Walid Bendada — ML Researcher

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Summary

ML researcher with 9 years of expertise in building and deploying large-scale music recommendation systems. Track record on applying sequential and multi-modal machine learning models to real-world problems. Strong foundation in applied mathematics.

Technical Skills

Programming Languages: Python, Spark Scala, SQL & BigQuery, Java, Bash

Libraries and Frameworks: PyTorch, Numpy, Scipy, Scikit-Learn

Tools and Platforms: Google Cloud Platform (GCP), MLflow, Docker, Git, ONNX, LaTeX

Professional Experience

Deezer **Paris**
Research Coordinator *2024–present*

- Translated cutting-edge research, such as Generative AI, deep reinforcement learning and multi-modal models (audio, text), into app personalization features, resulting in measurable improvements in user engagement.

Deezer **Paris**
Research Scientist *2021–2024*

- Developed and deployed a scalable framework for large-scale automatic playlist continuation using sequential neural networks (e.g transformers), achieving a +70% engagement increase in A/B testing.
- Designed a novel exploration policy for reinforcement learning-based music recommendation, now serving millions of daily active users (DAU).
- Contributed to the theoretical understanding of sequential recommendation systems by analyzing the mathematical properties of embedding averages with a probabilistic approach.

Deezer **Paris**
Machine Learning Engineer *2016–2020*

- Built a large-scale music recommender system using collaborative filtering and vector search.
- Implemented contextual bandit models for optimizing user engagement on Deezer's homepage.
- Designed and deployed multi-modal neural networks to improve engagement for cold start users.
- Mentored interns and junior engineers, guiding them in deploying models to production.

Education

Paris Dauphine University **Paris**
PhD in Machine Learning *2021–2024*
Thesis: Sequential Learning For Industrial-Scale Music Recommendation.

Sorbonne University **Paris**
Master's in Data Science *2015–2016*

Centrale Paris Engineering School **Paris**
Master's in Applied Mathematics *2011–2015*

Selected Publications

- **Walid Bendada**, Guillaume Salha-Galvan, Romain Hennequin, Théo Bontempelli, Thomas Bouabça, Tristan

Cazenave. *vMF-exp: von Mises-Fisher Exploration of Large Action Sets with Hyperspherical Embeddings*. Workshop on Aligning Reinforcement Learning Experimentalists and Theorists, 41st International Conference on Machine Learning (**ICML 2024**).

- **Walid Bendada**, Théo Bontempelli, Mathieu Morlon, Benjamin Chapus, Thibault Cador, Thomas Bouabça, Guillaume Salha-Galvan. *Track Mix Generation on Music Streaming Services using Transformers*. Proceedings of the 17th ACM Conference on Recommender Systems (**RecSys 2023**).
- Léa Briand, Guillaume Salha-Galvan,**Walid Bendada**, Mathieu Morlon, Viet-Anh Tran. *A Semi-Personalized System for User Cold Start Recommendation on Music Streaming Apps*. Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining (**KDD 2021**).
- **Walid Bendada**, Guillaume Salha, Théo Bontempelli. *Carousel Personalization in Music Streaming Apps with Contextual Bandits*. Proceedings of the 14th ACM Conference on Recommender Systems (**RecSys 2020**).
- Mathieu Delcluze, Antoine Khoury, Clémence Vast, Valerio Arnaudo, Léa Briand, **Walid Bendada**, Thomas Bouabça. *Text2Playlist: Generating Personalized Playlists from Text on Deezer*. Preprint for the 47th European Conference on Information Retrieval (**ECIR 2025 Preprint**).

Interests and Extracurriculars

Music: Co-founded a brass band of 15 musicians, performing regularly at local events.

Chess: Achieved a 1500 Elo rating on Chess.com.

Running: Paris half-marathon finisher.