OZEL YILMAZEL

(617) 595-1030 | ozel@yilmazel.com | linkedin.com/in/ozelyilmazel | medium.com/@ozel_24136 |ozelyilmazel.com

EDUCATION

University of Massachusetts Amherst – College of Information and Computer Science. *May 2025*

- **B.S. in Computer Science – GPA: 4.0**
- **Related Coursework**: Algorithms, Artificial Intelligence (Python), Data Management (PostgreSQL), Machine Learning, Information Systems (PostgreSQL), Search Engines, Theory and Practice of Software Engineering, Applications of NLP.
- Conducted an independent study with Ethan Zuckerman on topic modeling YouTube.
- **Awards**: Dean's List all semesters, Phi Kappa Phi member, Outstanding UCA Award.

WORK EXPERIENCE

Research Fellow – DataCore – Center for Data Science at UMass Amherst September 2024-Present

- Engineered machine learning pipelines and conducted experiments for the SingFit Music Recommendation System.
- Developed a large-scale text classification and evaluation suite for Large Language Models.
- Designed and deployed a customizable GIS Annotation Application for the Buzzards Bay Water Quality Project.
- Overhauled the iNatator application with a new component library and Vite.

Research Fellow – iNaturalist – Data Science for the Common Good – UMass Amherst Summer 2024

- Developed iNatator, a web-based annotation tool designed to enhance GeoModels used by thousands on iNaturalist, contributing to the SINR research paper.
- Created an extension of SINR, a fine-tuning program leveraging annotation data gathered from iNatator to improve model accuracy.
- Proposed and implemented new loss functions to address emerging objectives and handle additional labels for more effective model training.
- Authored a report detailing challenges and recommendations for future research on GeoModels, focused on fine-tuning with new annotation data.
- Integrated a Postgres database for efficient management of saved annotations in the application
- Engineered front-end rendering optimizations significantly improving the application's overall performance.
- Contributed to the growth of open-source projects iNaturalist and SINR, reinforcing the broader research community.

Software Engineer & NLP Engineer – Sociail June 2023 – April 2024

- Developed backend services that managed API requests for LLM instances.
- Improved AI interaction experience on an existing SociailChat platform, seamlessly integrating it with the Sociail AI Engine, resulting in positive feedback from the mentors and managers.
- Collaborated with a five-member Agile team to build the SocialAI Engine, utilizing Python, FastAPI, Redis, PostgreSQL, Celery, and Docker.
- Designed and implemented context-size management solutions for LLM, leading to a significant reduction on operational costs.
- Built a semantic analysis model to classify user inputs and route them to the appropriate generative model, improving response accuracy.
- Developed a comprehensive testing suite in Postman, conducting functionality, load, and integration testing to ensure the API's robustness and reliability.

Undergraduate Course Assistant – UMass Amherst September 2022- May 2024

- Assisted in teaching and mentoring over 300 students in three key computer science courses: Introduction to Problem Solving (CS121), Computer System Principles (CS230), Web Programming (CS326)

- Provided personalized support through weekly office hours, helping students grasp complex topics in Java, C, and JavaScript, improving overall course performance.
- Led tutorial sessions and review classes, helping students enhance their coding skills and understand foundational computer science concepts.
- Collaborated closely with faculty, gathering and implementing feedback to continuously improve course material and teaching strategies ensuring they aligned with student learning outcomes.
- Recognized for outstanding dedication and impact on students by receiving the **Outstanding UCA Award in Computer Systems Principles.**

PROJECTS

Available: github.com/oz03-hub

StackbuildIO

- Developed StackbuildIO, an AI-powered tech-stack generator designed to assist users in selecting the right tools for their projects. Users can describe their projects via prompts, and the platform recommends a suitable tech stack, allowing them to save and share stacks with others.
- Architected and implemented the full-stack web application using the MEHN stack (MongoDB, Express.js, HTML, Node.js).
- Fine-tuned GPT-3.5 to better assist users, ensuring responses were accurate and returned in the correct JSON format.

CatGAN

- Developed CatGAN, a modified CycleGAN model in PyTorch, enabling domain translation of images between humans and cats. Each human-to-cat and cat-to-human transformation is uniquely generated using convolutional feature extraction, overcoming the original CycleGAN limitations in geometric transformations.
- Implemented the CycleGAN model to train unpaired image transformations, showcasing the ability to translate between human and cat images.
- Contributed to the research by demonstrating that geometric transformations are possible with architectural modifications and loss function prioritization.
- Delivered the project using Google Colab, optimizing resource usage for large-scale model training.

Twitter Bot Classification

- Developed models to classify human and bot accounts on Twitter using only textual data (username and tweet), exploring various approaches for semantic analysis, including shallow models, transformer ensembles, and few-shot learning with LLMs.
- Achieved the best results using transformer ensembles while using TwiBot-20 benchmark, providing a highly competitive approach to bot classification without relying on full metadata of accounts.
- Engineered semantic analysis solutions using shallow models such as Naïve Bayes, Logistic Regression, Decision Trees and Random Forests.
- Fine-tuned BERT and Twi-BERT to classify tweet data, combining these with a Random Forest model to create and ensemble classifier using logistic regression.
- Delivered the project on Google Colab, optimizing workflows for large-scale model training and evaluation.

SKILLS

- Languages, Frameworks and Libraries: Python, JavaScript, Java, C, SQL, HTML, PyTorch, TensorFlow, NLTK (Natural Language Toolkit), LaTeX, React, Node.js.
- Tools: GitHub, Postman, Docker, NoSQL, REST APIs, PostgreSQL, Google Colab, Google Cloud.

ACTIVITIES

- Machine Learning Club: Collaborating on machine learning projects with peers, focusing on applying and experimenting with cutting-edge models in real-world applications.
- Sailing Club: Participating in regattas and helped improve the school's team standing in college sailing competitions. Developed strategy and leadership skills.
- Electric Guitar: Performing and collaborating with musicians weekly, with a focus on improvisation and creativity inspired by Metallica.
- Motorized Bicycle: Engineered bicycles into motorcycles, refining technical skills and fostering innovation.

PUBLICATIONS

- Zhu A., Navarrete P., Pogorelov S., Yilmazel O., Partridge V. iNatator: Obtaining Expert Feedback on Species Ranges. *New England Computer Vision Workshop (NECV); November 2024; Yale University, New Haven.*