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Marseille, France  
cartelgouabou@gmail.com

# Arthur Cartel Foahom Gouabou

Data Scientist

GitHub: cartelgouabou  
Website: cartelgouabou.github.io

Arthur Cartel Foahom Gouabou is a researcher in deep learning and computer vision. He is currently a research assistant professor at Aix Marseille University. His research focuses on automated diagnosis of skin cancers, but also on solving recurrent problems in the computer vision field such as class imbalance.

## SKILLS

|                           |   |
|---------------------------|---|
| <b>Tools</b>              | Python, Tensorflow, Scikit-Learn, R, Matlab, Git, $\LaTeX$ , MySQL                |
| <b>Technical skills</b>   | Deep Learning, Medical Imaging, Machine Learning, Computer Vision                 |
| <b>Transversal skills</b> | Public Speaking, Technical Writing, Project Management, Team Management, Teaching |
| <b>languages</b>          | English, French (Native), Ghomalah  |

## EDUCATION

|  |                     |
|--|---------------------|
| <b>PhD in Computer Science</b> , Aix-Marseille University  | Oct 2019 — Mar 2023 |
| <b>Master's degree in Mechatronics</b> , National Advanced School of Engineering of Sud-Alsace, GPA: 4.0/4.0 | Sep 2018 — Aug 2019 |
| <b>Engineer's degree in Mechatronics</b> , National Advanced School of Engineering of Douala, GPA: 3.33/4.0  | Sep 2015 — Aug 2017 |
| <b>Bachelor in Mechatronics</b> , National Advanced School of Engineering of Douala, GPA: 3.33/4.0           | Sep 2012 — Aug 2015 |
| <b>University Fellowship</b> , Aix-Marseille University  | 2019 — 2022         |

## TECHNICAL EXPERIENCE

|  |  |
|--|--|
| <b>Research Assistant Professor</b><br><i>Institut Fresnel</i> <ul style="list-style-type: none"><li>Research topics: Computer vision; Medical imaging; Image processing.</li></ul>  | <b>Sep 2022 — Aug 2023</b><br>Marseille, France  |
| <b>Researcher in Computer Vision</b><br><i>LIS Laboratoire d'Informatique et Systèmes</i> <ul style="list-style-type: none"><li>Implementation and training of deep learning algorithms for the automated diagnostic of melanoma.</li><li>Benchmarked state of the art deep learning CNN for image classification and segmentation.</li></ul>  | <b>Oct 2019 — Aug 2023</b><br>Marseille, France  |
| <b>Researcher Intern in Computer Vision</b><br><i>LIS Laboratoire d'Informatique et Systèmes</i> <ul style="list-style-type: none"><li>Designed a computer aided diagnosis system for skin cancer lesion (Melanoma).</li><li>Use of HOG, GLCM and LBP algorithms to extract features.</li><li>Dimensionality reduction of feature vectors with PCA and RFE algorithms.</li><li>Training, testing and validation of machine learning classifiers such as SVM, Logistic Regression and MLP.</li><li>Training, testing and validation of convolutional neural networks.</li></ul> | <b>Apr 2019 — Sept 2019</b><br>Marseille, France |
| <b>Head of SAV</b><br><i>Mapon Africa</i> <ul style="list-style-type: none"><li>Planned and supervised the installations of GPS devices.</li><li>Drafted the technicals documents.</li><li>Provided technical support to customers.</li><li>Training of technicians.</li><li>Competitive intelligence.</li></ul>   | <b>Jan 2018 — Aug 2018</b><br>Douala, Cameroon   |
| <b>Engineer</b><br><i>Mapon Africa</i> <ul style="list-style-type: none"><li>Installed GPS devices on vehicles.</li><li>Configured and tested GPS devices before installation.</li></ul>   | <b>Jun 2017 — Dec 2017</b><br>Douala, Cameroon   |
| <b>Technician Intern</b><br><i>Autohaus Volkswagen</i> <ul style="list-style-type: none"><li>Computer aided diagnosis of embedded system (using VAG, ELSA Win).</li><li>Did maintenance and reparation of on-board vehicle systems.</li></ul>  | <b>Jun 2016 — Sep 2016</b><br>Douala, Cameroon   |

## ACADEMIC EXPERIENCE

|  |   |
|--|---|
| <b>Research Assistant Professor (hourly volume: 192h/year)</b><br><i>Faculty of Sciences of the University of Aix-Marseille</i> <ul style="list-style-type: none"><li>Operation of computers - Licence 1 preparation to scientific studies : Tutorial and practical work</li><li>Programming - Bachelor in mathematic and computer science : Practical works</li><li>Introduction to software engineering - Bachelor in computer science : Practical works</li></ul> | <b>09/2022 — 08/2023</b><br>Marseille, France |
|--|---|

- Embedded systems - Master degree in TSI : Tutorial and practical work
- Programming - Bachelor in computer science : Practical works
- Signal acquisition and processing - Master degree in EEEA : Practical works
- Digital processing of measurement - Bachelor in SPI : Practical works

### Teaching Assistant (hourly volume: 64h/year)

IUT Networking and Telecommunications, Aix Marseille University

10/2019 — 08/2022

Marseille, France

- Transmission mathematics: Tutorial and practical work
- Communication Writing of internship report (MS WORD), presentation (MS Powerpoint): Tutorial and practical work Database (SQL): Practical work

## SUPERVISION

### Master's student

03/2023 — 08/2023

University of Strasbourg.

