CALLARD Baptiste

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Education

ENS Paris-Saclay · Master MVA (Mathématiques Vision Apprentissage) — Paris, France
MSc. in Applied Mathematics & AI; ***grade: 18.2/20.0, GPA: 4.0/4.0*** — *Sep 2023 – Sep 2024*

- **World's top-ranked mathematics university (ARWU)** partnership with : ENS Ulm · Polytechnique · CentraleSupélec · Dauphine PSL · Mines Paris · Telecom Paris
- **Relevant coursework:** Advanced learning for text and graph data · Geometric data analysis · Time series · Object recognition · Probabilistic Graphical Models · Convex optimization · Generative models for images · Graphs in machine learning · Deep learning for medical imaging/in practice · Reinforcement Learning

INSA Rennes · Engineering school — Rennes, France
MSc. in Applied Mathematics; ***grade: 16.5/20.0, GPA: 4.0/4.0 (valecditorian)*** — *Sep 2018 – Sep 2023*

- **Relevant coursework:** Probability · Statistics · Optimization · Graph Theory · Operational research
- **MSc. exchange at Klagenfurt University:** Artificial Intelligence & Cybersecurity; **GPA: 4.0/4.0**

Work Experience

Valeo.ai (team): Research internship · Representation Learning — Paris, France
Supervisors : Spyros Gidaris & Florent Bartoccioni & Elias Ramzi — *April 2024 – Oct 2024*

- Worked on multi-view foundation model. I developed a novel architecture and self-supervised methods for learning a coherent 3D multi-view scenes representation, capturing semantic, geometric, and dynamic information.
- Evaluated the representation on advanced datasets and tasks: Bird's Eye view segmentation, motion forecasting, and depth estimation.

Airbus: Research internship · Computer Vision — Toulouse, France
Supervisors : Alexandre Mayerowitz & Laurent Gabet — *Feb 2023 – Jul 2023*

- Mixed two deep learning methods to create a novel building footprints detector on satellite images with geometrical constraints such as simplicity, right angle, alignment.

Qohash: Research internship · Cybersecurity — Montreal, Canada (Remote)
Supervisor : Julien Keutchayan — *Jul 2022 – Sep 2022*

- Worked on an unsupervised insider threat detection method with a novel temporal graph structure. This new approach was interpretable and allowed us to locate anomalies at different granularities: hour, day, month.

M2S Laboratory (ENS Rennes): Researcher Assistant — Rennes, France
Worked with : Jacques Prioux & Fabien Renouf on sports analytics (3 hours/week). — *2021 – Part-time*

Projects

Learning :

- **Video Retrieval with image/text queries** *GitHub: Showed new results exhibiting relationship between the sampling strategy and retrieval score. Studied attention maps to find the most discriminative modalities.*
- **Generative Adversarial Model** *GitHub: Reimplementation of a paper with new experiments and datasets.*
- **Soft-DTW** *GitHub: Reimplementation of a PyTorch and GPU-compatible loss with custom backward.*
- **Wasserstein Graph Alignment** *GitHub: Reimplementation of a paper with new experiments on graph alignment.*

Data challenges :

- **Molecule retreival** *Rank 1/52 (GitHub) (Polytechnique) Contrastrive method with LLM and GNN, LRAP 95.62%*
- **Instance segmentation** *Rank 2/15 (College de France) Semi-supervised, few-shot with a Rand Index of 76.27%*
- **Multiple Instance Learning for medical images** *Rank 16/39 (GitHub) Built new methods to mimic doctor diagnoses: examine patient samples according to personal data such as age and gender in order to predict pathologies.*

Reports & Posters : *Drive*

Skills & interests

Programming: Python · Linux · Git · Latex · R · Slurm · Docker · Neo4j · SQL · GCP · Julia · C
Libraries: Pytorch · Pytorch Lightning · Hydra · Pandas · Numpy · Tensorboard · Plotly
Languages: French (Native), English (Professional : TOEIC 885)
Interests: Hiking (GR20, GR10), Handball (National level under 18 yo), Running, Travels

Recommendations

Academic: M. Cord (Sorbonne Uni.) · L. Oudre (Director MVA) · J. LEDOUX (Director INSA) · Internship Supervisors