

# LE Ngoc Luyen | PhD

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## Education

### PhD in Computer Science

IMT-Atlantique, Brest, France (11/2016 – 09/2020)

**Thesis :** Analysis of Discourse Representation Structure for French

September 2020

Funded by Crédit Mutuel ARKÉA

### Master's in Computer Science – Intelligent Systems & Multimedia (double degree, with honors)

Nov. 2015

Institut Francophone International (IFI), Hanoi, Vietnam (11/2013 – 11/2015)

AUF Scholarship

Master ICONE from the University of La Rochelle (France) and Master in Computer Science from the Vietnam National University in Hanoi

### Engineering Degree in Computer Science (valedictorian)

January 2011

University of Da Lat, Lam Dong, Vietnam (09/2006 – 01/2011)

## Experience

### Professional Positions

#### R&D Engineer

12/2024 – 05/2026

Gamaizer.io & University of Technology of Compiègne - UTC (Heudiasyc Lab)

Paris, France

- ▷ Development of knowledge bases for skill management, including ontologies to represent competencies, and learner profiles.
- ▷ Design and implementation of a recommender system for training programs and courses, tailored to users' skill gaps, career goals, and contextual constraints.
- ▷ Development of a skill management portal, enhanced by generative AI.

#### Postdoctoral Researcher

05/2021 – 10/2024

UTC (Heudiasyc Lab) & Vivocaz (ANR Project : ANR-21-PRRD-0072-01)

Compiègne, France

Development of a recommender system for vehicle purchase and sale :

- ▷ Designed an ontology to describe vehicle models and manage the buying/selling process.
- ▷ Proposed and built a user profile-based ontology adapted to context.
- ▷ Developed a method to estimate semantic similarity of RDF data.
- ▷ Built a personalized recommendation system suggesting vehicle models based on user profile and preferences (experiments with Protégé, SPARQL, AllegroGraph, and Python).

#### PhD Researcher

11/2016 – 03/2020

IMT-Atlantique (Lab-STICC Lab) & Crédit Mutuel ARKÉA (AI Innovation Department)

Brest, France

Proposed approaches to automatically build Combinatory Categorical Grammar (CCG) trees of sentences and ontologies to retrieve missing information in appointment requests at Crédit Mutuel ARKÉA :

- ▷ Proposed a new method for analyzing the grammatical dependency structure of a sentence and converting it into a CCG derivation tree (experiments with NLTK, Spacy, and Stanford Parser).
- ▷ Built a new CCG tree resource for the French language.
- ▷ Proposed a supervised sequence-to-sequence model based on a Bi-LSTM and Conditional Random Fields (CRF) architecture for the CCG supertagging task using morphological and dependency features (experiments with Tensorflow, Keras, Word2vec, Glove, and BERT).
- ▷ Proposed a semantic representation method for French discourse (experiments with VerbNet, Boxer, and previous results).

#### Software Developer

06/2011 – 03/2013

Freelance

Da Lat, Vietnam

- ▷ Designed and implemented web and Windows applications based on the needs of organizations and businesses in Da Lat using .NET frameworks with C#, ASP.NET, and SQL.

#### Lecturer

06/2011 – 11/2019

University of Da Lat (UDL) – Faculty of Information Technology

Da Lat, Vietnam

- ▷ Teaching : Java programming, advanced web programming, network programming ; supervised student projects.
- ▷ Team leader for the development of the faculty's online training management system using C# and ASP.NET.

## Internships

### Master's Final Internship

IBC (Institute of Computational Biology)

Development of a knowledge system for Big Data : application to rice phenotyping data (*O. Sativa*)

Organization, optimization, and enhancement of semantic search capabilities (inference, reasoning) on large-scale data using semantic web technologies (RDF data and ontologies) in conjunction with Big Data management systems such as MongoDB and Neo4j.

04/2015 – 09/2015

Montpellier, France

### Engineering Final Internship

University of Da Lat – Faculty of Information Technology

Development of an online system to support primary education, using C#, ASP.NET, and Web services (RESTful APIs).

06/2010 – 12/2010

Da Lat, Vietnam

## Skills

**Languages :** Vietnamese (native), French (fluent), English (fluent)

**Machine & Deep Learning :** TensorFlow, Keras, Scikit-Learn, NLTK, Spacy, BERT, Transformer, LLMs

**Development :** Python, Java, C/C++, Git, Docker

**Analysis:** Agile, UML, Design Patterns

**Databases :** SQL (MySQL, PostgreSQL), NoSQL (MongoDB, Neo4j), SPARQL

## Publications

### In Peer-Reviewed Journals

[24] LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. **Enhancing Context-Aware Recommender Systems through Deep Feature Interaction Learning**. The Journal of Multi-Criteria Decision Analysis (JMCDA), 2025. <doi:10.1002/mcda.70012>

