

# Jonas Falck

BIOINFORMATICS

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“rtfm”

## Education

### Radboud University

Nijmegen, Netherlands

B.S. IN MEDICAL BIOLOGY

2012 - 2015

- Sparked interest in molecular biology, omics and ngs technologies.
- Started to invest time in understanding the linux operating system.

### Radboud University

Nijmegen, Netherlands

M.S. IN MEDICAL BIOLOGY

2015 -

- Developing a wide range of (bio)informatic and machine learning/data science skills in internships and extracurricular.

## Skills

### IT skills

- **r/bioconductor:** tidyverse, ggplot2, caret, grid, shiny
- **python:** pandas, matplotlib, scikit-learn, django, SQLAlchemy, flask, jinja2
- **productivity:** shell scripting, regex
- **database:** SQL, elasticsearch
- **writing:** LaTeX, markdown, html

### Data science/Machine learning

- **supervised:** linear regression, knn, decision trees
- **unsupervised:** HCA, PCA, kmeans
- **statistics:** parametric and non-parametric methods
- **visualization:** publication ready plots, development of custom visualizations using grid

### Software

- **operating systems:** linux, windows, macOS
- **version control:** git, gitlab
- **container and virtualization:** docker, virtualbox, qemu
- **IDE:** vscode, rstudio
- **web:** nginx, shiny
- **office solutions:** microsoft, google, libreOffice
- **graphics:** adobe photoshop, gimp

### Languages

- **English:** fluent
- **Dutch:** fluent (nt2)
- **German:** native

## Experience

### Identification and ranking of p63 binding sites putatively involved in the etiology of non-syndromic cleft lip with or without cleft palate

Nijmegen, Netherlands

RADBOUD UNIVERSITY MEDICAL CENTER NIJMEGEN RUNMC, HUMAN GENETICS

2015-2016

- In-silico prediction and in-vitro validation of clinically relevant transcription factor binding sites using an integrative multiomics approach.
- Took ownership of a network research project and pioneered bioinformatical research in a solely network focused lab, teaching myself the necessary bioinformatic skills.
- Development of a pipeline to integrate publicly available and in-house multi-omics data (Chip-seq, SNP, GWAS, conservation, linkage disequilibrium).
- Effective communication and presentation of bioinformatical methods and results to researches with no bioinformatical expertise.

### CTCF-motif directionality controls CTCF-mediated chromatin interactions and correlates with topological domain structure

Nijmegen, Netherlands

CENTER FOR MOLECULAR AND BIOMOLECULAR INFORMATICS CMBI, COMPARATIVE GENOMICS

2016

- Drove and transformed a loosely defined, explorative research project into a hypothesis driven project resulting in a publication (see writing).
- Hypothesis generation by leveraging multiomics datasets describing different dimensionalities of the genome, ranging 1D (sequence), 2D (ChIP-Seq), and 3D data (ChIA-PET, Hi-C).
- Hypothesis testing by applying parametric and non-parametric methods, randomization, as well as modeling of chromatin loops.
- Applying unsupervised machine learning techniques e.g. PCA, HCA as well as a multitude of visualizations for data exploration.

## Logistics employee

Beuningen, Netherlands

QUANTORE

2018 - now

- Using warehouse management software to analyse erroneous orders and solve problems in an independent manner or to communicate issues with the superiors.
- Being contact person for order pickers to resolve any problems occurring during the picking process or relaying them to superiors.
- Checking orders and ensuring every customer receives what is ordered.
- Assisting new employees finding their way around in a warehouse environment.
- Picking orders for customers, moving stock inside the warehouse in a quick but safe manner.

## Extracurricular Activity

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### Machine Learning provided by Stanford University through coursera

Grade: 87%

PARTICIPANT, SYLLABUS

- My brother's phd defense about support vector machines inspired me to take this course.
- 11 week course covering go to methods applied in supervised and unsupervised learning, regularization and how to tackle problems like bias and overfitting.

### Computing for Data Analysis provided by John Hopkins University through coursera

Grade: 97%

PARTICIPANT

- This course covered the basics of data manipulation and visualization in R.

### Full Stack web development

LEARNED THROUGH BLOGS, WEBSITES, VIDEOS, MANUALS

- Because I was interested in web technology and how database driven and dynamic websites work, I learned how to setup, develop and maintain a full stack operation.
- Learned how to setup and admin headless linux systems.
- Learned how to use SQL-like databases and the NoSQL database elasticsearch for websites.
- Delved into python model-view-controller frameworks django and flask + SQLAlchemy.
- Learned how to speed up websites using caching technology like memcached and redis.
- Learned some html, css, templating and javascript for front-end use.

## Writing

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### Identification, ranking and testing of p63 binding sites putatively involved in the etiology of non-syndromic cleft lip with or without cleft palate

Nijmegen, Netherlands

MASTER INTERNSHIP: HUMAN GENETICS, UNIVERSITY MEDICAL CENTER NIJMEGEN

2016

### CTCF-motif directionality controls CTCF-mediated chromatin interactions and correlates with topological domain structure

google drive

MASTER INTERNSHIP, COMPARATIVE GENOMICS, CENTER FOR MOLECULAR AND BIOMOLECULAR INFORMATICS NIJMEGEN

2016

### CTCF-mediated chromatin loops enclose inducible gene regulatory domains

[bmcgenomics.biomedcentral.com](https://bmcgenomics.biomedcentral.com)

CO-AUTHOR

March 2016, BMC Genomics; 17:252.

pmid:27004515

- Publication is based on my research internship.
- I participated in the discussion around this paper and did some proofreading.