METE DIBI

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PERSONAL PROFILE

I'm a computational & applied mathematics student from University of Edinburgh. I have an industrial engineering and an economics background with a specific focus on mathematical and computational modelling, probabilistic approaches and data analysis.

EDUCATION

University of Edinburgh (UoE), Edinburgh *(September 2023-August 2024)*

- **MSc in Computational Applied Mathematics**: **Distinction Grade (%75.4) (Equivalent to 3.70-4.00 GPA)**

Relevant Coursework: *Research Skills for CAM, Mathematical Biology, Bayesian Theory, Industrial Mathematics, Uncertainty Quantification, Methods for Causal Inference, Numerical Methods for Data, Stochastic Differential Equations, Dynamical Systems*

Bogazici University, Istanbul *(September 2018- June 2023)*

- **BSc in Industrial Engineering** ***(Being ranked in top 0.05 percentile in National University Admission Exam is required for admission to the programme)*** **GPA: 3.56/4.00**

Relevant Coursework: *Operations Research, Object Oriented Programming , Systems Science & Simulation, , Advanced Probability & Statistics, Agent Based Modelling, Statistical Forecasting and Time Series, Queuing Theory Studies*

- **Minor Degree in Economics: GPA: 3.75/4.00 (Focus: Game Theory & Macroeconomics)**

Technical University of Munich (TUM) *(April 2021 - August 2021)*

- **Erasmus-Exchange Study**

Relevant Coursework: *Machine Learning Methods and Tools, Graphical Models in Statistics*

RESEARCH EXPERIENCE

Research on Cancer

MSc Dissertation (UoE, Spring-Summer 2024)

- 3 months thesis study under Dr. Michael Nicholson and Dr. Craig Anderson's supervision (Institute of Genetics and Cancer & UoE School of Maths). The research focused on quantifying the effects of DNA damage on cancer mutations.
- Generalised an existing model of mutagenesis to account for transcription effects in genic regions
- Built efficient stochastic simulation algorithms in Python with parallelised approaches to model mutagenesis in humans
- Implemented and evaluated statistical estimators to determine the minimum fraction of DNA damage responsible for cancer
- Using simulated ground truth data, concluded that the estimator is accurate in many biological scenarios, while reporting specific conditions where it may perform poorly

Project on Numerical Chromosomal Instability (UoE, Spring 2024)

- 8-week study on chromosomal instability (CIN) under supervision of Dr. Tibor Antal
- Hypothesised a novel approach by incorporating a Multi-type branching process into CIN studies
- Utilised Python and Julia for parallel-programmed simulations, employing ground truth methods to validate theoretical predictions.
- Achieved significant insights by quantifying tumour extinction probabilities and karyotype variations
- Explored current clinical studies, confirming the future potential of our research

Review Report on Analytical Metastasis Predictions (UoE, Spring 2024)

- Authored a detailed review report on the application of mathematical and statistical methods in the prediction of metastatic sites using large datasets

Academic Poster Presentation on Site Frequency Spectra (UoE, Fall 2023)

- Developed and presented an academic poster on Jasmine Foo's 'Exact Site Frequency Spectra of Neutrally Evolving Tumours to peers and academic staff

Other Research Experience

Research Skills for Computational Applied Mathematics Coursework (UoE, Fall 2023-Spring 2024)

- Developed and trained neural networks from scratch, performing optimisation tests to enhance model accuracy
- Created parallel algorithms in Julia to analyse state transitions in overdamped Langevin dynamics, yielding faster results than classical methods
- Enhanced academic writing and presentation skills through multiple graded assignments and presentation sessions.
- Participated in 16 seminars, focusing on the application of mathematical and data science methodologies in biomedical sciences, enriching my understanding of current industry practices.

