JOËL FABIAN MEILI

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WORK EXPERIENCE

Credit Suisse AG, Zurich October 2019 - May 2021
Global Treasury Execution Analytics

Tasks include data analytics and the support of the Global Treasury Execution Analytics Team in their daily tasks by generating reports.

ETH Zurich, Zurich November 2017 - October 2019
Student Research Assistant

Tasks include the development of game theory experiments based on oTree (Python / Django-Framework) for ETH Center for Law and Economics, assistance on research papers/teaching and supervision of exams.

Swiss Armed Forces, Bern June 2015 - April 2016
OR-7 / Sergeant First Class

Mandatory military service including the promotion to Sergeant First Class. Further lead a company's logistics with five subordinates for the following recruit school.

EDUCATION

University of Zurich, Zurich September 2019 - May 2023
Master of Science, Biostatistics, Grade: (5.46/6.00)

Biostatistics is the science of analyzing and interpreting biomedical data. Scientific challenges from clinical and biological research require the development and competent application of novel statistical methodology. Currently such challenges emerge, for example, in personalized and evidence-based medicine, in infectious disease and environmental epidemiology, and in the rapidly expanding fields of molecular biology, e.g. genomics, proteomics, epigenomics.

Zurich University of Applied Sciences, Winterthur September 2016 - July 2019
Bachelor of Science, Engineering and Management with focus on Business Mathematics, Grade: (5.44/6.00

The Bachelor Programme in Business Mathematics at ZHAW is focused very much on developing mathematical skills as well as solid programming expertise in R and Python. Modules in mathematics and statistics sum up to a total of 110 ECTS credits. The R programming language is used throughout all six statistics courses. These cover topics such as Markov chains with finite state space, point processes and their asymptotic analysis, multilinear regression models and maximum-likelihood estimators.

Berufsbildungszentrum des Kantons Schaffhausen, Schaffhausen August 2010 - July 2014
Swiss Federal VET Diploma, Information Scientist (5/6)

PROJECTS

Masters' thesis: Differential Regulation

In this thesis we investigate, in each cell cluster (e.g. cell type), how the relative abundance of spliced and unspliced reads varies between experimental conditions. Changes to these relative abundances are directly linked to gene regulation, therefore differences in these proportions are taken as a proxy for differences in gene regulation. Methods that are capable of detecting differences in relative abundance already exist (e.g. BRIE2 and eisaR), however they neglect two sources of mapping uncertainty: i) multimapping reads across spliced and unspliced versions of a gene, and ii) reads compatible with multiple genes. Therefore, we propose a novel method, DifferentialRegulation, that tackles this issue and evaluate the performance of the existing methods (BRIE2, DEXSeq and eisaR) and our novel approach. For this, we created two semi-simulated data sets using real mouse kidney singlecell RNA sequencing data as an anchor data set to simulate from. From the analysis we conclude that the two methods that account for mapping uncertainty (DEXSeq and DifferentialRegulation) have significantly higher TPR and better control of FDR than the methods that ignore mapping uncertainty. Additionally, we studied methods robustness by investigating how gene abundance levels, and differential gene expression (a nuisance effect in this analysis), affect the results of each method. We also ran a null analysis on a real data set (where no differences between groups are expected), to study methods false positive rates. Lastly, we ran a computational benchmark on the mouse kidney data to evaluate the computational burden of each method.

Statistical consulting project: Benefit of prolonged and earlier treatment of Hepatocellular carcinoma patients with TACE

This study aims to investigate if there is a benefit of prolonged and earlier treatment of hepatocellular carcinoma (HCC) patients with TACE. Patients were seen regularly for at least five years. The methods used were Kaplan-Meier plots, competing risk analysis and Cox-regression. The analysis is subject to the assumption that the patients in BCLC stages 0-A and C are not representative as patients are probably more/less ill than the average patient in said stage. The analysis showed that there is a tendency for improved overall survival for patients in BCLC stages B and C. Contrarily, TACE did not improve the overall survival for patients of the earlier stages 0 and A. The comparison of overall and progression-free survival curves between the different BCLC stages showed that there is no evidence for a difference between patients in stages 0-A and B. Competing risk analysis showed that patients regardless of their staging die quickly from hepatic failure compared to other causes of death. Confounders such as sex, age and underlying conditions did not influence the effect of the BCLC stages on the overall survival. Based on the results we would recommend only patients of BCLC stages B and C to receive earlier and prolonged treatment with TACE.

Bachelor's thesis: The Influcence of the Investment Horizon on the Asset Allocation

The goal of this paper is to model the fat tails of the return distributions of financial assets and, based on this, to understand how the length of the investment horizon impacts portfolio allocation among various assets for different levels of risk. Addressing this problem requires essentially to (1) establish a measure of financial risk and (2) to build a model for representing the evolution of each assets value and the effects of financial risk.

ACADEMIC ACHIEVEMENTS

Zurich University of Applied Sciences, Winterthur September 2016 - July 2019
Bachelor of Science, Engineering and Management with focus on Business Mathematics (5.44/6)

Graduated in the top 10% of my class

TECHNICAL STRENGTHS

Bioinformatics	salmon, alevin, scRNA pipelines e.g. Seurat
Programming Languages	Python (proficient), R (proficient), SQL (proficient)
Software & Tools	MS Office, RStudio, Latex
Languages	German (native), English (C1 level, IELTS Academic 7.5)

PERSONAL TRAITS

Highly motivated and eager to learn new things

Analytical skills and problem-solving attitude

Ability to work as an individual as well as in group