

Quoc Cuong LE

Research Scientist | Research engineer in Machine Learning & Computer Vision



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🇫🇷 🇻🇳 Dual citizenship (French & Vietnamese)

Ph.D. in Machine Learning & Computer Vision with 3 years of experience at XXII Group, a startup based near Paris. As a research engineer, I hold a strong background in engineering principles, project leadership, and the effective application of research, which I am carrying at my company.

SKILLS

Programming	Python, C/C++, CUDA
ML Frameworks	Pytorch, Tensorflow 2, Open MMLab, Google's frameworks (Tensorflow Model Garden, Scenic), TensorRT, ONNX, Darknet
IDE	Visual Studio Code, JetBrains
OS	Linux Ubuntu, Windows
Other	Docker, Kubernetes, Mongo DB, SQL, Nvidia RAPIDS, Slurm, bash, git

PROFESSIONAL EXPERIENCE

December 2022 Current	R&D Lead - Tracking algorithm development, XXII GROUP, France <ul style="list-style-type: none">➤ Developing scalable multi-camera tracking systems for security applications, e.g. retail, infrastructure, quick-service-restaurant, and public surveillance.➤ Benchmarking multi-camera tracking systems and automated evaluation process.➤ Developing multi-modal non-biometric re-Identification, image/video retrieval systems.➤ Leading role in multi-team collaboration projects as an expert in tracking algorithm, as well as senior software developer.➤ Participation in a consortium of EU Starlight project (codename H2020) as a partner providing vision-related technologies including Detection, Tracking and Re-Identification.➤ Drafted system design in collaboration with functional architects <div>Python Cython Pytorch Tensorflow 2 FAISS Tensorstore OpenCV Gitlab CI/CD Scrum/Agile</div>
April 2022 Current	Research Scientist - Machine Learning in Computer Vision, XXII GROUP, France <ul style="list-style-type: none">➤ Real-time Multiple Object Tracking in multiple camera systems.➤ Out-of-Distribution and Distribution Shift problems in Machine Learning and Computer Vision (e.g. object detection, segmentation)➤ Applying vision-Language Pretrained models, e.g. CLIP (OpenAI), Flamingo (Deepmind), GLIP (Microsoft) for real-time Open-Vocabulary/ Zero/One/Few-shot Object Detection (named YOLO-CLIP)➤ Re-Identification, Image/Video Retrieval algorithms/approaches <div>Python Pytorch Tensorflow 2</div>
April 2020 November 2022	Research Engineer, XXII GROUP, France <p>Scalable real-time solutions for Smart City such as traffic monitoring, incident detection, and other video surveillance applications.</p> <ul style="list-style-type: none">➤ Developed a fast Multiple Object Tracking algorithm as a common shared library, which was used in all service projects, as well as, main products XXII-CORE.➤ Developed unit and integration test that yields above 85% code coverage following SDLC's Agile Model.➤ Developed a benchmarking system for video surveillance systems <div>Python Cython C/C++ CI/CD Docker Gitlab Sphinx-docs Mongo DB Scrum/Agile</div>
November 2016 Mars 2020	Ph.D. Candidate, UNIVERSITÉ TOURS, France <p>Laboratory of Fundamental and Applied Computer Science of Tours - EA 6300 - ERL CNRS 7002, France., Project LUMINEUX. Keywords : Camera calibration, Single Object Tracking, Multiple Object Tracking in Mono/Multi-view, Re-identification</p> <ul style="list-style-type: none">➤ Single Object Tracking (Correlation Filters, Point-based tracking)➤ Multiple Object Tracking (Bi-partite matching, Multiple Hypothesis Tracking, Graph cut)➤ Online Multi-view Multi-Object Tracking via graph-based approaches➤ Re-Identification, Image Retrieval <div>Matlab Python Pytorch Caffe C/C++</div>

Mars 2016	Research Intern, CEA LIST, France
September 2016	<p>Implementation of multiple signal interpolation methods to speed up Non-Destructive Testing (NDT) simulation of ultrasound echos in CIVA, a simulation and analysis software for NDT.</p> <ul style="list-style-type: none"> ➤ State-of-the-Art study ➤ Implementation of a data interpolation method inspired by Plane-Wave Destruction filters used to characterize seismic data ➤ Implementation of Auto-Regressive-Moving-Average (ARMA) model for signal interpolation

Matlab

EDUCATION

2016-2020	Ph.D. in Computer Vision, Université François Rabelais de Tours, France Laboratory of Fundamental and Applied Computer Science of Tours - EA 6300 - ERL CNRS 7002
2011-2016	French Engineer's Degree, INSA Centre Val de Loire, France Major in Industrial System Engineering Minor in Automation System, Industrial informatics, and Instrumentation (rank #1)
2015-2016	Master Degree, Université d'Orléans, France Major in Mechatronics, Control, Robotics, and Signal



LANGUAGE

French	●	●	●	●	●
English	●	●	●	●	●
Vietnamese	●	●	●	●	●



FORCES

- Passioné
- Motivé
- Autonome



PUBLICATIONS

Conference Proceedings

1. LE, Quoc Cuong, Donatello CONTE et Moncef HIDANE (sept. 2018). "Online Multiple View Tracking : Targets Association Across Cameras". In : *6th Workshop on Activity Monitoring by Multiple Distributed Sensing (AMMDS 2018)*. Newcastle, United Kingdom. URL : <https://hal.science/hal-01880374>.
2. — (jan. 2021). "Unbalanced Optimal Transport in Multi-Camera Tracking Applications". In : *International Conference on Pattern Recognition*. T. 12665. ICPR 2021 : Pattern Recognition. ICPR International Workshops and Challenges. Milan, Italy : Springer International Publishing, p. 327-343. DOI : 10.1007/978-3-030-68821-9_30. URL : <https://hal.science/hal-03375834>.
3. LE, Quoc Cuong et Moncef HIDANE (mars 2020). "Appearance features for online multiple camera multiple target tracking". In : *SAC '20 : 35th Annual ACM Symposium on Applied Computing*. Brno, Czech Republic. DOI : 10.1145/3341105.3373960. URL : <https://hal.science/hal-03591527>.



REFERENCES

Available upon request