andenne

September 2024 - December 2024

I teach **AI** and **Prompt Engineering**, simplifying complex concepts to **professionals** and **executives**. My focus is on practical applications, covering generative AI, ethics, and prompt crafting to help participants integrate AI into their workflows.

Engemab.be / Web Developer - Liège

August 2023 - ...

I have designed and still maintain a website for Engemab using **WordPress**, **Divi**, **PHP**, **JavaScript/jQuery**, **CSS**, and **HTML**. ([Available here](#))

Jobs

HEC-Liège / Postdoc under Win4Spinoff Grant - Liège

October 2023 - ...

Developed **stochastic models** for **Trend Analysis** using **LLMs** and **Topic Modelling** in **Python**. Using **MongoDB**, **Flask**, and **Docker**, I produced an **MVP** with an easy-to-use **web interface**. With **BeautifulSoup** and **Selenium**, I crafted crawlers to retrieve web data to train my models. During this period, I have also used other tools for research and production, including **SQL**, **AWS EC2**, **PyTorch**, **Scipy**, **NLTK**, **Scipy**, **scikit-learn**, **TensorFlow**, **spacy**, **HuggingFace models**, **JavaScript**, **HTML**, and **CSS**.

KPMG & HEC-Liège / Ph.D. thesis - Liège

October 2019 - September 2023, Liège

Performed Research in **NLP**, including **LLM**, **Topic models**, **Word Embeddings**, and **Evaluation methods**. I **published 4 papers in 4 years** and I am proud to say that one of my papers was **published in EMNLP2021**, the **2nd best conference in NLP**: "*A Comprehensive Comparison of Word Embeddings in Event & Entity Coreference Resolution*." During this period, I have also used other tools for research, including **Python**, **SQL**, **AWS EC2**, **PyTorch**, **Scipy**, **NLTK**, **Scipy**, **scikit-learn**, **TensorFlow**, **spacy**, and **HuggingFace models**, **JavaScript**, **HTML**, and **CSS**.

EU Commission - DG FISMA / Student job - Brussels & Liège

January 2019 - August 2019, Brussels

Through this project, which became my master's thesis, I developed a novel algorithm and measure for **Complex Terminology Extraction** using **Python**, **Scipy**, **scikit-learn**, and **NLTK** to help with **Automatic thesaurus learning**. **Automatic thesaurus learning** is the process of automatically creating a repository of concepts and their definitions from a set of documents. The learned thesaurus can then be used by readers to make their lives easier. In particular, it aims to help them understand heavily technical texts such as financial regulatory documents published by DG FISMA.

Orange / Student job - Liège

January 2019 - April 2019, Liège

Indah / Volunteering - Liège

2016 - 2019, Liège

VOO / Student job - Herstal

2016 - 2017, Liège

Personal Projects

Duplicate & Translate / Personal project

July 2025

WordPress plugin for duplicating and translating pages. Uses generative AI and WordPress editor integration to speed up translation while keeping page layout and formatting. ([Available here](#))

TheThoughtProcess.xyz / Personal project

Since June 2019

My **personal blog** built with **WordPress** about **AI/LLM/NLP** and other subjects that interest me ([Available here](#))

Crazy square/ Personal project

2016, Liege

Small reflex Game for Android phone made in **JAVA** using the **Android SDK**.
No longer Available on the Android Play Store since 2022.

Education

ULiege | HEC-Liege / Ph.D. in Natural Language Processing

ULiege | Applied Science Faculty / Master in Data Science

ULiege | Applied Science Faculty / Bachelor in Computer Science

Awards, Publications & Lectures

Publications :

- Using meaning instead of words to track topics ([NLDB 2022](#))
- A Comprehensive Comparison of Word Embeddings in Event & Entity Coreference Resolution ([EMNLP 2021](#))
- HTMOT: Hierarchical Topic Modelling Over Time ([RANLP 2023](#))
- Evaluating Unsupervised Hierarchical Topic Models Using a Labeled Dataset ([RANLP 2023](#))
- NLP Methods for Weak Signals Detection from Unstructured Text ([DOCTORAL THESIS](#))
- Neuropsychology and Explainability of AI: A Distributional Approach to the Relationship Between Activation Similarity of Neural Categories in Synthetic Cognition ([Arxiv 2024](#))
- Neuropsychology of AI: Relationship Between Activation Proximity and Categorical Proximity Within Neural Categories of Synthetic Cognition ([Arxiv 2024](#))

Lectures given at ULiege to master students :

- Introduction to WordPress
- Introduction to contextual Word Embeddings and Language models
- Introduction to Topic Models
- Introduction to MongoDB
- Sales analytics Part I (Data cleaning and preparation)

Lectures given at HEAJ to Master, Bachelor students, & Executives :

- Unity Engine: the basics
- NPC Behavior Tree
- Demystifying Artificial Intelligence

Winner of the RSSB 2021 mini hackathon (team of 4 PhD students)