Nicolas Hubert, Ph.D.

✉ nicolas.hubert@univ-lorraine.fr
📞 +33 (0)6 05 29 30 58
🎓 Google Scholar
in LinkedIn
🌐 Website
○ GitHub

Employment History

from September 2024	**Applied Scientist.** Zalando SE, Berlin, Dortmund, Germany. Working on probabilistic delivery time forecasting for customer fulfillment.
2021 – 2024 (36 months)	**Ph.D. Researcher.** University of Lorraine, Nancy, France. Creator of PyGraft, an open-source Python library (650 stars, 5,000 downloads).
2023 – 2023 (4 months)	**Visiting Ph.D. Researcher.** University of Mannheim, Germany. Data and Web Science Group, worked with Dr. Prof. Heiko Paulheim. Published at K-CAP 2023 (Florida, US) and ESWC 2024 (Greece).
2020 – 2021 (5 months)	**Data Scientist Intern.** Nokia Bell Labs, Paris, France. Worked on an improved version of DBSCAN for anomaly detection.
2019 – 2019 (5 months)	**Machine Learning Scientist Intern.** Credit Suisse, Lausanne, Switzerland. Developed ML models for classifying fraudulent transactions. Deployed the model in production using Django and Flask.
2018 – 2018 (2 months)	**Back-End Developer Intern.** Altervest Ltd, Montreal, Canada.
2017 – 2017 (3 months)	**Data Analyst Intern.** HedgeServ, Luxembourg, Luxembourg.

Education

2021 – 2024	**Ph.D. in Computer Science.** University of Lorraine, Nancy, France. Keywords: *Knowledge Graphs, Graph ML, LLMs, Neuro-symbolic AI.*
2020 – 2020	**Full-Stack Development Bootcamp.** Le Wagon, Nantes, France. 9-week intensive coding bootcamp. Keywords: *HTML, CSS, JavaScript, SQL, Git, and Ruby.*
2016 – 2020	**M.Sc. in Applied Mathematics for Data Science.** Centrale Nantes, France | Top 10%. Keywords: *Machine Learning, Probability, Statistics, NumPy, pandas, scikit-learn, and Tensorflow.*
	M.Sc. in Management-Engineering. Audencia BS, Nantes, France | Valedictorian. Keywords: *Quantitative Finance, Entrepreneurship, IT, Power BI, Tableau.*

Skills

Languages	French (native), English (C2), Spanish (C2).
Programming	Python (advanced), R (intermediate), C/C++ (intermediate).
Frameworks & Libraries	Hugging Face, NumPy, pandas, PyTorch, scikit-learn.
IT Tools	MongoDB, MySQL, PostgreSQL, SPARQL, SQL, PowerBI, Tableau.

Awards & Publications

Best Student Research Paper	21st Extended Semantic Web Conference (ESWC 2024).
Best Resource Paper	21st Extended Semantic Web Conference (ESWC 2024).
Best Research Paper	23rd Int. Conf. on Knowl. Engineering and Knowl. Management (EKAW 2022).
Ph.D. of the Year	Nominated for the best Ph.D. award (to be revealed at EGC 2025).

Research Publications

Journal Articles

1. **Hubert**, **N.**, Monnin, P., Brun, A., & Monticolo, D. (2023). Sem@K: Is my knowledge graph embedding model semantic-aware? *Semantic Web.* 🔗 doi:10.3233/SW-233508

2. **Hubert**, **N.**, Monnin, P., & Paulheim, H. (2023). Beyond transduction: A survey on inductive, few shot, and zero shot link prediction in knowledge graphs (under review). 🔗 doi:10.48550/arXiv.2312.04997

International Conference Articles

1. **Hubert**, **N.**, Monnin, P., Brun, A., & Monticolo, D. (2024b). Treat different negatives differently: Enriching loss functions with domain and range constraints for link prediction. In *The Semantic Web - 21st Int. Conf., ESWC 2024, Hersonissos, Crete, Greece, May 26 - May 30, 2024, Proceedings.* 🔗 doi:10.48550/arXiv.2303.00286

