ABDERRAHIM-OUSSAMA BATOUCHE

+358-417-542-251 | abderrahim.batouche[at]helsinki.fi | OussamaBatouche.com
LinkedIn | Google Scholar | ORCID
Helsinki, 00550, Finland

About

I am a final-year PhD candidate in Data Science at the University of Helsinki, affiliated with the Helsinki Urological Cancer Center (HUCC). With a strong background in Software Engineering and Data Science, I work on integrating advanced software solutions with cutting-edge AI methodologies. At HUCC, I design and implement novel statistical and machine learning models to analyze prostate cancer (PCa) data, enhancing clinical practices by profiling PCa and predicting treatment outcomes. My work aims to minimize overdiagnosis and prevent unnecessary treatments. My PhD thesis leverages this interdisciplinary expertise to develop scalable, data-driven tools that bridge software engineering, AI and precision medicine.

Experience

- **University of Helsinki [🌐]** *Current position (since 01.2022)*
  Doctoral researcher Helsinki, Finland
  - Developed data mining algorithms for missing treatment data in EHRs.
  - Studied the grade inflation in the MRI-era of prostate cancer diagnosis.
  - Conducted analysis on time to PCa treatment using Integrated Nested Laplace Approximation method, identifying significant relation with biochemical recurrence.
  - Built machine learning models using digital pathology images and clinical data.
  - Presented findings at several international conferences and engaged in overseas collaborations.
- **Georgia Tech & Emory University [🌐]** *04.2024 - 05.2024*
  Visiting fellow Atlanta, GA, USA
  - Collaborated with Prof. Madabushi's lab team to apply AI in digital pathology images.
  - Developed a new pipeline to extract features from histopathology images to predict upgrading of Gleason grade group on prostatectomy.
  - Built a multicentre machine learning multi-model to predict patients' outcomes after surgery.
- **King Abdullah University of Science and Technology (KAUST) [🌐]** *02.2024*
  Visiting researcher Thuwal, Saudi
  - Collaborated with Prof. Håvard's lab "Bayesian Computational Statistics & Modeling".
  - Trained on joint models using INLAjoint and INLA Bayesian optimisation method.
  - Conducted a statistical analysis to model the effect of time to treatment on the risk of biochemical recurrence in prostate cancer treatment using the INLAjoint R package.
- **Aalto University [🌐]** *02.2020 - 12.2021*
  Research assistant Espoo, Finland
  - Developed a new framework for object detection based on live video streaming for autonomous vehicles.
  - Optimised the detection system to work at the edge using Nvidia Jetson GPU.
  - Created the full-stack software, including the web-based interface and the edge programmes.
  - Participated in the international collaboration projects, mainly working on AI systems.
- **i2b SPA [🌐]** *January 2019 – Present*
  Software Engineer Remote
  - Designed and developed key modules for GEOFLOTTE, a vehicle tracking system, enhancing real-time monitoring capabilities.
  - Engineered the company's full-stack website and the GEOFLOTTE platform website, improving user experience and accessibility.
  - Led a research initiative to integrate artificial intelligence into the Algeria INVEST platform, optimizing decision-making processes.

Education

- **University of Helsinki** *2022 - In progress*
  PhD in Data Science Helsinki, Finland
  - GPA: - -
- **University of Science and Technology Houari Boumediene (USTHB)** *09.2018 - 09.2020*
  Master's of Science Bab ezzouar, Algeria
  - Grade: 15/20
- **University of Science and Technology Houari Boumediene (USTHB)** *09.2015 - 06.2018*
  Bachelor's in Computer Science and Mathematics Bab ezzouar, Algeria
  - Grade: 13/20

PUBLICATIONS

A=ABSTRACT, C=CONFERENCE, J=JOURNAL, S=IN SUBMISSION, T=THESIS

[A.4] Batouche, et al. (2025). **Computational pathology–based classifier for predicting Gleason grade group upgrading on radical prostatectomy from diagnostic biopsies**. In the *Journal of Clinical Oncology*, 43, 329-329. 2025 ASCO Genitourinary Cancers Symposium, 13-15 February 2025, San Francisco, CA. DOI: 10.1200/JCO.2025.43.5_suppl.329.