[23] Jinfeng ZHONG, LE Ngoc Luyen, Elsa NEGRE, Marie-Hélène ABEL. **Ontology-based crisis simulation system for population sheltering management**. Transactions of The Society for Modeling and Simulation International, 2024. <doi:10.1177/00375497231214563>

### In International Peer-Reviewed Conferences

[22] LE Ngoc Luyen, Marie-Hélène ABEL. **Joint Group Profiling and Recommendation via Deep Neural Network-based Multi-Task Learning**. The 26th International Conference on Computer Supported Cooperative Work in Design (CSCWD), May 2025, Compiègne, France. <Accepted>

[21] LE Ngoc Luyen, Marie-Hélène ABEL. **Enhancing Recommender System Using Textual Embeddings from Pre-trained Language Models**. Proceeding in the 8th International Conference on Information Technology and Systems (ICITS), 2025, Mexico.

[20] LE Ngoc Luyen, Marie-Hélène ABEL. **Context-Aware Multi-Criteria Recommender Systems Using Variable Selection Networks**. Proceedings of the 11th International Conference on Advanced Intelligent Systems and Informatics (AISIS 2025), Jan 2025, Port Said, Egypt. pp.3-15. <hal-04961071>

[19] LE Ngoc Luyen, Marie-Hélène ABEL. **From Individual to Group : Developing a Context-Aware Multi-Criteria Group Recommender System**. Proceeding in the 16th International Conference of Digital Ecosystems (MEDES) 2024, Naples, Italy.

[18] LE Ngoc Luyen, Marie-Hélène ABEL, Elsa NEGRE. **Recognizing Similar Crises through the Application of Ontology-based Knowledge Mining**. The 57th Hawaii International Conference on System Sciences, Jan 2024, Hawaii, United States. <arXiv:2401.03770>

[17] LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. **Combining Embedding-Based and Semantic-Based Models for Post-Hoc Explanations in Recommender Systems**. The 2023 IEEE Conference on Systems, Man, and Cybernetics (SMC), October 2023, Hawaii, United States. <arXiv:2401.04474>

[16] LE Ngoc Luyen, Jinfeng ZHONG, Elsa NEGRE, Marie-Hélène ABEL. **CORec-Cri : How Collaborative and Social Technologies Can Help to Contextualize Crises?**. The 2023 IEEE Conference on Systems, Man, and Cybernetics (SMC), October 2023, Hawaii, United States. <arXiv:2310.02143>

[15] LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. **Designing a User Contextual Profile Ontology : A Focus on the Vehicle Sales Domain**. The 6th International Conference on Information and Knowledge Systems (ICIKS 2023), Portsmouth, United Kingdom. <arXiv:2308.06018>

[14] LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. **Improving Semantic Similarity Measure Within a Recommender System Based-on RDF Graphs**. The 6th International Conference on Information Technology & Systems (ICITS 2023), Lecture Notes in Networks and Systems, vol 691. Springer, Cham. <hal-04161309>

[13] LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. **A Constraint-based Recommender System via RDF Knowledge Graphs**, The 26th International Conference on Computer Supported Cooperative Work in Design (CSCWD), May 2023, Rio de Janeiro, Brazil. <10.1109/CSCWD57460.2023.10152701>

[12] *LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. A Personalized Recommender System Based-on Knowledge Graph Embeddings.* The 3rd International Conference on Artificial Intelligence and Computer Vision (AICV2023), March 5–7, 2023. AICV 2023. Lecture Notes on Data Engineering and Communications Technologies, vol 164. Springer, Cham. (hal-04101826)

[11] *LE Ngoc Luyen, Jinfeng ZHONG, Elsa NEGRE, Marie-Hélène ABEL. Constraint-based recommender system for crisis management simulations.* The 56th Hawaii International Conference on System Sciences, Jan 2023, Hawaii, United States. (10125/102854)

[10] *LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. Towards an ontology-based recommender system for the vehicle sales area.* Progresses in Artificial Intelligence & Robotics : Algorithms & Applications. ICDLAIR 2021. Lecture Notes in Networks and Systems, vol 441. Springer, Cham. (10.1007/978-3-030-98531-8\_13)

[09] *LE Ngoc Luyen, Yannis HARALAMBOUS. CCG Supertagging using Morphological and Dependency Syntax Information.* International Computational Linguistics and Intelligent Text Processing. CICLing 2019. Lecture Notes in Computer Science, vol 13451. Springer, Cham. (hal-02110790)

[08] *LE Ngoc Luyen, Yannis HARALAMBOUS, Philippe LENCA. Towards a DRS Parsing Framework for French.* Sixth International Conference on Social Networks Analysis, Management and Security (SNAMS), October 2019, Granada, Spain. (hal-02280800)