2. **Hubert**, **N.**, Monnin, P., d'Aquin, M., Brun, A., & Monticolo, D. (2024). Pygraft: Configurable generation of synthetic schemas and knowledge graphs at your fingertips. In *The Semantic Web - 21st Int. Conf., ESWC 2024, Hersonissos, Crete, Greece, May 26 - May 30, 2024, Proceedings.* 🔗 doi:10.48550/arXiv.2309.03685

3. **Hubert**, **N.**, Paulheim, H., Brun, A., & Monticolo, D. (2024). Do similar entities have similar embeddings? (under review). In *The Semantic Web - 21st Int. Conf., ESWC 2024, Hersonissos, Crete, Greece, May 26 - May 30, 2024, Proceedings.* 🔗 doi:10.48550/arXiv.2312.10370

4. **Hubert**, **N.**, Paulheim, H., Monnin, P., Brun, A., & Monticolo, D. (2023, December). Schema First! Learn Versatile Knowledge Graph Embeddings by Capturing Semantics with MASCHInE. In *K-CAP 2023 - 12th Int. Conf. on Knowl. Capture.* 🔗 doi:10.1145/3587259.3627550

5. **Hubert**, **N.**, Brun, A., & Monticolo, D. (2022a, October). New Ontology and Knowledge Graph for University Curriculum Recommendation. In *ISWC 2022.* 🔗 doi:https://ceur-ws.org/Vol-3254/paper349.pdf

6. **Hubert**, **N.**, Monnin, P., Brun, A., & Monticolo, D. (2022b, September). New Strategies for Training Knowledge Graph Embeddings: the Recommendation Case. In *EKAW 2022 - 23rd Int. Conf. on Knowl. Engineering and Knowl. Management.* 🔗 doi:10.1007/978-3-031-17105-5_5

International Workshop Articles

1. **Hubert**, **N.**, Monnin, P., Brun, A., & Monticolo, D. (2022a, October). Knowledge Graph Embeddings for Link Prediction: Beware of Semantics! In *DL4KG@ISWC 2022.* 🔗 doi:https://ceur-ws.org/Vol-3342/paper-4.pdf

National Conference Articles

1. **Hubert**, **N.**, d'Aquin, M., Monnin, P., Monticolo, D., & Brun, A. (2024, July). PyGraft: un outil Python pour la génération de schémas et graphes de connaissance synthétiques. In *IC2024 : 35èmes journées francophones d'Ingénierie des Connaissances*, La Rochelle, France. Retrieved from 🔗 https://inria.hal.science/hal-04589855

2. **Hubert**, **N.**, Monnin, P., Brun, A., & Monticolo, D. (2024a, July). Enrichissement de fonctions de perte avec contraintes de domaine et co-domaine pour la prédiction de liens dans les graphes de connaissance. In *27e Conférence Nationale en Intelligence Artificielle*, La Rochelle, France. Retrieved from 🔗 https://inria.hal.science/hal-04566996

National Workshop Articles

1. **Hubert**, **N.**, Brun, A., & Monticolo, D. (2022b, January). Vers un système de recommandation explicable pour l'orientation scolaire. In *EGC 2022.* 🔗 doi:https://hal.science/hal-03559471

Teaching

2024 – 2024 (16 hours)	🔖	**Semantic Web.** University of Lorraine, Nancy, France.
		M.Sc. Year 1 | Teaching coordinator: Mathieu d'Aquin

Teaching (continued)

2023 – 2024 (48 hours)   **Advanced Mathematics.** Lycée Henri-Poincaré, Nancy, France.
B.Sc. Year 1 | Teaching coordinator: Olivier Binda

2022 – 2023 (64 hours)   **Introduction to Java Programming.** University of Lorraine, Nancy, France.
B.Sc. Year 1 | Teaching coordinator: Vincent Thomas

2021 – 2022 (64 hours)   **Advanced Database Systems.** University of Lorraine, Nancy, France.
B.Sc. Year 1 | Teaching coordinator: Nadia Bellalem

Ari Katz
CTO
EmergeX
Washington DC, USA
ari@emergex.ai

March 8 2024

To whom it may concern,

It is with great pleasure that I write this recommendation letter for Nicolas Hubert, who worked as an external consultant for EmergeX over the past several months.

