Sid Ali Hamideche

Contact Information

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Experience

June 2020 - December 2024

Research Engineer & PhD candidate at **Nokia Bell Labs & University of Rennes**, Massy/Nozay/Rennes, France

- Researched context-aware mobile network usage for beyond 5G/6G systems, focusing on user behavior patterns and environmental factors impacting connectivity and service quality.
- Implemented user environment detection models for mobile networks using advanced machine learning techniques (e.g., LSTM, CNN) applied to raw time-series 3GPP radio signal measurements (e.g., RSRP, RSRQ).
- Developed classification models to detect end-user applications and services (e.g., streaming, gaming, VoIP) based on mobile radio signal features using supervised machine learning approaches.
- Applied deep representation learning methods for automatic feature extraction from large-scale 3GPP radio signal datasets, improving model generalization and reducing manual preprocessing.
- Investigated and prototyped federated learning strategies for privacy-preserving, distributed training in next-generation mobile networks (beyond 5G/6G), enabling edge intelligence without raw data sharing.
- Designed and developed an Android-based data collection tool to log real-time mobile network signal metrics (RSRP, RSRQ, etc.) for use in training and evaluating ML models.

Tools: Python, PyTorch, scikit-learn, Java (Android), TensorFlow, Docker, Kubeflow

November 2019 - January 2020

Software Engineer at **Altim France**, Boulogne-Billancourt, France

- Explored image processing techniques for luminance detection using multi-sensor input, focusing on ambient light analysis and adaptive brightness estimation.
- Investigated methods for light intensity enhancement in low-light conditions through sensor fusion and signal-based image adjustment.
- Prototyped RESTful web APIs for basic backend functionality

Tools: C++, Python, OpenCV, JavaScript

March 2019 - September 2019

Computer vision and machine learning Internship at **VEDECOM**, Versailles, France

- Investigated unsupervised and self-supervised learning approaches for obstacle classification and instance segmentation in autonomous driving scenarios.
- Explored techniques for learning meaningful visual representations from unlabeled driving scene data to enable object understanding without manual annotation.

Tools: Python, PyTorch, C++, OpenCV, scikit-learn, CUDA

June 2019 - August 2019

R&D Engineer at **HB Technologies**, Algiers, Algeria

- Contributed to the implementation of JavaCard applets for smart cards addressing diverse use cases.
- Assisted in frontend web development of web applications.
- Experimented with OCR techniques using Tesseract, including basic image preprocessing and text extraction from scanned documents, with light annotation for evaluation or training purposes.

Tools: Java, JavaCard, JavaScript

February 2017 - June 2017

Image processing internship at **Laboratoire de Recherche en Intelligence Artificielle (LRIA)**, Algiers, Algeria

- Continuation of previous internship
- Experimented with image processing techniques for shape description and classification, using geometric and contour-based features to distinguish between object types.
- Implemented basic shape retrieval techniques and developed a graphical user interface (GUI) for querying and visualizing similar shapes from a dataset.

Tools: C++, QT, OpenCV, MySQL

February 2015 - June 2015

Image processing internship at **Laboratoire de Recherche en Intelligence Artificielle (LRIA)**, Algiers, Algeria

- Experimented with image processing techniques for shape description and classification, using geometric and contour-based features to distinguish between object types.
- Implemented basic shape retrieval techniques and developed a graphical user interface (GUI) for querying and visualizing similar shapes from a dataset.

Tools: C++, QT, OpenCV, MySQL

Education

2020 – 2024 PhD in computer science (BAC+8): Machine learning, Context-aware networks, 5G networks and beyond at **Nokia Bell Labs & University of Rennes**, Massy/Nozay/Rennes, France

2018 – 2019 Master's (BAC+5) in Machine learning, Information and Content (AIC) at **Paris-Saclay University**, Orsay, France

2015 – 2017 Master's (BAC+5) intelligent computer systems (Systèmes Informatiques Intelligents) at **University of Sciences and Technology Houari Boumediene**, Algiers, Algeria

2012 – 2015 Bachelor's Degree (BAC+3) in Information systems and software engineering (Ingénierie des Systèmes d'Information et des Logiciels) at **University of Sciences and Technology Houari Boumediene**, Algiers, Algeria

Publications

1. Marie Line Alberi Morel, Illyyne Saffar, Kamal Singh, Sid Ali Hamideche, and César Viho. "Improving User Environment Detection Using Context-aware Multi-Task Deep Learning in Mobile Networks". In: *IEEE Transactions on Cognitive Communications and Networking* 8.4 (2022), pp. 1665–1676
2. Sid Ali Hamideche, Marie Line Alberi Morel, Kamal Singh, and Cesar Viho. "Indoor-Outdoor Detection using Time Series Classification and User Behavioral Cognition". In: *2022 14th IFIP Wireless and Mobile Networking Conference (WMNC)*. IEEE. 2022, pp. 7–14
3. Soumeya Kaada, Sid Ali Hamideche, Chloe Daems, and Marie Line Alberi Morel. "Classification with Synthetic Radio Data for Real-life Environment Sensing". In: *2023 IEEE 97th Vehicular Technology Conference (VTC2023-Spring)*. IEEE. 2023, pp. 1–7
4. Sid Ali Hamideche, Marie Line Alberi Morel, Kamal Singh, and César Viho. "Federated Representation Learning for Indoor-Outdoor Detection in beyond 5G networks". In: *Workshop on AI-enabled Localization and Resource Allocation for Wireless@ Globecom2023*. 2023
5. Karthika Satheesh, Kamal Singh, Sid Ali Hamideche, Marie Line Alberi-Morel, and César Viho. "User Environment Detection Using Long Short-Term Memory Autoencoder". In: (in press, 2024)
6. Sid Ali Hamideche, Marie Line Alberi Morel, Kamal Singh, and César Viho. "Federated Representation Learning for Encrypted Application Type Classification in Beyond 5G RAN". in: *2025 IEEE 22nd Consumer Communications & Networking Conference (CCNC)*. 2025, pp. 1–7. DOI: 10.1109/CCNC54725.2025.10976139

Tools & skills

Programming Language: Python, JavaScript, TypScript, C/C++, Java, lua, Zig, Rust, PHP

Data Science & Machine Learning: NumPy, pandas, Matplotlib, scikit-learn, Octave, PyTorch, TorchRL, Hugging Face, LlamaIndex, LangGraph, LangChain, TensorBoard, OpenCV, TensorFlow, Kubeflow

Frontend Development: HTML5, CSS, React, Tailwind CSS, Vue.js, jQuery, Bootstrap

Backend Development: Django, Node.js, Express.js, Nginx, WordPress, Hugo

Databases: MariaDB, MongoDB, SQLite, PostgreSQL

Documents & Design: LaTeX, TikZ, Inkscape, GIMP, LibreOffice

Development environment and other tools: Bash, Git, Docker, Kubernetes, QEMU, FFmpeg, ImageMagick

Languages

- French: Fluent
- English: Fluent
- Arabic: Native language

Interests and Activities

Technology, Programming, Mathematics, Physics, Sciences
Astronomy, Sports, Football, Travelling, Reading