THÉO DESCHAMPS-BERGER

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EXPERIENCE

Machine Learning Research Engineer Oct. 2024 - Present
Diabolocom *Paris, France*

· Developing and deploying speech processing solutions for customer service applications.
· Implementing state-of-the-art models for automatic speech recognition and emotion detection.

Ph.D. in Computer Science Oct. 2020 - Sept. 2024
Paris-Saclay University *Orsay, France*
Laboratory: Dept. of Language Science and Technology, LISN (CNRS)
Funding: AI Chair, HUMAAINE Project

Dissertation: Social Emotion Recognition with Multimodal Deep Learning Architecture in Emergency Call Centers [8].

Supervisors: Laurence Devillers (devil@lisn.fr) & Lori Lamel (lamel@lisn.fr).

· Designed and fine-tuned multimodal transformer architectures for speech emotion recognition on real-world French emergency call center data (SAMU) [1, 2].
· Developed novel fusion strategies combining speech audio and text transcriptions to improve emotion classification accuracy [3, 4, 5].
· Implemented context-aware models that capture conversational dynamics and emotional influence between speakers during interactions [6].
· Advanced multi-label emotion classification using contemporary emotion theories to detect mixed emotional states [7].
· Published 7 peer-reviewed papers in top-tier conferences (ICASSP, ICMI, ACII) and journals.

Master's Research Intern - Spoken Language & Machine Learning March - Sept. 2020
Dept. of Language Science and Technology, LISN (CNRS) *Orsay, France*

· Conducted comparative analysis of handcrafted audio features versus deep learning approaches for speech emotion recognition.
· Evaluated performance trade-offs between traditional signal processing methods and end-to-end neural architectures.

Data Scientist Intern Feb. - Aug. 2019
Lendi *Sydney, Australia*

· Applied clustering algorithms to marketing data for customer segmentation, enabling targeted acquisition and retention strategies.
· Developed actionable insights that informed business development and marketing campaign optimization.

Data Engineering Intern Feb. - Oct. 2018
Horus-SI *Paris, France*

· Led data warehouse migration project, implementing optimized partitioning strategies to accelerate query performance.
· Designed and executed database optimization solutions that reduced data retrieval times for production systems.

EDUCATION

MSc in Artificial Intelligence Sept. 2019 - Sept. 2020
Paris-Saclay University *Orsay, France*

Coursework: Machine Learning, Deep Learning, Optimization, Large-Scale Learning & Inference, Natural Language Processing, Signal & Image Processing, Voice Recognition & Interaction.

Key Project: Led team project on CodaLab platform for automated malaria detection from blood cell images using convolutional neural networks.

Exchange Semester - Engineering Sept. 2018 - Feb. 2019
Griffith University *Brisbane, Australia*

Coursework: Advanced Statistics, Big Data Analytics, Systems Analysis, IT Services Management.

Key Project: Built predictive models for song popularity using multi-platform data (Twitter, YouTube, Spotify), incorporating sentiment analysis and topic modeling (LDA) to forecast market trends.

Engineering Master's Degree in Computer Science Sept. 2014 - July 2019
ISEP - Institut Supérieur d'Électronique de Paris *Paris, France*

Coursework: Mathematics, Physics, Big Data, Computer Science, Cybersecurity, Information Systems Architecture.

Key Project: Developed intelligent Pacman game in Java with AI-driven ghost behaviors using Manhattan distance heuristics.

TECHNICAL SKILLS

Multimodal AI	Speech & Audio Processing · NLP · ASR · NER · Speaker Diarization Computer Vision · Affective Computing · Neural Audio Codecs
LLM Training	Multi-GPU Training (DDP, FSDP) · Sequence Packing · Mixed Precision Gradient Accumulation · Parameter-Efficient Fine-Tuning (LoRA) Model Quantization & Optimization
ML Frameworks	PyTorch · Hugging Face Ecosystem · scikit-learn
Programming	Python · SQL · Bash/Shell Scripting · LaTeX
Development Tools	Experiment Tracking (W&B, MLflow) · Version Control (Git/GitHub)

LEADERSHIP & ACTIVITIES

Vice-President 2016 - 2018
ISEP Sailing Club *Paris, France*

- Led club operations and coordinated training programs for 30+ members.
- France Sailing Student Champions in 2016 and 2017.

PUBLICATIONS

[1] T. Deschamps-Berger, L. Lamel, and L. Devillers, "End-to-End Speech Emotion Recognition: Challenges of Real-Life Emergency Call Centers Data Recordings," in *9th International Conference on Affective Computing and Intelligent Interaction* **(ACII)**, Nara, Japan, Sept. 2021.

[2] T. Deschamps-Berger, "Emotion Recognition In Emergency Call Centers: The Challenge of Real-Life Emotions," in *9th International Conference on Affective Computing and Intelligent Interaction Workshops and Demos* **(ACIIW)**, Nara, Japan, Sept. 2021.

[3] T. Deschamps-Berger, L. Lamel, and L. Devillers, "Investigating Transformer Encoders and Fusion Strategies for Speech Emotion Recognition in Emergency Call Center Conversations," in *24th ACM International Conference on Multimodal Interaction* **(ICMI)**, Bangalore, India, Nov. 2022.

[4] T. Deschamps-Berger, L. Lamel, and L. Devillers, "Exploring Attention Mechanisms for Multimodal Emotion Recognition in an Emergency Call Center Corpus," in *IEEE International Conference on Acoustics, Speech and Signal Processing* **(ICASSP)**, Rhodes, Greece, June 2023.

[5] A.-R. Ispas, T. Deschamps-Berger, and L. Devillers, "A Multi-task, Multi-Modal Approach for Predicting Categorical and Dimensional Emotions," in *25th ACM International Conference on Multimodal Interaction* **(ICMI)**, Paris, France, Oct. 2023.

[6] T. Deschamps-Berger, L. Lamel, and L. Devillers, "Multiscale Contextual Learning for Speech Emotion Recognition in Emergency Call Center Conversations," in *25th ACM International Conference on Multimodal Interaction* **(ICMI)**, Paris, France, Oct. 2023.

[7] L. Devillers, T. Deschamps-Berger, and L. Lamel, "Les émotions "in the wild" des appelants d'un centre d'appels d'urgence : vers un système de détection des émotions dans la voix," in ***Langages : "Voix et émotions"***, France, 2024.

[8] T. Deschamps-Berger, "Social Emotion Recognition with Multimodal Deep Learning Architecture in Emergency Call Centers," Ph.D. dissertation, Computation and Language [cs.CL], ***Université Paris-Saclay***, 2024.