

Amar Ali-bey

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ABOUT

Machine Learning Researcher and Engineer with expertise in Computer Vision and Multimodal AI. Proven track record of developing production-ready deep learning solutions and leading open-source projects with significant community impact.

- **Research:** Published in top AI venues: CVPR, BMVC, WACV, Neurocomputing.
- **ML Expertise:** Representation Learning, Image Localization, SLAM, Text/Image Retrieval, Few-Shot Learning, Object Detection, Multimodal AI, LLM, VLM.
- **Open-Source:** Built multiple projects from scratch, now used by hundreds of researchers and practitioners. [2000+ downloads and 500+ GitHub stars].
- **Technical Skills:** PyTorch, Numpy, OpenCV, Lightning AI, Tensorboard, FAISS, Python, C/C++, and more.

EDUCATION

Ph.D. in Computer Vision and Machine Learning 2017 – 2024

Laval University, Québec, Canada

Thesis title: *Deep Representation Learning for Visual Place Recognition.*

Master's in Computer Science 2015 – 2017

Laval University, Québec, Canada

Advanced courses: Mobile Robotics, Machine Learning, Optimization. *Transitioned directly into Ph.D.*

B.S. in Software Engineering (with honors) 2014

Ecole nationale Supérieure d'Informatique (ESI), Algiers, Algeria

Attended Algeria's most competitive engineering school and *Graduated as Valedictorian.*

FIRST AUTHOR PUBLICATIONS

BoQ: A Place is Worth a Bag of Learnable Queries (CVPR 2024)

Amar Ali-bey, Brahim Chaib-draa and Philippe Giguère

MixVPR: Feature Mixing for Visual Place Recognition (WACV 2023)

Amar Ali-bey, Brahim Chaib-draa and Philippe Giguère

Global Proxy-based Hard Mining for Visual Place Recognition (BMVC 2022)

Amar Ali-bey, Brahim Chaib-draa and Philippe Giguère

GSV-Cities: Toward Appropriate Supervised Visual Place Recognition (Neurocomputing 2021)

Amar Ali-bey, Brahim Chaib-draa and Philippe Giguère

WORK EXPERIENCE

Deep Learning Consultant 2018 – 2024

Short/Medium term interventions with high impact on performance.

- Football players Re-Identification in video streams
- Traffic cone detection,
- Helmet detection for safety in work sites
- Semantic segmentation for urban scenes

Graduate Teaching Assistant

2017 – 2023

Laval University

Prepared new materials for courses, assisted students with technical questions, and taught parts of the courses:

- Advanced Techniques In Artificial Intelligence (IFT-4102/7025) — [100+ students]
- Deep Learning (GLO-4030/7030) — [70+ students]
- Practical Machine Learning (GLO-7050) — [50+ students]
- Introduction to Mobile Robotics (GLO-4001/7021) — [80+ students]

The Autonomous Vehicle of Laval University (VAUL)

2018 – 2019

- Developed a cone detector using OpenCV to enhance the annotation of cones in circuit videos.
- Trained YOLO models for real-time cone detection in video streams.

Student Internship

2013 – 2014

University of Technology of Compiègne (UTC), Compiègne, France

Worked on the Vehicle Routing Problem with Time Windows (VRPTW), which consists of selecting the optimal routes for a fleet of vehicles to service customers within specific time frames. Under the supervision of Pr. Aziz Moukrim.

PROJECTS

NanoCLIP

[\[GitHub\]](#) [\[Demo\]](#)

An open-source lightweight Text-to-Image retrieval Web App.

- **Real-time speed:** 6ms/query including tokenization, embedding, and retrieval from 40K references.
- **Tech stack:** PyTorch, Lightning AI, FAISS, Transformers, Tensorboard, Gradio, HuggingFace.

GSV-Cities

[\[GitHub\]](#) [\[Kaggle\]](#)

A large-scale dataset for training Place Recognition models. Widely used by researchers with **+2000** downloads.

- More than **500k** images depicting over **60k** different places spread across multiple global cities.
- Brings up to **10x** improved performance on out-of-distribution benchmarks.
- Up to **100x** faster training compared to existing datasets (by completely eliminating the need of pair/triplet mining).

OpenVPRLab

[\[GitHub\]](#)

A comprehensive open-source framework for SOTA visual place recognition. Adopted by +100 researchers.

- Highly modular design — Easy dataset download management — Model Zoo of existing VPR techniques.
- Flexibility to develop custom aggregators, backbones, and loss functions.
- Integrated Tensorboard and Performance visualization tools.

ACADEMIC ACHIEVEMENTS AND ACTIVITIES

1st Rank Awards. Received 3 times in a row, for maintaining top of class. 2012, 2013, 2014

Attended International Computer Vision Summer School (ICVSS) 2017

Presented at Rendez-vous IA Québec 2021

Presented at Montreal AI Symposium 2022

Reviewer for many AI venues (ICRA, IROS, WACV, RA-L) 2020-2024

SKILLS

Programming languages: Python, C, C++, PHP, SQL.

Frameworks/Libraries: PyTorch, Numpy, OpenCV, Lightning AI, FAISS, TensorBoard, Gradio.

ML/AI: Information Retrieval, Few-Shot Learning, Contrastive Learning, Object Detection, Image Classification, LLM/LVM.

Communication Languages: English, French.