ALEXANDRE BORDAT

Doctoral student under a CIFRE contract, I will be available during the first half of 2025. Currently, I am focusing on the early estimation of signs of biomechanical failure through unconventional radar imaging.
A graduate of ENSEA, I aim to become a researcher in the fields of algorithms, signal processing, image processing, and algorithm-architecture matching (CPU, GPU, FPGA).



CONTACT

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SKILLS

Programming

C
C++
Python
VHDL
Assembly Language
Bash

Operating system

Linux
Windows

Software & Tools

MatLab
Vivado
IDE
(Eclipse, CubeMx, Keil µVision, ...)
LaTeX
Visualization
(i.e. Matplotlib, OpenCV)
Data extraction and Analysis
(i.e. NumPy, SciPy, Pandas)
Artificial Intelligence
(i.e. TensorFlow, PyTorch, Sklearn)

Languages

French : Mother Tong
English : C1 Level
German : A2 Level

INTERESTS

- Music: Clarinet in conservatory and harmony.
- Hiking and mountain biking.
- New technologies.
- Passionate traveler.
- Volunteering for academic support.

PROFESSIONAL EXPERIENCES

07/2021 - Current 2025
BlueLinea - Versailles, France
ETIS - Cergy, France

PhD student in embedded computing and signal processing

- Research and development of a gait analysis prototype (RADAR imaging).
- Signal processing: Time/frequency analysis - Non-stationarity - Filtering.
- Image processing: Mathematical morphology - Pattern recognition - Noise reduction and suppression techniques.
- Machine learning: Non-linear regression - Computer vision.
- Algorithm-architecture matching: Parallelization - Memory hierarchy - Profiling.

03/2021 - 06/2021
ETIS - Cergy, France

Embedded systems engineer

- Prototype design of a LORA node.

06/2020 - 11/2020
ETIS - Cergy, France

Embedded Systems Engineer Intern

- Radar data processing and hardware acceleration.

EDUCATION

07/2021 - Current 2025
CY Cergy Paris University
Cergy, France

PhD in embedded computing and signal processing

Early estimation of biomechanical failure signs using unconventional radar imaging. Applications for robust fall prediction in the elderly.

01/2020 - 04/2020
Georgia Institute of Technology
Metz, France

Study Semester

- Computer network security.
- Machine Learning.
- Sensor Network (IOT, TCP/IP layers ...)

09/2017 - 11/2020
ENSEA – Cergy, FRANCE

Graduate Engineer from ENSEA Specialized in Embedded Systems

- Embedded Systems (VxWorks, Embedded Linux, Microprocessor, FPGA)
- Digital Signal Processing
- Embedded Computing and Networks
- Management, Communication, and Economics

SCIENTIFIC PROFILE

CPU · GPU · FPGA · Algorithmics · Digital signal processing · Innovation · MatLab · Research · Development · Real-time · Image processing · Radar · Artificial Intelligence · Algorithm-architecture matching

GENERAL SKILLS

Project management · Analytical thinking · Management · Technical communication · Research mindset · Leadership · Emotional intelligence · Communication · Interdisciplinary collaboration

TEACHING

- C Programming Course - IUT Neuville-sur-Oise (60h lab sessions) - 2022/2023:
  - 1st semester BUT :
    - Introduction to programming (IDE, variables, basic operations).
    - Control structures, C functions, and introduction to algorithmics.
  - 2nd semester BUT :
    - Advanced algorithmics.
    - Introduction to embedded systems (I2C, UART, GPIO, etc.).
  - 3rd semester BUT :
    - Embedded systems project, memory management, and pointers.
- GPU Course - M2 Research, CY Cergy Paris University (8h lectures and 8h lab sessions) - 2022/2024:
  - Introduction to GPU programming and GPU programming models.
  - GPU performance optimization (thread concurrency management, shared memory, and constant memory, etc.).
  - Image processing mini-project (CPU vs GPU).

SCIENTIFIC MEDIATION, RESPONSIBILITY, AND OTHER PROJECTS

- Scientific mediation :
  - Participation in MT180 and presence in the regional final at Cergy Pontoise.
  - Participation in the CY Alliance Science Festival 2022/2023 - 2023/2024.
  - Participation in the CNRS 2023 unusual visits.
- Responsibility :
  - Co-responsible for the doctoral students' club of the ETIS laboratory - 2022/2023.
- Other projects :
  - Preparation of a research ethics committee file, construction of a multimodal database of daily activities (Motion Capture, Radar, Event Camera).
  - Co-organization of the 2023 ETIS laboratory doctoral students' day (catering management, logistics, poster printing).

PUBLICATIONS

International conference proceedings

Radar-based Human Activity Acquisition, Classification and Recognition towards Elderly Fall Prediction

C. Béranger, **A. Bordat**, M. A. Khelif, P. Dobiáš, N.-S. Vu, J. Le Kernec, D. Guyard and O. Romain

2023 26th Euromicro Conference on Digital System Design (DSD) DOI

GPU Based Implementation for the Pre-Processing of Radar-Based Human Activity Recognition

A. Bordat, P. Dobias, J. L. Kernec, D. Guyard and O. Romain

2022 25th Euromicro Conference on Digital System Design (DSD) DOI

Towards Real-Time Implementation for the Pre-Processing of Radar-Based Human Activity Recognition

A. Bordat, P. Dobias, J. L. Kernec, D. Guyard, et O. Romain

2022 31st International Symposium on Industrial Electronics (ISIE) DOI

Fusion of Radar Data Domains for Human Activity Recognition in Assisted Living

Le Kernec, J., Fioranelli, F., Romain, O., **Bordat, A.**

2022 14th International Conference on Sensing Technology (ICST) DOI

Journal

Human Activity Recognition Based on Acceleration Data From Smartphones Using HMMs

S. Iloga, **A. Bordat**, J. Le Kernec and O. Romain

2021 IEEE Access DOI