KASIA KEDZIERSKA

For my PhD @ **University of Oxford**, 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**.

I worked with **NLP** methods and knowledge graphs during my internship @ Novo Nordisk Research Centre in Oxford. Using **Transfer Learning** and **YOLO model** I built a framework to identify sea pens from a video footage of an ocean floor @ Turing Data Study Group. Currently, I'm using **RNNs** to investigate cancer evolution trajectories in endometrial cancer.

💻 SELECTED WORK EXPERIENCE

2021

Intern @ Novo Nordisk Research Centre Oxford, Oxford, UK

- 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.
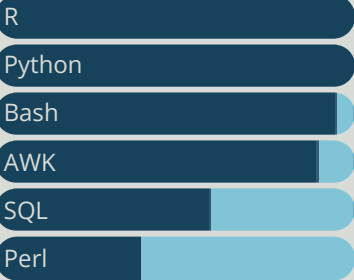
👤 SUMMER SCHOOLS & HACKATHONS

2022

Sea pen identification from video footage challenge @ Turing Data Study Group

The Alan Turing Institute   📍 London, UK

2019

Machine Learning Summer School

Imperial College London, University College London   📍 London, UK

CONTACT

✉ kasia@well.ox.ac.uk

🐦 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\Tensorflow`, `PyTorch`, `Seaborn`, `matplotlib` and more

LANGUAGES

Polish

English

French

📖 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
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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
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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

2022
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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 2019-2022; Vice President 2018 - 2019, Founder