[07] *LE Ngoc Luyen, Anne Tireau, Aravind Venkatesan, Pascal Neveu, Pierre Larmande. Development of a Knowledge System for Big Data : Case Study to Plant Phenotyping Data.* 6th International Conference on Web Intelligence, Mining and Semantics (WIMS '16). Association for Computing Machinery, New York, NY, USA, Article 27, 1–9. (hal-01411565)

### In National Peer-Reviewed Conferences.....

[06] *LE Ngoc Luyen, Gildas Tagny Ngompé. Extraction de relations multi-étiquettes en utilisant des modèles pré-entraînés et des couches de Transformer.* Actes de l'atelier TextMine 2025, La conférence Extraction et Gestion des Connaissances (EGC), Jan 2025, Strasbourg, France. (hal-04919844)

[05] *LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. Construction d'un système de recommandation basé sur des contraintes via des graphes de connaissances.* 34es Journées francophones d'Ingénierie des Connaissances (IC 2023) @ PFIA 2023, Jul 2023, Strasbourg, France. (hal-04152530)

[04] *LE Ngoc Luyen, Jinfeng Zhong, Elsa Negre, Marie-Hélène ABEL. Système de recommandations basé sur les contraintes pour les simulations de gestion de crise.* 34es Journées Francophones d'Ingénierie des Connaissances (IC 2023)@ PFIA 2023, Jul 2023, Strasbourg, France. (hal-04152504)

[03] *LE Ngoc Luyen, Marie-Hélène ABEL, Philippe GOUSPILLOU. Apport des ontologies pour le calcul de la similarité sémantique au sein d'un système de recommandation.* 33ème Journées Francophones d'Ingénierie des Connaissances (IC 2022), Jun 2022, Saint-Étienne, France. (hal-03675591v2)

### In Conference Posters.....

[02] *LE Ngoc Luyen, Yannis HARALAMBOUS, Philippe LENCA. Détection du Déficit d'Information dans un Fil de Discussion.* Journée du Département d'Informatique de l'IMT Atlantique 2018. L'Aberwrac'h, France. (RG.2.2.22822.24644)

[01] *LE Ngoc Luyen, Jouannic Stéphane, Gantt Pascal, Pierre Larmande. Development of generic indexing tool to optimize the use of biological data.* Journées Ouvertes en Biologie, Informatique & Mathématiques (JOBIM) 2015. Clermont-Ferrand, France. (lirmm-01274707)

## Supervision : Bachelor's / Engineering / Master's Theses

### 2024–2025

*Comparison and Evaluation of Methods for Calculating Semantic Similarity on RDF Data*

▷ Soudarsane Tillai, soudarsane.tillai@etu.utc.fr

### Engineering Program

UTC (Heudiasyc Lab)

### 2023–2024, Semester II

*Improvement and Optimization of a Vehicle Recommendation System via a Mobile Application*

▷ Adam Hafiz Bin Ahmad, adam-hafiz.bin-ahmad@etu.utc.fr

▷ Xinghua Shao, xinghua.shao@etu.utc.fr

▷ Edouard Le, edouard.le@etu.utc.fr

### Master's Program

UTC (Heudiasyc Lab)

### 2023–2024, Semester I

*Used Vehicle Search Application Using a Recommendation System*

▷ Adam Hafiz Bin Ahmad, adam-hafiz.bin-ahmad@etu.utc.fr

▷ Xinghua Shao, xinghua.shao@etu.utc.fr

▷ Cheng Xu, cheng.xu@etu.utc.fr

### Master's Program

UTC (Heudiasyc Lab)

**2022–2023**

*Learning User–Item Relationships from Knowledge Graphs*

20h equivalent tutorials (**24.5/30** UTP)

- ▷ Mohamed Ibrahim Attala, mohamed-ibrahim.attala@etu.utc.fr
- ▷ Ambra Zajsi, ambra.zajsi@etu.utc.fr
- ▷ Ermal Belul, ermal.belul@etu.utc.fr
- ▷ Hedil Maatoug, hedil.maatoug@etu.utc.fr
- ▷ El Hadj Mohamedou, el-hadj.mohamedou@etu.utc.fr

**Master's Program**

*UTC (Heudiasyc Lab)*

## Services

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### Reviewers.....

- ▷ The International Conference on Artificial Intelligence, Computer, Data Sciences and Applications (ACDSA), August 2025, Antalya, Türkiye.
- ▷ The 26th International Conference on Computer Supported Cooperative Work in Design (CSCWD), May 2025, Compiègne, France.
- ▷ The Journal of Multi-Criteria Decision Analysis (JMCDA), 2024.
- ▷ The 2023 IEEE Conference on Systems, Man, and Cybernetics (SMC), October 2023, Hawaii, United States.
- ▷ The 6th International Conference on Information Technology & Systems (ICITS), April 2023, Cusco, Pérou.

### Member of Conference Technical Committees.....

- ▷ The 26th International Conference on Computer Supported Cooperative Work in Design (CSCWD), May 2025, Compiègne, France.