KASIA KEDZIERSKA

I am a PhD student at the University of Oxford. As a computational biologist, I use **Data Science** and **Machine Learning** to answer biological questions. Specifically, I study cancer of the uterus and chromatin organisation in disease progression. Last summer, I joined Computational Biology Department at Novo Nordisk Research Centre in Oxford as an intern, where I was working with NLP methods and knowledge graphs. Currently, I am looking into adapting my experience from the internship to build models for investigating cancer evolution.

🖥 SELECTED RESEARCH EXPERIENCE

2021

Intern
Novo Nordisk Research Centre Oxford
📍 Oxford, United Kingdom

- I used NLP based methods to screen biomedical artciles and identify potential therapeutic targets. I built R Shiny App to allow colleagues within the company to investigate results from our pipeline.

present | 2018

DPhil Candidate
Wellcome Centre for Human Genetics, Big Data Institute
📍 University of Oxford, UK

- In my PhD project *Functional and evolutionary characterisation of chromatin organisation in endometrial cancer* I am looking at how chromatin organisation influences disease progression in cancer of the uterus.
- Mentored by D. Church and D. Woodcock
- Currently I'm working on building and refining ML models of cancer evolution.

2018 | 2017

Visiting Graduate Student
Ratan group
📍 University of Virginia, USA

- Developed SONiCS - a tool for genotyping short tandem repeats (STRs) profiled using capture assays.
- Worked on the Master thesis - *Analysis of the mutational burden across gene sets in cancer*.

🎓 EDUCATION

present | 2018

DPhil. Candidate, Genomic Medicine and Statistics
Nuffield Department of Medicine, Brasenose College
📍 University of Oxford, UK

- PhD fully funded by Wellcome Trust Four-year PhD Studentships in Science

2018 | 2015

M. Sc. Eng., Biotechnology
Warsaw University of Technology
📍 Warsaw, Poland

- Master thesis: - *Analysis of the mutational burden across gene sets in cancer* awarded the title of **The Best Master Thesis in Bioinformatics** defended in 2018.

CONTACT

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- 🐦 kzkedzierska
- 🐙 github.com/kzkedzierska
- 🔗 kasia.codes
- in kzkedzierska

CODING SKILLS

R
Python
Bash
AWK
SQL
Perl
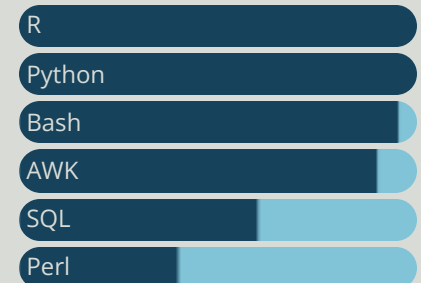
R: `tidyverse`, `data.table`, `Shiny`, `plotly`, `tidymodels`, `caret` and others
Python: `NumPy`, `Pandas`, `SciPy`, `scikit-learn`, `keras`, `PyTorch`, `Seaborn`, `matplotlib` and more

LANGUAGES
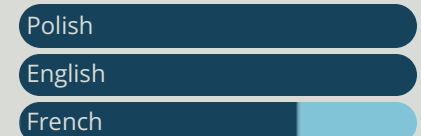
Polish
English
French

SELECTED PUBLICATIONS

Full list of publication on my Google Scholar profile scholar.google.com/citations?user=Yv6poTwAAAAJ.

2021 — **Multi-omics analyses of early liver injury reveals cell-type-specific transcriptional and epigenomic shift**

M. Migdal, E. Tralle, K. A. Nahia, L. Bugajski, **K. Z. Kedzierska**, F. Garbicz, K. Piwocka, C. L. Winata, M. Pawlak

📍 BMC Genomics

2020 — **The *MLH1* polymorphism rs1800734 and risk of endometrial cancer with microsatellite instability**

H. Russell, **K. Kedzierska**, D. D. Buchanan, R. Thomas, E. Tham, M. Mints, A. Keränen, G. G. Giles, M. C. Southey, R. L. Milne, I. Tomlinson, D. Church, A. B. Spurdle, T. A. O'Mara and A. Lewis

