Education

Ph.D. Candidate in computer science
Mar 2022 - Present

EDSTIC – Université Côte d'Azur (UCA), France
Director: Pr. Jean Martinet
PhD topic: Attention guided dynamic inference in deep neural networks

M.S. in Robotics, signal and image processing
Sep 2018 - Nov 2020

Paris-Saclay University, France
- Robotics, Multi-agent Systems, Reinforcement learning, Computer vision
- Statistical learning, Deep neural networks, Data mining, Information theory
- Image processing, Pattern recognition, Signal processing, Audio processing

B.S. in Control theory
Sep 2016 - Jun 2018

University of Béjaia, Algeria
- Signal theory, Control theory, Dynamical systems theory, Computer science
- Robotics, Automation, Electronics, Numerical analysis, Electrical engineering

Prep school, opt: Math-Physics
Sep 2014 - Jun 2016

Preparatory classes for engineering schools, opt: Math-Physics, Algeria
- Calculus, Linear Algebra, Probability theory, Statistics, Physics, Algorithmics
- Differential calculus, Derivation, Integrals, Series, Partial Differential Equations
- Algebraic structures (groups, rings), Random variables, Stochastic processes

Experience

Ph.D. Candidate in computer science
Mar 2022 - Present

Commissariat à l'énergie atomique et aux énergies alternatives (CEA) – LIST, France
Supervisors: Dr. Thibault Allenet, Dr. Karim Ben Chehida. Director: Pr. Jean Martinet
PhD topic: Attention guided dynamic inference in deep neural networks

Deep learning & computer vision engineer
Feb 2021 - Nov 2021

Société nationale des chemins de fer français (SNCF), Le Mans, France
Working on applications of deep learning in computer vision for railway.

Research internship
Jun 2020 - Nov 2020

Laboratoire d'Ingénierie des Systèmes de Versailles (LISV) - Paris-Saclay, France
Supervisor: Pr. Sylvain Chevallier
Topic: Deep learning for Unsupervised Anomaly detection in time series

Research assistant
Oct 2019 - Mar 2020

Laboratoire d'Ingénierie des Systèmes de Versailles (LISV) - Paris-Saclay, France
Supervisor: Pr. Sylvain Chevallier
Topic: Transfer learning for Brain-computer interfaces (BCI)

Programming skills

Programming languages: Python, C/C++, Matlab
Libraries: Sklearn, PyTorch, TensorFlow, Keras

Publications

- **Haroun, K.**; Allenet, T.; Ben Chehida, K. and Martinet, J. (2025). *Dynamic Hierarchical Token Merging for Vision Transformers*. In Proceedings of the 20th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications - Volume 3: VISAPP, ISBN 978-989-758-728-3, ISSN 2184-4321, pages 677-684.

- Proust, M.; Poreba, M.; Szczepanski, M. and **Haroun, K.** (2025). *STEP: SuperToken and Early-Pruning for Efficient Semantic Segmentation*. In Proceedings of the 20th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications - Volume 3: VISAPP, ISBN 978-989-758-728-3, ISSN 2184-4321, pages 50-61.

- **Haroun, K.**, Martinet, J., Chehida, K. B., & Allenet, T. (2024, December). *Leveraging local similarity for token merging in Vision Transformers*. In ICONIP 2024-31th International Conference on Neural Information Processing.

- Proust, M., Poreba, M., Szczepanski, M., **Haroun, K.**. *Optimising ViT for Edge Deployment: Hybrid Token Reduction for Efficient Semantic Segmentation*. In EEAI 2024-2nd European Conference on EDGE AI Technologies and Applications.

- Fabre, W., **Haroun, K.**, Lorrain, V., Lepecq, M., & Sicard, G. *From Near-Sensor to In-Sensor: A State-of-the-Art Review of Embedded AI Vision Systems*. Sensors, 24(16), 5446.

- Khazem, S., Chevallier, S., Barthélemy, Q., **Haroun, K**., & Noûs, C. (2021, May). *Minimizing subject-dependent calibration for BCI with Riemannian transfer learning*. In 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER) (pp. 523-526). IEEE.

Teaching

- *Artificial Intelligence and data (IA01) at ENSTA engineering school:* ***14h***
- *Algorithmic and data structure in C language (IN103) at ENSTA engineering school:* ***50h***

Languages

French - Fluent

English – Fluent

Hobbies

Classical guitar: 18 years (6 years at the conservatory of *Béjaia, Algeria*)
Basketball: 14 years

References

Dr. Thibault Allenet
2 Boulevard Thomas Gobert,
91120 Palaiseau
thibault.allenet@gmail.com

Dr. Karim Ben Chehida
2 Boulevard Thomas Gobert,
91120 Palaiseau
karim.benchehida@cea.fr

Pr. Jean Martinet
2000 Rte des Lucioles,
06900 Sophia Antipolis
jean.martinet@univ-cotedazur.fr