



Sebastien Montella

MACHINE LEARNING & DEEP LEARNING RESEARCHER · NATURAL LANGUAGE PROCESSING & GRAPHS

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French ●●●● English ●●●● Chinese ●●●● German ●●●●

Work Experience

Huawei Research Center

Edinburgh, United Kingdom

Senior Research Scientist

Jan. 2023 - Now

- Developing Tool-Augmented Large Language Models.
Keywords: *Function Calling, ReAct, Chain-of-Thought, ToolLLM, API Retriever, Constrained Decoding (Guardrails)*
- Improving LLMs' Planning and Reasoning.
Keywords: *LLMs, PDDL Problem Generation, Instruction Tuning, Multi-Agents Systems (MAS)*
- Knowledge Graph Construction from LLMs.
Keywords: *LLMs, Retrieval-Augmented Generation (RAG), In-Context Learning*
- Knowledge Self-Awareness and Self-Validation Evaluation in Large Language Models.
Keywords: *LLMs, In-Context Learning, Chain-of-Thought (CoT)*
- Co-organizing the First International Workshop on Prompt Engineering for Pre-Trained Language Models.
Link: <https://prompteng-ws.github.io/2025/>

Orange Labs

Lannion, France

Industrial Ph.D. Researcher

Nov. 2019 - Nov. 2022

- Investigating the Effect of Relative Positional Embeddings on AMR-to-Text Generation using Structural Adapters.
Keywords: *Transformers, AMR-to-Text, Relative Position Embeddings, Graph Encoding*
- Hyperbolic (Temporal) Knowledge Graphs Embeddings for Link Prediction. New state-of-the-art performances with fewer dimensions.
Keywords: *Temporal Knowledge Graph, Link Prediction, Hyperbolic Geometry*
- Participation to the WebNLG-2020 Challenge consisting in verbalizing knowledge triples. Significant boost in BLEU scores with pre-training.
Keywords: *Transformers, Graph-to-Text, Data Augmentation, Denoising Auto-Encoder*

Orange Labs

Belfort, France

Research Intern

Feb. 2019 - Aug. 2019

- Identifying whether a connected object is inside or outside a building (Binary Classification) using CSI measurements in a 5G / LTE-M context. Performances improved by 10%.
Keywords: *Python, PyTorch, scikit-learn, Naive Bayes, k-NN, Gradient Boosting, SVM, Advanced Dimensionality Reduction, BERT*
- Study of indoor localization in static and dynamic scenarios in large building using CSI data with different bandwidth. Comparison with state-of-the-art methods.
Keywords: *Neural Nets, Deep Belief Network, Convolutional Neural Network, Gated Mechanism, Multi-tasking*

Web Intelligence and Data Mining Lab

Zhongli, Taiwan

Research Assistant

Sept. 2016 - (remote) Feb. 2019

- Build a generative model to generate emotionally-consistent response given a social post to show empathy to the user.
Keywords: *Python, PyTorch, Encoder-Decoder architecture, Bidirectional RNNs, Attention mechanism, Words Embedding, Autoencoder, GAN, Seq-GAN, StarGAN, Reinforcement Learning, Policy Gradient, CNNs, Gated Mechanism*
- Academic-Industrial Cooperation with the branding VERSO Agency. Social media mining and sentiment analysis on Facebook groups for precision marketing.
Keywords: *R, Facebook API, PostgreSQL, Solr, Crawlers, Information Extraction and Retrieval*
- Academic-Industrial Cooperation with Institute for Information Industry (Taiwan) on Machine Learning application on Recommendation System.
Keywords: *RNN, LSTM, GRU*

Education

AMU (Aix-Marseille University)

Lannion/Marseille, France

Industrial Ph.D. in Computer Science and Information Engineering

Nov. 2019 - Nov. 2023

- Thesis Topic: Neural Graph-to-Text Generation: Comparing Euclidean and Riemannian Graph Encoding
- Supervisors: Johannes Heinecke, Lina Rojas M. Barahona, Alexis Nasr, Frédéric Béchet

NCU (National Central University)

Zhongli, Taiwan

Master in Computer Science and Information Engineering

Sept. 2016 - (remote) Jul. 2019

- Master Thesis: Emotionally-Trigged Short Text Conversation using Attention-Based Sequence Generation Models
- Supervisor: Chang Chia-Hui
- GPA: 4.0/4.0 Ranked: 2~3/123

BFA (Beijing Film Academy)

Chinese Language Program

- Intensive Chinese Courses
- Level: Intermediate (HSK4) Ranked: 1st

Beijing, China

Feb. 2018 - Aug. 2018

UTBM (University of Technology of Belfort-Montbéliard)