Nicolas is a highly intelligent, incisive and dedicated scientist and engineer specializing in graph machine learning. His expertise in knowledge graphs (KGs), natural language processing (NLP), and large language models (LLMs) has been invaluable to our team as we developed the knowledge graph architecture and its LLM interface for our generative AI product. Although the specifics of his work are proprietary, I can attest to the fact that Nicolas consistently delivers high-quality results and provides insightful contributions to our projects.

What sets Nicolas apart from other graduate students and consultants I have worked with is his unique combination of technical prowess and interpersonal skills. He is not only innovative in his approach to problem-solving but also a great listener and collaborator. His congenial nature makes him a pleasure to work with, and his strong work ethic ensures that he always meets deadlines and exceeds expectations.

In addition to his technical abilities, Nicolas possesses a strong moral compass and impeccable character. He is trustworthy, responsible, and always conducts himself with the utmost professionalism. His billing practices are fastidious, transparent and appropriate, further demonstrating his integrity.

I am confident that Nicolas would be a valuable asset to any organization fortunate enough to have him. His skills, work ethic, and personality make him stand out as a top candidate for any position he pursues. I wholeheartedly recommend Nicolas Hubert without reservation. If you have any further questions, please do not hesitate to contact me.

Sincerely,

Ari Katz

REFERENCE for

Mr. Nicolas Hubert, born November 19, 1996

from France

Date of entry: April 1, 2019   Date of departure: August 31, 2019

Mr. Nicolas Hubert joined our company on the above date.

Mr. Hubert completed an internship in the GFIT DVC Lausanne Innovation area at Credit Suisse Services Ltd. and was responsible for the following tasks:

- Conducting data analysis and visualization on the new Finance Big Data Platform
- Designing and analyzing machine learning algorithms
- Developing a web application using Flask API and HTML/CSS languages
- Supporting with the analysis of a Natural Language Processing solution

We are pleased to confirm that Mr. Hubert was an exceedingly proactive, independent and conscientious employee who demonstrated profound specialist knowledge and a quick grasp of new topics. Moreover, he was noted for his highly analytical and integrated way of thinking and excellent conceptual skills. We would especially like to mention his strong command of English and the ability to present data. Mr. Hubert paid close attention to detail and completed his tasks in a consistently target-oriented and well-structured manner. He produced outstanding results in terms of both quality and quantity at all times, thereby exceeding our high requirements and expectations in every respect.
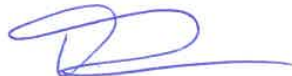
We came to appreciate Mr. Hubert as a very motivated, flexible and open-minded employee who developed exceptional solutions and frequently came up with innovative ideas. Furthermore, he communicated clearly and effectively, and his particularly pleasant, helpful and team-focused nature ensured that he was held in equally high regard by all who worked with him. Mr. Hubert's conduct toward clients, superiors and colleagues was impeccable at all times and exemplary in every respect.

Mr. Hubert is leaving us as of August 31, 2019, upon completion of his internship. We would like to thank him for his excellent contribution and wish him all the best and every success for the future.

CREDIT SUISSE AG

Nicholas Patterson
Head of Group Finance IT

Paul Keenan
Head of IT Development Center Lausanne

Lausanne, August 22, 2019 / ob

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Bloomberg
Engineering

Leonardo Perrone
Software Engineer
Bloomberg LP
New York, USA
lperrone5@bloomberg.net

February 10, 2024

To whom it may concern:

I am writing with great enthusiasm to recommend Nicolas Hubert for a Machine Learning or Data Scientist position.

Our professional paths crossed in 2019 at Credit Suisse in Switzerland, where we both worked in the Risk Management and Fraud Detection team. Nicolas, as a Machine Learning (ML) Scientist, brought unparalleled insights and analytical value to our projects, while my contributions as a Software Engineer helped in crafting those insights into tangible enhancements for our business operations. More specifically, Nicolas was responsible for tracking incorrect and fraudulent financial transactions, implementing and benchmarking various ML models in Python. Nicolas subsequently designed a Web application and deployed his model using Flask, HTML, CSS, and Javascript. Nicolas distinguished himself by proposing a novel approach to enhance our risk assessment frameworks. His role was pivotal in improving our decision-making processes and fostering ML adoption within our team.

