

# Asli Akalin

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## Education

**M.S. Electrical Engineering and Computer Science**, *University of California, Berkeley*

May

2021

Relevant Coursework: Deep Reinforcement Learning, Decisions, and Control, Sketching Algorithms, Parallel Programming, Algorithmic Human-Robot Interaction, ML in Biology & Chemistry, Computer Networking

**B.A. Computer Science and Economics**, *University of California, Berkeley*

August 2020

GPA: 3.7

Relevant Coursework: Data Structures, Algorithms, Database Systems, Software Engineering, Randomized Algorithms, Data Science, Machine Structures, User Interface Design, Probability and Random Processes, Artificial Intelligence, Machine Learning, Deep Neural Networks, Natural Language Processing

## Skills

**Languages**: Python, Java, Ruby, C, Javascript, SQL, HTML, CSS

**Frameworks**: Rails, R Studio, Stata

**Methodologies**: Agile, Scrum, SaaS

**Databases**: SQLite, Firebase, Airtable

**Tools**: Spark, Hadoop, Git, Docker, Heroku, Bundle

**Libraries**: TensorFlow, PyTorch, scikit-learn, Pandas, Seaborn, NumPy, Matplotlib, Beautiful Soup, jQuery, React, Node.js

**Operating System**: iOS, Linux/Unix

## Experience & Research

**Software Engineer** | Berkeley Student Food Collective

Sept - Dec 2019

Extended client's [Ruby on Rails](#) web-app and refactored legacy code:

- Implemented [location mapping](#), [interactive](#) gallery, [multimedia](#) content and [dynamic tagging](#) features
- Redesigned model architecture to ensure new tagging feature is compatible with old Product and Vendors; [introduced 4 models to support added features](#) as well as [rewriting ~80% of existing code](#)
- Cleaned up and [expanded documentation](#) to serve as a user & future developer guide
- Eliminated security threats caused by vulnerable 'admin access' links, by implementing a secure, encrypted [authorization system](#)

**Teaching Assistant (TA)** | EECS Department at UC Berkeley

Fall 2017 - Present

Worked in various computer science courses as a part of the official teaching staff, including positions:

- (Actively) [Head of Content TA of CS169](#), Software Engineering, for 3 semesters, with ~200 students/sem
- [Head TA of CS370](#), Teaching Techniques in Computer Science
- [Head of Content TA of CS70](#), Discrete Math and Probability Theory, for 2 semesters, with 1500+ students
- [Tutor and WebCasting Operator of CS170](#), Algorithms and Intractable Problems, with over 200+ students
- Also volunteered as a [Senior Mentor](#) in [Computer Science Mentors \(CSM\)](#) for 4 semesters, teaching lower-division courses to small groups of students who signed up for extra tutoring each week
- Spent [25+ hours/week](#) throughout a semester teaching, creating class materials and holding office hours

**Software Engineer / Data Scientist** | Prof. Dal Bo and Yuchtman, Haas

July - Sept 2020

Wrote [web scraping](#) scripts (using [BeautifulSoup](#), [Scrapy](#), [Regex](#)) to collect, filter and organize relevant data about UK Parliamentarians of the Glorious Revolution, using historical archives for the decade.

**Software Engineer** | Prof. Roland-Holst of Dept. of Economics

June 2019 - Jan 2020

Built a prototype [blockchain based supply-chain network](#) to be expanded as a [mobile app](#), aimed to reduce market access costs in developing agri-food supply chains by directly involving small-holders in market

transactions, increasing small-holder revenue as a result.

**Software Engineer** | [People Power Solar Coop.](#)

Sept 2019 - Jan 2020

2020

Built a web-app using [Airtable](#) and [React](#) that allows members and stakeholders to follow [updates](#), track their [investments](#), view their [energy consumption](#), [automate paying bills](#) and receiving returns.

**Software Engineer** | [Prof. Auslander of Grad. School of Mechanical Engineering](#)

Jan - Sept 2019

Worked on developing software of a [SCADA feedback control system](#) for contactless vertical farming systems. [Optimized data transfers](#) by utilizing computer hierarchies, [parallel and distributed computing](#) in the computer network.

**Software Engineer** | [Free Software Foundation \(FSF\)](#)

Jan - May 2019

Built an [open sourced](#) mobile app (using [FDroid](#), [Go](#)) that displays FSF's [newsfeed](#), and allows users to support common causes through [petitions and donations](#).

## Projects

**Natural Language Processing Challenges** | Python + [Colab](#) + Big Data + Kaggle

- Designed a [sentiment analysis](#) model, optimized by the engineered features (using bag-of-words, sentiment dictionaries, subjectivity lexicons, punctuation and syntax analysis), that can [classify](#) given review as 'positive' or 'negative' with [81.5% accuracy](#), measured on [~2M testing samples](#)
- Trained vector representations on [~420K movie plot summaries containing ~13M words](#), and fine-tuned using [cosine similarity](#) as a measure, capturing [semantic context](#) of words in vector embeddings
- Designed a [bidirectional LSTM](#) model optimized for [Parts-of-Speech \(POS\) tagging](#) (sequence labeling), that reaches an [accuracy of 92.6%](#) in the test set, by creating a dictionary of 400K words, using high dimensional (300d) word representations
- Trained a dependency parser to handle ambiguity issues with the use of greedy arc-algorithm, and [reducing time complexity from  \$O\(n^3\)\$  to  \$O\(N\)\$](#)  in contrast to using Eisner's algorithm
- Built a model for [coreference resolution](#), inspired by [Lee et al. \(2017\)](#), "[End-to-end Neural Coreference Resolution](#)", incorporated [word distance](#), [gender agreement](#), [number agreement](#) and [subject agreement](#) into the model's consideration

**Berkeley Economics Course Recommender** | [Ruby on Rails](#) + [Big Data](#) + [R](#) + [Stata](#) + [Pandas](#)

Built a web-app that enables Economics students to make data-driven course scheduling decisions.

- Utilizes [user-specific information](#) (previous classes, grades) to generate course suggestions based on the actions of [similar students](#), as well as offering course-specific advice
- Back-end uses [regression and clustering techniques](#) applied to student data of all UC Berkeley economics students from 1983 to 2016 ([700K+ data points](#))

**IMDB Movies Dataset Challenge** | [Python](#) + [Jupyter](#) + [TensorFlow](#) + [CNN](#) + [Word Embedding](#)

Built a [BERT-like Transformer model](#) with pre-trained [GloVe](#) word vectors, refined with [Bayes' Nets](#) and combined with a [Convolutional Neural Net](#) to predict movie ratings from given review with up to [96.4% accuracy](#) on the test set.

## Interests

**Human Languages:** Turkish, Mandarin Chinese, Italian, and (basic) Spanish

**Hobbies:** Chess, Swimming, Playing Piano, Reading, Salsa/Bachata Dancing, Learning Guitar