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. My work includes data exploration, data visualisation and communicating results to non-technical audience. For example, I take advantage of **feature selection** and **dimensionality reduction** methods, generate hypothesis with **unsupervised learning** and test them with *in silico* and *in vitro* experiments. I model complex biological processes with a repertoire of ML models - from **Linear Models** to **Deep Learning**.

Last summer, I joined Computational Biology Department at Novo Nordisk Research Centre in Oxford as an intern, where I worked with **NLP** methods and knowledge graphs. Currently, I am looking into adapting my experience from the internship to build models investigating cancer evolution.

SELECTED WORK EXPERIENCE

2021 — **Intern @ Novo Nordisk Research Centre Oxford, Oxford, United Kingdom**

- I used NLP based methods to screen biomedical articles 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.
- 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.

SELECTED AWARDS AND HONORS

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

2022 — **Turing Data Study Group**

The Alan Turing Institute — London, United Kingdom

2019 — **Machine Learning Summer School**

Imperial College London, University College London — London, United Kingdom

View this Resume online
kasia.codes/resume/

CONTACT

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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

CV source code. Made with pagedown, based on nstrayer/cv.
Last updated on 2022-11-30.

SELECTED PUBLICATIONS

Full list of publication is available through 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 @ BMC Genomics**
M. Migdal, E. Tralle, K. A. Nahia, L. Bugajski, **K. Z. Kedzierska**, F. Garbicz, K. Piwocka, C. L. Winata, M. Pawlak

2020 • **The *MLH1* polymorphism rs1800734 and risk of endometrial cancer with microsatellite instability @ Clinical Epigenetics**
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

2019 • **Dynamics of cardiomyocyte transcriptome and chromatin landscape demarcates key events of heart development @ Genome Research**
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

2018 • **SONiCS: PCR stutter noise correction in genome-scale microsatellites @ Bioinformatics**
K. Z. Kedzierska, L. Gerber, D. Cagnazzi, M. Krützen, A. Ratan, L. Kistler

SELECTED CONFERENCE PRESENTATIONS

2022 • **Poster presentation: Systematic characterisation of chromatin modifiers in endometrial cancer @ European Association for Cancer Research 2022 Congress**

2019 • **Invited talk: Analysis of the mutational burden across gene sets in cancer @ Polish Bioinformatics Society Symposium**

2018 • **Poster: Differential mutation analysis across gene sets in cancers @ Biology of Genomes 2018**

TEACHING EXPERIENCE

2022 • **Unsupervised learning @ NGSchool2022: Machine Learning in Computational Biology**

- 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**

- I led the hackathon in data viusalisation with emphasis on computational biology. Teaching materials are available at github.com/kzkedzierska/NGSprint_data_viz.

2020 • **Online tutorials: Python for Data Science and Introduction to Python @ NGSeminars**

- 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**

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

2020 | 2019 • **Introduction to Managing Code with Git @ Wellcome Centre for Human Genetics**

- 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 | 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 | 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