Nicolas consistently showcased exceptional programming skills. Throughout his tenure at Credit Suisse, he demonstrated an impressive ability to apprehend intricate concepts and integrate them adeptly into practical applications. Nicolas consistently sought out new challenges, surpassing expectations and showcasing proficiency in various technical domains. His innate capacity for quickly grasping programming languages and frameworks allowed him to efficiently investigate complex problems and provide quick solutions to support his findings. With his comprehensive understanding of programming and ML principles and his ambition for continuous learning, Nicolas consistently delivered high-quality and efficient code.

Nicolas' outstanding interpersonal and communication skills greatly contributed to his success at Credit Suisse. He is highly self-motivated, proactive, and able to work independently. Nicolas' collaboration skills enable him to effectively communicate complex technical concepts to non-technical team members — product owners, project managers, and business analysts — thereby fostering a cohesive work environment. His professionalism, determination, and dedication consistently exceeded our expectations.

In summary, Nicolas possesses a rare combination of technical expertise, creative problem-solving skills, and interpersonal abilities that make him an outstanding team member and leader. His proactive nature and unwavering commitment to excellence have consistently led to tangible improvements in our projects and internal processes. I am confident that he will continue to excel and make significant contributions in his future endeavors.

Yours sincerely,
Leonardo Perrone

To whom it may concern,

I am writing to offer my strongest possible recommendation for Nicolas Hubert for a research scientist position. Since September 2021, I have had the distinct pleasure of supervising Nicolas's Ph.D. research at the Loria laboratory in Nancy, France.

Nicolas stands out as an extraordinary researcher, displaying an exceptional blend of independence, collaborative spirit, and leadership. His Ph.D. thesis work revolves around knowledge graph completion with embedding-based models. Nicolas chose to focus on the semantics of these embeddings and has proposed several metrics and neuro-symbolic approaches to tackle the task of link prediction. His contributions have not only enriched the field of neuro-symbolic artificial intelligence for knowledge-based applications, but also earned him a well-deserved best paper award at EKAW 2022 (international conference).

What sets Nicolas apart is his intrinsic ability to generate pioneering research ideas independently. During his Ph.D., he has initiated and led numerous impactful projects with minimal guidance, showcasing his remarkable capacity for conceptualizing, organizing, and executing research endeavors. His work ethic, both conceptually and technically, is impressive.

Nicolas's adaptability and resilience are also noteworthy. He seamlessly transitioned from his initial Ph.D. project (designing an explainable recommender system in the field of education) to his current research directions, exemplifying the importance of aligning projects with a researcher's talents and interests – a synergy we have achieved remarkably in his case.

As a communicator, Nicolas excels in both oral and written forms. His ability to articulate complex ideas clearly and convincingly is exceptional. His skills as a mentor and supervisor are equally impressive, as demonstrated during his successful supervision of a graduate student's internship.

Overall, Nicolas is the most talented and dedicated Ph.D. student I have ever had the privilege of supervising: he is independent, skilled, and possesses the most extensive and high-quality publication record. He can conceptualize and execute research projects like no other and can juggle multiple projects. I highly recommend Nicolas Hubert for a research scientist position with the utmost confidence.

Armelle Brun
Professor in Computer Science
Head of the BIRD research team
Deputy director of the LORIA Lab.

Prof. Mathieu d'Aquin
Full Professor of computer science
LORIA/IDMC
Université de Lorraine, Nancy, France

February 7, 2024

To whom it may concern:

I am writing to provide support for the application of Nicolas Hubert to a a Data Scientist, Machine Learning, or Research Scientist position.

Since 2021, I am the head of the K research Team in the Loria computer science laboratory in Nancy, France. I was previously director of the Data Science Institute of the University of Galway, Ireland. I have had the pleasure to work with Nicolas for the last three years, as a collaborator on several research endeavours. Indeed, while he is currently finishing his PhD in another team at Loria, I connected with him due to our joint interest in knowledge graphs and their contributions to the broader AI field. Having read some of his publications, I was particularly interested in Nicolas's expertise in the integration of knowledge graphs with machine learning, including the exploitation of semantics, at the schema-level of knowledge graphs, in the evaluation and training of GNN-based deep neural networks. While we have regular conversations on possible research directions in this area, concrete examples of our collaborations include my involvement in the supervision of a master-level student (from a French engineering school) conducting his final year project, for whom Nicolas was the primary supervisor, or co-authoring (with him as first author) a paper accepted at ESWC 2024 (selection rate of 21%) . Both of those works will continue in the Loria lab, and we are establishing new projects on that basis, including through a small-grant recently received by one of our international partners on the integration of LLMs and knowledge graphs which Nicolas helped setup.

