

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

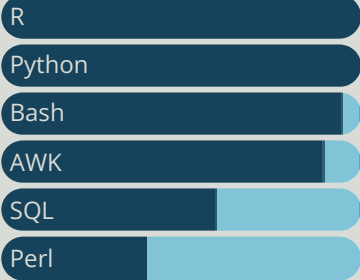
London, UK

View this Resume online
 kasia.codes/resume/

CONTACT

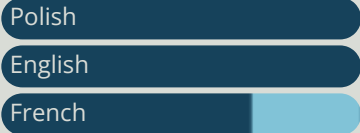
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- github.com/kzkedzierska
-
- [kzkedzierska](https://in.kzkedzierska)

CODING SKILLS



R: tidyverse, data.table, Shiny, plotly, tidymodels, caret and others
Python: NumPy, Pandas, SciPy, scikit-learn, keras\Tensorflow, PyTorch, Seaborn, matplotlib and more

LANGUAGES





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 Märten](#), lecture and tutorial sessions on unsupervised learning and its use cases in computational biology. All materials are available at github.com/kzkedzierska/ngs22_unsupervised.
- 2021 • **Data visualization in bioinformatics - hackathon mentor @ Online hackathon NGSprint**
 - I led the hackathon in data visualisation 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.com/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

- 2022 | 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