Numerical Methods for Data Coursework (UoE, Spring 2024)

- Worked on two small coding projects
- Used ML and mathematical methods such as K-means clustering, spectral clustering and inverse problem methodologies using data

Industrial Mathematics Course Projects (UoE, Fall 2023)

- 2 different group projects that model real life problems from the industry and hypothesised solutions to these problems
- Extensive use of advection-diffusion equations, cellular automata/agent based models, T-tests and robustness checks of the algorithm
- Validated models by comparing the results with those of similar method studies in the domain
- Achieved highest grade in class

Teaching Assistant of IE 306: Systems Simulation (Bogazici University, Spring 2023)

- Worked with Associate Professor Aybek Korugan
- Prepared and graded homework for a cohort of 100+ students, also held feedback sessions to help explain material to students
- Conducted regular research on the current state of the art stochastic process and queuing theory studies
- Managed and manipulated simulation data, including data cleaning tasks, using Excel and pandas to prepare datasets for use in student assignments

Object Oriented Programming & ABM: (Bogazici University, Spring 2023)

- Created an object-oriented game in Python, using agent based methodologies
- Documented and presented methodologies, game design, and development stages regularly, ensuring transparency and facilitating feedback
- Achieved the highest grade in the class for this project, independently managing tasks typically handled by groups of 3-4 students

Time Series Forecasting & Analysis (Bogazici University, Fall 2021)

- Analysed large longitudinal datasets of electricity consumption to understand usage patterns and predict future demands
- Applied advanced regression techniques, including static and dynamic ARIMA models, to forecast electricity consumption
- Conducted prediction accuracy checks, followed by necessary model revisions to improve forecasting reliability
- Extensively utilised R for statistical analysis and model development

PRIVATE SECTOR EXPERIENCE

ortak, Istanbul (2023 September-November) *(3 months)*
Founder's Team: Strategy Intern

- Contributed to the launch of an innovative fintech platform
- Actively involved in every aspect of the startup, including competitor analysis, product roadmap, regulatory design
- Delivered thorough market insights on financial technologies to shape the platform's strategic direction

Insider, Istanbul (2022 January-May) *(5 months)*
CEO's Executive Office: Strategy & Operational Excellence Intern

- Working directly with the COO, regularly synthesised insights from complex data analyses, crafting coherent stories and constructing persuasive arguments for presentations to C-Suite
- Was one of the key stakeholders for a project that eventually brought 2.5$ Million additional annual revenue to the company
- Developed and refined key communication materials including investor updates, board meeting briefs, shareholder gatherings
- Manipulation of large consumer data sets, experience with advanced data visualisation techniques such as PowerBI

Yemeksepeti, Istanbul (2020 October-November) *(2 months)*
System Analyst Intern

- Participated in backlog grooming activities and agile ceremonies such as daily standups, sprint review, sprint planning
- Collaborated with stakeholders in inception stage to elicit business requirements and priorities
- System analysis, requirement gathering, functional design preparation

CERTIFICATES & ACHIEVEMENTS

High School Admission Exam (2011)

- Ranked in 1st place in Turkey (shared with 350 others) among 1 million candidates

University Admission Exam (2017)

- Ranked in top 500 in 7 different exams among 1.5 million candidates
- Awarded Presidential Scholarship for 5 years for outstanding success

Deutsches Sprachdiplom Stufe II, (German Language C1 Advanced Level Certificate) (2017)

Machine Learning Professional Certificate, IBM (2024) (In Progress)

VOLUNTEER EXPERIENCE

Bogazici University Music Association *(BUMK):*

- Founder & Director of Sponsorship Committee (2019-2021)

Boğaziçi University Radio Club

- Radio Host (2017-2020)

PROGRAMMING

Languages: R, Python, Julia (Advanced)

SQL, C, NetLogo (Intermediate)

Technologies: Git, Numpy, Pandas, Sci-py, Matplotlib, Seaborn, Plotly,

REFERENCES

Dr. Michael Nicholson
Supervised MSc Thesis
Institute of Genetics and Cancer & School of Mathematics, University of Edinburgh
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Dr. Tibor Antal
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