Through my experience working closely with him, I keep being impressed by Nicolas's qualities as a researcher. His technical abilities, knowledge and expertise in the areas of knowledge graphs and graph-based machine learning are undeniable, as is his ability to incorporate new research into his work. More importantly, his approach to research is, in my opinion, a perfect mix of robustness and openness. Indeed, I found on numerous occasions that Nicolas can demonstrate exceptional maturity for someone at the end of their PhD, presenting a clear, inventive and exciting research vision, while also being able to take on board contributions from the broader team and to establish a robust plan to test and validate his research ideas, as well as to communicate them. At a human level, those qualities make him someone really enjoyable to work with: He is extremely talented at all levels, from the technical aspects of implementing deep learning models, to "research brainstorms" and idea generation, but remains able to express his ideas clearly and handle criticisms gracefully.

In other words, I personally have a lot of respect for Nicolas abilities, research contributions and his ethos as a researcher, and would always respond positively to an opportunity to work with him. Having discussed with him on his longer term research projects and ambitions, I have absolutely no doubt that he is a perfect fit to join your team and that he will bring a lot of value to the group and all its members. I remain at your disposal for any addition or clarification.

Yours sincerely,

Prof. Mathieu d'Aquin

![Altervest logo]

October 18th, 2018

Geneviève BLOUIN
President and Founder
Altervest Ltd
gblouin@altervest.ca
7505 boul. Taschereau, Suite 111
Brossard, QC, Canada, J4Y 1A2

To whom it may concern: referral letter from Altervest Ltd.

Dear Sir, Madam,

I'm writing to express my wholehearted support for Nicolas' application for this position. As Nicolas' supervisor during his internship with Altervest in summer 2018, I was impressed with his commitment, capacity for taking initiatives, and ability to meet deadlines. For these reasons, I am confident that Nicolas is the best candidate for this position.

As an intern in our company, Nicolas had a number of responsibilities, including developing computer programs in VBA for Excel. These programs intended to automate redundant tasks, such as reconciling trades positions. We are really proud of what Nicolas achieved : a great example of his effectiveness was the development of a tailored program which allowed us to have both a global and thorough overview of such things as : the current amount on clients' accounts, the number of clients in each fund, and even the performance of each fund on a daily basis. In no more than ten seconds, we are now able to realize a task that used to take us about thirty minutes. There is no doubt that Nicolas has strong analytical and programming skills. He obviously loves to solve complex problems and his ability to carry out long-term projects is really impressive.
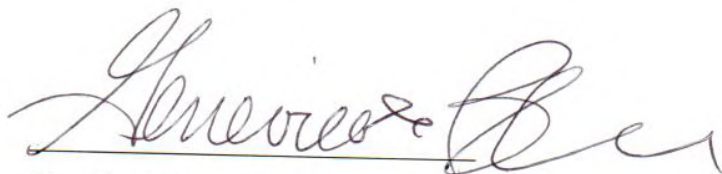
Nicolas was also especially skilled at presenting his ideas and the results of his work in a clear and understandable way, which allowed our team to quickly capitalize on the projects he worked on. In addition to his ability to effectively communicate, Nicolas has outstanding interpersonal skills : he had no difficulty in working both independently and in a team, he continuously adapted to change was able to give full priority to his work.

Beyond his numerous skills, Nicolas left a mark with his open-minded and thoughtful personality. He is well-spoken, intellectual, and he lights up whenever he talks about what he is passionate about. We had a lot of interesting and enriching conversations, and his ability to

7505 Boul. Taschereau, suite 111, Brossard, Québec, J4Y 1A2
Téléphone: 514-448-4029

Altervest Ltd. www.altervest.ca
gblouin@altervest.ca

evolve in a multilingual setting as well as his high level of proficiency in English and Spanish will be another boon to his success in this position.

I want to reiterate my strong support for Nicolas' application. Nicolas is a talented young man driven by an insatiable curiosity and dedication. Should you need further information, please don't hesitate to contact me.

Sincerely,

Genvième Blouin, President Altervest Ltd.

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Téléphone: 514-448-4029

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