[S.3] Pohjonen, Batouche, et al. (2024). **HistoEncoder: a digital pathology foundation model for prostate cancer**. DOI: 10.48550/arXiv.2411.11458.

[A.3] Batouche, et al. (2024). **Joint modelling to assess the relationship between time to curative treatment and treatment recurrence in Prostate Cancer patients**. In *European Urology Open Science*, 63, S12-S13. 9th Baltic Meeting in conjunction with the EAU, 24-25 May 2024, Tallinn, Estonia. ISSN 2666-1683. DOI: 10.1016/S2666-1683(24)00424-5.

[A.2] Batouche, et al. (2024). **Preliminary evidence of Gleason grade inflation in prostate cancer: A pre-treatment study**. In *European Urology Open Science*, 63, S14. 9th Baltic Meeting in conjunction with the EAU, 24-25 May 2024, Tallinn, Estonia. ISSN 2666-1683. DOI: 10.1016/S2666-1683(24)00425-7.

[S.2] Batouche, et al. (2024). **A joint frailty model to assess the relationship between time to curative treatment and biochemical recurrence in Prostate Cancer patients**. Manuscript submitted for publication in *Computers in Biology and Medicine*.

[S.1] Batouche, et al. (2024). **MRI-Targeted Prostate Biopsy Introduces Grade Inflation and Overtreatment for Gleason Grade Group 2 cancers**. Manuscript submitted for publication in *BJU International*, PMID: 38260466; PMCID: PMC10802666. DOI: 10.1101/2024.01.10.24300922.

[C.1] Batouche, et al. (2024). **Synergizing Data Imputation and Electronic Health Records for Advancing Prostate Cancer Research: Challenges, and Practical Applications** . In *Proceedings of the 17th International Joint Conference on Biomedical Engineering Systems and Technologies - HEALTHINF*, ISBN 978-989-758-688-0; ISSN 2184-4305, 77-86, SciTePress, 2024, Rome, Italy. DOI: 10.5220/0012350300003657

[A.1] Batouche, et al. (2023). **Prognostic impact of prostate cancer grade inflation in targeted biopsies**. In *European Urology*, 83, S1371-S1372. Abstracts EAU23 - 38th Annual EAU Congress. ISSN 0302-2838. DOI: 10.1016/S0302-2838(23)00998-3.

SKILLS

- **Programming Languages:** Python, R, Shell, JavaScript, Matlab
- **Web Technologies:** Django, NodeJS, React, Laravel
- **Database Systems:** SQL (Oracle, MySQL), NoSQL (MongoDB)
- **Data Science & Machine Learning:** Tensorflow, Keras, Scikit Learn, PyTorch, Survival analysis, Joint Models
- **Cloud Technologies:** Azure ML, Google Cloud
- **DevOps & Version Control:** Docker, Kubernetes, Travis CI, Slurm, Ansible, Git
- **Specialised Area:** Biomedical data analysis, prostate cancer clinical and imaging data
- **Other Tools & Technologies:** Parallel programming, CUDA

RESEARCH GRANTS AND AWARDS

- **University Grant** *09.2024*
  University of Helsinki (Doctoral School)
  ◦ I have received a travel grant to participate in ASCO GU conference, San Francisco, CA, USA.

- **Best presentation award** *05.2024*
  European association of urology [🌐]
  ◦ I gave a talk at the 9th EAU Baltic meeting, Tallinn, Estonia, on our work focused on joint models
  ◦ The talk was followed by a poster presentation
  ◦ Our work was awarded the 2nd best presentation at the conference.

- **University Grant** *03.2024*
  University of Helsinki (Doctoral School)
  ◦ I have received a travel grant to participate in the International Joint Conference on Biomedical Engineering Systems and Technologies, Rome, Italy.

- **University Grant** *03.2023*
  University of Helsinki (Doctoral Programme in Computer Science)
  ◦ I have received a travel grant to attend the Oxford Machine Learning Summer School in Oxford, UK.

ADDITIONAL INFORMATION

Languages: Arabic (Native), French (Bilingual), English (Fluent), Swedish (Elementary).
Interests: Science, Basketball, Travel.
More: Up-to-date news, projects and talks are regularly published on my website.