📍 Clinical Epigenetics

2019 — **Dynamics of cardiomyocyte transcriptome and chromatin landscape demarcates key events of heart development**

M. Pawlak, **K. Z. Kedzierska**, M. Migdal, K. A. Nahia, J. A. Ramilowski, L. Bugajski, K. Hashimoto, A. Marconi, K. Piwocka, P. Carninci and C. L. Winata

📍 Genome Research

2018 — **SONiCS: PCR stutter noise correction in genome-scale microsatellites**

K. Z. Kedzierska, L. Gerber, D. Cagnazzi, M. Krützen, A. Ratan, L. Kistler

📍 Bioinformatics

SELECTED TALKS AND POSTERS

2022 — **Systematic characterisation of chromatin modifiers in endometrial cancer**

European Association for Cancer Research 2022 Congress

📍 Seville, Spain

• Poster presentation

2019 — **Analysis of the mutational burden across gene sets in cancer**

Polish Bioinformatics Society Symposium

📍 Cracow, Poland

• Invited talk

2018 — **Differential mutation analysis across gene sets in cancers**

Biology of Genomes 2018

📍 Cold Spring Harbor, NY, USA

• Poster

SELECTED AWARDS AND HONOURS

present | 2021 — **Senior Hulme Scholarship**

Brasenose College, University of Oxford

📍 Oxford, UK

• Senior Hulme Scholarship is awarded by Brasenose College, University of Oxford to DPhil students whose academic performance is deemed to be exceptional.

2022 | 2021 — **Graduate Prize in the 'Outstanding work outside degree' category**

Nuffield Department of Medicine, University of Oxford

📍 Oxford, UK

• Each year Nuffield Department of Medicine, based on nominations, awards selected PhD students based on their performance within and outside of their degree.

🎓 ATTENDED WORKSHOPS, SUMMER SCHOOLS

2019

Machine Learning Summer School

Imperial College London, University College London

📍 London, United Kingdom

🖥 TEACHING EXPERIENCE

2022

Unsupervised learning

NGSchool2022: Machine Learning in Computational Biology

📍 Jablonna, Poland

- I co-led, with Kaspar Märtens, lecture and tutorial sessions on unsupervised learning and its use cases in computational biology. All materials are availble at github.com/kzkedzierska/ngs22_unsupervised.

2021

Data visualization in bioinformatics - hackathon mentor

Online hackathon NGSprint

📍 Discord

- I led the hackathon in data viusalisation with emphasis on computational biology. Under my supervision, 3 teams of around 5 people each, created interactive and captivating visualisation. Teaching materials are available at github.com/kzkedzierska/NGSprint_data_viz.

2020

Online tutorials: Python for Data Science and Introduction to Python

NGSeminars

📍 YouTube

- I led two Python tutorials: **Introduction to Python** kasia.codes/talk/intro_to_python/ and **Python for Data Science** kasia.codes/talk/py4ds/.

2019

Introduction to R

Wellcome Centre for Human Genetics

📍 Oxford, United Kingdom

- 8 week course in Introduction to R, Data Manipulation, Data Visualisation and RNA-seq data analysis.
- Materials available on github/kzkedziersa/r_intro

2020
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2019

Introduction to Managing Code with Git

Wellcome Centre for Human Genetics

📍 Oxford, United Kingdom

- I led a 2-hour introduction to working with Git. Materials, including slides and exercises are available at kasia.codes/talk/into_to_git/.

€ SELECTED GRANTS

2022
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2020

Visegrad Grant to organize NGSchool2022

Visegrad Fund

- 32,190 EUR awarded towards organising affordable training and conference focusing on ML application in Computational Biology. During this project I managed an international team of volunteers and led the organisation of summer school, conference, online seminars and hackathon.

🤝 NON-PROFIT WORK

present
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2018

President

NGSchool Society

- The goal of the Society is to promote and support science, with emphasis on computational biology.
- President since 2019; Vice President 2018 - 2019, Founder