# Benoît GALLET, Ph.D.

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## SUMMARY

Postdoctoral scholar in cybersecurity and computer science/ecoinformatics at Northern Arizona University.
PhD in Informatics and Computing from Northern Arizona University: "Efficient Euclidean Distance Calculations and Distance Similarity Searches: An Examination of Heterogeneous CPU, GPU and Tensor Core Architectures".
Expert in data analysis and clustering algorithms, high-performance computing, parallel and GPU computing, and algorithm performance optimization.

## EXPERIENCE

**Northern Arizona University** **Flagstaff, AZ**
Postdoctoral Scholar in Cybersecurity Jun 2023 – Jun 2024

- Porting Number Theoretic Transform (NTT) operations from the Post-Quantum Cryptography (PQC) algorithm Kyber from the CPU to GPU Tensor Cores using CUDA.

Postdoctoral Scholar in Computer Science/Ecoinformatics Jun 2023 – Jun 2024

- Designing and coding an algorithm to periodically retrieve satellite image data from several providers (PlanetLabs, NASA, ESA, USGS) for the state of Arizona, using Python.
- Designing and coding an algorithm to periodically ingest newly downloaded imagery, fit data onto a grid spanning Arizona, and update a model to compute the tree water and bark beetle stresses for each pixel. Uses C++, and OpenMPI for distributed computing.

Graduate Research Assistant Aug 2018 – May 2023

- Worked on data analysis and clustering algorithms, in particular those computing similarity searches using the Euclidean distance.
- Designed several GPU algorithms and optimizations; a heterogeneous CPU-GPU algorithm; and a novel GPU algorithm using Tensor Cores to compute distance similarity searches.
- Published and presented several articles in international conferences.
- *Related to the PhD dissertation.*

CS450 Instructor May 2022 – Aug 2022

- Instructor of record for the CS450 Instruction to Parallel Programming class for the summer 2022 term.
- Taught shared memory parallelism, including pthreads and OpenMP.
- Average course evaluation: 3.86 / 4.

**Université d'Orléans** **Orléans, France**
MSc Internship Apr 2018 – Sep 2018

- *GPU Kernel Performance Optimizations for Efficient Similarity Joins.*
- Proposed several optimizations for a GPU distance similarity searches algorithm.

**Université d'Orléans / National Center for Scientific Research** **Orléans, France**
BSc Internship Apr 2016 – Jun 2016

- *GPU Detection of Pulse Radio Signals.*
- Cleaned and formatted an existing sequential CPU code in C detecting pulse radio signals from neutron stars with a radio telescope.
- Ported the original code to the GPU using CUDA.

## EDUCATION

**Northern Arizona University** — **Flagstaff, AZ**
PhD in Informatics and Computing — 2023

- *Efficient Euclidean Distance Calculations And Distance Similarity Searches: An Examination of Heterogeneous CPU, GPU, and Tensor Core Architectures*, supervised by Dr. Michael Gowanlock.
- Worked as a Graduate Research Assistant.
- Published 4 articles as first author, presented in several international conferences.

**Université d'Orléans** — **Orléans, France**
MSc in Computer Science — 2018

- With Honors.

**Université d'Orléans** — **Orléans, France**
BSc in Computer Science — 2016

## SKILLS

- C, C++, Python, CUDA, OpenMP, MPI.
- Data analysis and clustering algorithms, high-performance computing, parallel and GPU computing, algorithms, data structures, performance optimizations.
- Conducting research, presenting, public speaking.
- French (native), English (bilingual), German (intermediate).

## CERTIFICATIONS

**Fundamentals of Deep Learning**
Nvidia Deep Learning Institute — Feb 2024

- Credential id: 459a9d067084444a9354e9823d75ab1d