
Kornel Labun



Birthday 20 Oct 1990
Nationality Polish
E-mail: kornel.labun@gmail.com
Website: kornellabun.com
Github: <https://github.com/JokingHero>
Code: <https://github.com/JokingHero/CHOPOFF.jl>

COMPETENCE

Expertise Big Data and Analytics, Machine Learning, scalable software development and bioinformatics

Programming languages python, Julia, R, JavaScript, C++, C#, Java (Android), Matlab + Simulink, LabView

Frameworks Bioconductor, tidyverse, Node.js, Express, Angular, React/Redux, Spring/Hibernate, D3.js, Langchain, Keras, TensorFlow, scikit-learn, SciPy, NumPy

Cloud Microsoft Azure, Google Cloud Platform, Heroku, Openshift

PaaS & SaaS integrations Twilio, MailChimp, Dropbox, Facebook, PayPal etc.

Databases MySQL, PostgreSQL, Redis, MongoDB, Neo4j

Containerization Kubernetes, Docker, conda, renv, virtualenv

Other Statistics, high performance computing, Git, GraphRAG, LLM

Languages Polish (native), English (fluent), Norwegian (basic)

INTERESTS

Jujitsu, judo, chess and books

Blockchain and design patterns

Abstraction and Reasoning Corpus

Machine learning and generative models

PERSONALITY

Lighthearted

Persistent

Curious

Helpful

EDUCATION

Sep 2015 - Oct 2019

PhD: University of Bergen, Department of Informatics, Computational Biology Unit

Title: "In silico design and analysis of gene editing experiments."
Defense date: 27th January 2020

Oct 2009 - Sep 2014

MSc Eng: Silesian University of Technology, Faculty of Automatic Control, Electronics and Computer Science; Biotechnology, spec. Bioinformatics

Title: "Spatial evolutionary games as a tool for modeling inter-population interactions."
Defense date: 16th September 2014

EXPERIENCE

Dec 2022 -

Researcher at University of Bergen

- CHOPOFF tool for off-target detection (10x speed and 100% precision, 96% code coverage)
- Analysis of datasets and tool creation (GUIDE-seq, CRISPR etc.) for precision pediatrics and gene editing
- RCP-seq (RNA/80S/SSU sequencing) for mouse neuronal cells
- <https://ribocrypt.org/> interactive visualization in genomics

Jan 2021 - Nov 2022

Postdoctoral fellow at University of Bergen

- Development of tools for off-target detection for genome editing with CRISPR, enabling precision medicine
- Applying Oxford Nanopore technology for modification detection
- Analyzing Ribo-seq and TCP-seq datasets for metastasis signature

Nov 2019 - Dec 2020

Senior Consultant at Sonat Consulting AS

- Youwell/Helse I Hardanger - Software engineering
Android development and Bluetooth integration: RxJava, Dagger2, Retrofit, MVVM, backend: Azure/C#, Redux/React
- Cutters - Software engineering and data analysis
Back-end website development, building marketing platform in Google Cloud Platform, Python, SQL, Facebook API integration and data analysis.
- Absa - Software engineering and data analysis
Build analysis service in SQL Server Analysis Services (SSAS multidimensional cube). Big data ETL, data warehouse with schema design and dimensional data modeling.

- Sep 2015 - Oct 2019 **PhD student:** “In silico design and analysis of gene editing experiments.”
supervisor: Eivind Valen
- Analysis of RNA-Seq, Ribo-Seq, Cage-Seq, ATACK-Seq, SMS-seq and other *-Seq kind of datasets, as well as Oxford Nanopore sequencing data (noisy signal over time)
 - Development of pipelines and tools ([ORFik](#), [ampliCan](#), [RareVariantVis](#), [CHOPCHOP](#), [tailfindR](#))
 - Machine learning related projects: prediction of polyA tail from nanopore data, prediction of repair profile after CRISPR edits
 - Teaching for courses: INF207 (Social Network Theory), INF109 (Computer Programming for Science), and [R Crash Course](#) for Molecular and Computational Biology Research School and NORBIS
- Jul 2014 - Jul 2015 **Software Developer/data analyst** at rspective (renamed to [Voucherify](#))
- Front-end and back-end website development, machine learning solutions and data analysis, quality assessment, architectural design and deployment.
- 2013 - 2014 MSc project: “Spatial evolutionary games as a tool for modeling inter-population interactions”.
supervisor: Prof. Andrzej Świerniak
- Evolutionary game theory in the cellular automaton to solve differential equations
- 2012 - 2013 Eng project: “Seeking for the signature of radiosensitivity with the use of data on single nucleotide polymorphisms and the results of γ -H2AX test with the expressions of the chosen DNA repair genes.”
supervisor: Prof. Joanna Polańska
- Developing a novel statistical model for the signature of radiosensitivity.
- Aug 2011 Internship at Maria Skłodowska-Curie Memorial Cancer Center and Institute of Oncology Gliwice Branch, Department of Nuclear Medicine and Endocrine Oncology
- Designing microRNA discovery pipeline.

SELECTED PUBLICATIONS

Total number of publications: **15** h-index: **10**

CHOPCHOP v3: expanding the CRISPR web toolbox beyond genome editing.

Labun K, Montague TG, Krause M, Torres Cleuren YN, Tjeldnes H, Valen E
Nucleic acids research, 47(W1):W171–W174. (2019)

Citations: 1411

CHOPCHOP v2: a web tool for the next generation of CRISPR genome engineering.

Labun K, Montague TG, Gagnon JA, Thyme SB, Valen E
Nucleic acids research, 44(W1):W272–6 (2016)

Citations: 990

tailfindr: alignment-free poly(A) length measurement for Oxford Nanopore RNA and DNA sequencing.

Krause M, Niazi AM, Labun K, Torres Cleuren YN, Müller FS, Valen E
RNA , 25(10):1229–1241. (2019)

Citations: 80

Accurate analysis of genuine CRISPR editing events with ampliCan.

Labun K, Guo X, Chavez A, Church G, Gagnon JA, Valen E
Genome Research , 29 (5) (2019)

Citations: 65

ORFik: a comprehensive R toolkit for the analysis of translation

Tjeldnes H, Labun K, Torres Cleuren YN, Chyżyńska K, Świrski M, Valen E
BMC bioinformatics 22 (1), 336

Citations: 26

TEACHING EXPERIENCE

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| May 2021 | Organizer and teacher of R Crash Course for NORBIS (national research |
| May 2019 | school in bioinformatics, biostatistics and systems biology) and MCB |
| Nov 2017 | (Molecular and Computational Biology) research school. Course website:
r-crash-course.github.io |
| Spring 2018 | INF109 (Computer Programming for Science) for Institute of |
| Spring 2017 | Informatics/University of Bergen. Designing homework assignments and
grading them. |
| Autumn 2018 | INF207 (Social Network Theory) for Institute of Informatics/University of |
| Autumn 2016 | Bergen. Teaching exercises on a blackboard. |
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