Master in Computer Science

- Programming & basics of computer science

Belfort, France

Sept. 2013 - Sept. 2019

Programming Skills

Programming Language: Python, Bash, SQL, LaTeX, R, C++, Java, C, HTML

Development Tools & O.S.: Git, PyCharm, vim, Ubuntu (Linux), Windows

Packages: PyTorch, Tensorflow, Hugging Face Transformers, Langchain, LangGraph, vLLM, Grafana, Keras, nltk, pandas, NumPy, matplotlib

Cloud tools: Huawei Cloud, Google Cloud

Volunteering

Co-organizer of the International Workshop on Prompt Engineering (PromptEng) co-located with TheWebConf.

Co-organizer of the 18th Workshop on Spoken Dialogue Systems for PhDs, PostDocs & New Researchers (YRRSDS) in Edinburgh, Scotland (2022).

Co-organizer of the “*Doctoral Day*” in Lannion, France (2022).

Invited Speaker at the NL4XAI Spring School in Nancy, France (2022).

(Dataset) Contributor to the GEMv2 Multilingual NLG Benchmarking Environment Package.

Volunteer at the International Conference on Language Resources and Evaluation (LREC) at Marseille, France (2022).

Publications

Journal Articles

- [1] **Sébastien Montella**, Brieuc Berruet, Oumaya Baala, Valéry Guillet, Alexandre Caminada, Frédéric Lassabe, “A Funnel Fukunaga-Koontz Transform for Robust Indoor-Outdoor Detection Using Channel State Information in 5G IoT Context”, *IEEE Internet of Things Journal* (2022)

Peer-Reviewed Conference Papers

- [1] Kaustubh Vyas, Damien Graux, Yijun Yang, **Sébastien Montella**, Chenxin Diao, Wendi Zhou, Pavlos Vougiouklis, Ruofei Lai, Yang Ren, Keshuang Li, Jeff Z. Pan, “From An LLM Swarm To A PDDL-Empowered HIVE: Planning Self-Executed Instructions In A Multi-Modal Jungle”, *ICLR 2025*
- [2] Wenyu Huang, Guancheng Zhou, Mirella Lapata, Pavlos Vougiouklis, **Sébastien Montella**, Jeff Z Pan, “Prompting Large Language Models with Knowledge Graphs for Question Answering Involving Long-tail Facts”, (*under review*)
- [3] **Sébastien Montella**, Alexis Nasr, Johannes Heinecke, Frederic Bechet, Lina M Rojas-Barahona, “Investigating the Effect of Relative Positional Embeddings on AMR-to-Text Generation using Structural Adapters”, *EACL (2023)*
- [4] **Sébastien Montella**, Lina Rojas-Barahona, Johannes Heinecke, “Hyperbolic Temporal Knowledge Graph Embeddings with Relational and Time Curvatures”, *Findings of ACL (2021)*
- [5] **Sébastien Montella**, Chia-Hui Chang, Frédéric Lassabe, “Emotionally-Triggered Short Text Conversation using Attention-Based Sequence Generation Model”, *Proceedings of NTCIR-14 Conference, Tokyo, Japan (2019)*
- [6] Yu-Ching Chen, Chia-Ching Yang, Yu-Han Chen, **Sébastien Montella**, Chia-Hui Chang, Pin-Liang Chen, Ping-Che Yang, Tsun Ku, “Structured Learning Applied to Consumer Goods Recommended”, *Proceedings of the 2017 Conference on Technologies and Applications of Artificial Intelligence, Taiwan (2017)*
- [7] Yu-Han Chen, **Sébastien Montella**, Wei-Han Chen, Chia-Hui Chang, “WIDM at the NTCIR-13 STC-2 Task”, *Proceedings of NTCIR-13 Conference, Japan (2017)*

Workshop Papers

- [1] **Sébastien Montella**, Lina M Rojas-Barahona, Frederic Bechet, Johannes Heinecke, Alexis Nasr, “Transfer Learning and Masked Generation for Answer Verbalization”, *Structured and Unstructured Knowledge Integration (SUKI) Workshop at NAACL (2022)*
- [2] **Sébastien Montella**, Betty Fabre, Tanguy Urvoy, Johannes Heinecke, Lina Rojas-Barahona, “Denoising Pre-Training and Data Augmentation Strategies for Enhanced RDF Verbalization with Transformers”, *WebNLG2020 Workshop at INLG (2020)*

Demo Papers

- [1] Sebastian Gehrmann et al. (**76 authors**), “GEMv2: Multilingual NLG Benchmarking in a Single Line of Code”, *EMNLP 2022: System Demonstrations*