Internship for Master's thesis project.

Topic: "Detection, study, and reduction of outlier data in medical images using deep learning".

Technical environment: Python.

### Master's student

03/2022 — 08/2022

Ecole centrale de Marseille.

Internship for Master's thesis project.

Topic: "Segmentation of skin cancer images using convolutional neural networks".

Technical environment: Python, Matlab.

## PUBLICATION

(Under revision) Jilliana Monnier, **Arthur Cartel Foahom Gouabou**, Meryem Serdi, *et al.* Automated detection of melanoma.

Comparing an algorithm based on the characterization of disordered pattern of melanocytic lesions mimicking dermatologists practice, with a convolutional neural network approach. *European Journal of Cancer*, 2022.

**Arthur Cartel Foahom Gouabou**, *et al.* Computer Aided Diagnosis of Melanoma using Deep Neural Networks and Game Theory: application on Dermoscopic Images of Skin Lesions In: *International Journal of Molecular Sciences*, 2022, vol. 23, no 22, p.13838.

**Arthur Cartel Foahom Gouabou**, *et al.* End-to-End Decoupled Training for Long-tailed Classification applied on Skin Lesion Classification from Dermoscopic images In: *Electronics*, 2022, vol. 11, no 20, p.3275.

**Arthur Cartel Foahom Gouabou**, *et al.* Rethinking decoupled training with bag of tricks for long-tailed recognition. In: *2022 Digital Image Computing: Techniques and Applications (DICTA)*, 2022, Sydney (Australie) (Oral presentation).

Jilliana Monnier, **Arthur Cartel Foahom Gouabou**, Meryem Serdi, *et al.* Automated detection of melanoma. Comparing a Convolutional Neural Network (CNN) approach with an algorithm assessing disorder in the pattern of pigmented lesions, intended to mimick onco-dermatologists visual analysis. In: *European Society for Medical Oncology Congress (ESMO)*. Elsevier, 2022.

Jilliana Monnier, **Arthur Cartel Foahom Gouabou**, Meryem Serdi, *et al.* Automated detection of melanoma. Comparing an algorithm based on the characterization of pattern disorder of the lesion, mimicking dermatologist practice, with a convolutional neural network approach. In: *European Academy of Dermatology and Venereology Congress (EADV)*, 2022.

**Arthur Cartel Foahom Gouabou**, *et al.* HMLoss: une nouvelle fonction de coût robuste au déséquilibre de classe. *GRETSI 2022: XXVIIIème Colloque*, 2022, Nancy (France) (Poster presentation).

Jilliana Monnier, **Arthur Cartel Foahom Gouabou**, Meryem Serdi, *et al.* Détection automatique du mélanome : comparaison d'un algorithme fondé sur la caractérisation de l'aspect désordonné de lésions mélanocytaires mimant la pratique des dermatologues, avec une approche par CNN (Convolutional Neural Network) *Annales de Dermatologie et de Vénéréologie-FMC*, 2021, vol. 1, no 8, p. A135.

**Arthur Cartel Foahom Gouabou**, *et al.* Ensemble Method of Convolutional Neural Networks with Directed Acyclic Graph Using Dermoscopic Images: Melanoma Detection Application *Sensors*, 2021, vol. 21, no 12, p. 3999.

Jilliana Monnier, **Arthur Cartel Foahom Gouabou**, Caroline Gaudy-Marqueste, *et al.* Impact d'un artefact fréquent sur la détection automatique du mélanome à partir d'images dermoscopiques : approche deep learning combinée à l'algorithme Support Vector Machine *Annales de Dermatologie et de Vénéréologie*, 2021, vol. 147, no 12, p. A82.

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## PROJECTS

**DIAMELEX Project: Helping to diagnose melanoma by example** Oct 2019 — Feb 2023  
<https://anr.fr/Projet-ANR-20-CE45-0026/>

- Diamelex is a research project funded by the French National Research Agency (ANR) for an amount of 513,950 euros in collaboration with the start-up Anapix medical, the Marseille Cancer Research Center (CRCM) and the Computer Science and Systems Laboratory (LIS). The project concerns the development of a computer aided diagnosis system for melanoma based on deep learning techniques. I actively participated in this project as a researcher and my research activities in this project led to the publication of five scientific papers in international and national journals and conferences.

**Voice command from a Raspberry pi (tutored project)** Oct 2018 — Jan 2019

- State of the art of techniques for speech recognition.
- Handling of the Google platform Assistant SDK.
- Drafted the project specification.
- Realized a prototype using Raspberry pi 3.

**Design of a driver assistance system for vehicles** Jun 2017 — Dec 2017  
<https://hal-amu.archives-ouvertes.fr/hal-02308475/document>

- Drafted the project specification.
- Realized a prototype using a microcontroller.

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## ACTIVITIES

IM team of LIS LAB: Research Presenter, Some Workshop, Creator/Facilitator 2019 — 2022  
Volunteer, ETIC Association: Conferences organization, Academic campaign 2014 — 2016  
Hobbies: swimming; cycling; basketball