ABDERRAHIM-OUSSAMA BATOUCHE

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About

I am a PhD student in computational data analysis at the University of Helsinki and part of the Helsinki Urological Cancer Center (HUCC). At HUCC, I am actively involved in the development of innovative methodologies to analyse and enhance existing clinical practices related to Prostate Cancer (PCa) treatment. Our primary objective is to prevent unnecessary treatment and overdiagnosis.
My PhD thesis revolves around designing, creating, and utilising statistics and AI models to profile PCa and predict its outcomes.

Experience

- **University of Helsinki [🌐]** *Current position (since 01.2022)*
  Doctoral researcher Helsinki, Finland
  - Developed new algorithms to detect and impute missing treatment data in EHRs.
  - Studied the grade inflation hypothesis in the MRI-era of prostate cancer diagnosis.
  - Conducted analysis on time to prostate cancer treatment using Integrated Nested Laplace Approximation method, identifying significant relation with biochemical recurrence.
  - 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 new software to extract features from histopathology images to predict upgrading of Gleason grade group on prostatectomy.
  - Conducted a statistical analysis to validate the pre-trained model on external data cohort.
- **King Abdullah University of Science and Technology (KAUST) [🌐]** *02.2024*
  Visiting Student 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 system 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 program including the web-based interface and the edge programs.
  - Participated in an international collaboration project, where my tasks included developing a face-recognition system to work at the edge for doorbell systems.

Education

- **University of Helsinki** *2022 - In progress*
  PhD in Computational Data Analysis 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
  - GPA: 13/20

PUBLICATIONS

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

[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.

[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

[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.

[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*.

[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

- **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 word 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)
Interests: Science, Basketball, Travel, Arts