

Joel Beck

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EXPERIENCE

Undergraduate Research Assistant

June 2020 – Present

Texas A&M University

College Station, TX

- Developed a REST API using FastAPI and PostgreSQL to store data from learning management systems
- Developed a full-stack web application using Flask, React, PostgreSQL and Docker to analyze GitHub data
- Explored ways to visualize GitHub collaboration in a classroom setting

Information Technology Support Specialist

Sep. 2018 – Present

Southwestern University

Georgetown, TX

- Communicate with managers to set up campus computers used on campus
- Assess and troubleshoot computer problems brought by students, faculty and staff
- Maintain upkeep of computers, classroom equipment, and 200 printers across campus

Artificial Intelligence Research Assistant

May 2019 – July 2019

Southwestern University

Georgetown, TX

- Explored methods to generate video game dungeons based off of *The Legend of Zelda*
- Developed a game in Java to test the generated dungeons
- Contributed 50K+ lines of code to an established codebase via Git
- Conducted a human subject study to determine which video game dungeon generation technique is enjoyable
- Wrote an 8-page paper and gave multiple presentations on-campus
- Presented virtually to the World Conference on Computational Intelligence

EDUCATION

Georg-August-University of Göttingen

Göttingen, Germany

Master of Science: Applied Statistics

Sep. 2020 – Sep. 2023

- Overall Grade: 1.0 (Top 1%)
- Focus: Machine Learning, Deep Learning (NLP)
- Thesis: *Bridging Citation Analysis and Language Models: A Hybrid Recommender System for Computer Science Papers*

University of Oslo

Oslo, Norway

ERASMUS Study Abroad

Aug. 2018 – Dec. 2018

- Courses in Risk Analysis & Actuarial Science

University of Mannheim

Mannheim, Germany

Bachelor of Science: Mathematics in Business and Economics

Sep. 2016 – March 2020

- Overall Grade: 1.2 (Top 5%)
- Focus: Statistics, Probability Theory, Econometrics

Ludwigsgymnasium Saarbrücken

Saarbrücken, Germany

Abitur

Sep. 2007 – July 2015

- Overall Grade: 1.0 (Top 1%)

SCHOLARSHIP

Stiftung der deutschen Wirtschaft

Oct. 2016 – Sep. 2023

- Awarded for academic excellence and social engagement

TECHNICAL SKILLS

Languages: Python (3 Years), R (2 Years), Go (6 Months), Typescript (6 Months), SQL (SQLite), Bash

Developer Tools: Git, GitHub, GitHub Actions, GitLab, GitLab CI, Docker, Jira, Confluence, VS Code

Writing: LaTeX, Markdown, RMarkdown, Quarto, Jupyter Notebooks, MkDocs

PROJECTS

- readnext** | *Python, transformers, sklearn, gensim, spacy, polars, requests, pydantic, pytest, MkDocs* 2023
- Developed a hybrid recommender system for computer science papers, resulting in 67% higher Mean Average Precision (MAP) than the baseline.
 - Constructed a dataset from Semantic Scholar API and preprocessed it using spaCy and polars.
 - Applied multiple language models including SciBERT, FastText, and TF-IDF for recommendations.
 - Ensured robustness with 88% code coverage, user input validation and continuous integration.
 - Provided comprehensive [documentation](#) with MkDocs, deployed to GitHub Pages.
- drafts** | *Typescript, Javascript, Bun* 2023
- Developed action scripts for the [Drafts](#) app, automating text editing tasks.
 - Solved [the challenge](#) to develop actions in Typescript using external editors, enhancing productivity.
 - Implemented bundling process with Bun to bundle Typescript files into Javascript and ensure compatibility with Drafts.
- postforecasts** | *R, tidyverse, testthat, RMarkdown* 2022
- Crafted an R package for post-processing of Covid-19 forecasts.
 - Contributed custom methods (Conformalized Quantile Regression and Quantile Spread Averaging) for enhanced post-processing.
 - Utilized tidyverse packages for data wrangling and visualization, and testthat for unit testing.
- airbnb-oslo** | *Python, pytorch, sklearn, pandas, seaborn, beautifulsoup, LaTeX* 2022
- Predicted Airbnb prices in Oslo using an ensemble regression model, outperforming Ridge, Random Forest, XGBoost and Fully Connected Neural Network.
 - Enhanced data by scraping apartment images using BeautifulSoup.
 - Developed a CNN with PyTorch for image-based price categorization.
 - Analyzed latent space distribution using Variational Autoencoder (VAE).
- shrtcts** | *R, RStudio* 2022
- Developed a collection of RStudio shortcuts using the [shrtcts](#) package.
 - Enabled keyboard-triggered commands to automate developer tasks, increasing productivity.
- asp21bridge** | *R, tidyverse, testthat, S3, roxygen2, RMarkdown* 2021
- Created an R package featuring a Bayesian MCMC sampler with Ridge penalization.
 - Offered extensive diagnostic visuals and summaries using ggplot2.
 - Facilitated comparison between frequentist MLE and Bayesian estimates with/without Ridge penalization.
 - Introduced a custom S3 class for sampling outputs, incorporated unit testing with testthat, documented with roxygen2.