Yasemin Ozkut

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About Me

AI/ML enthusiast and MSc candidate, specializing in multimodal learning, vision-language models, and computer vision. Seeking a full-time internship for Autumn 2025 and full-time AI/ML roles upon graduation in December 2025.

Education

MSc **The Ohio State University (OSU)**, Electrical and Computer Engineering — Columbus, OH, USA
- **Focus:** Multimodal Learning, VLMs, Computer Vision — Aug 2024 – Expected Dec 2025

BSc **Sabanci University**, Computer Science and Engineering — Istanbul, Turkey
- **Minor:** Business Analytics, School of Management — Sept 2019 – Feb 2024

Skills

Languages: Python, C++, C, C#, SQL, JavaScript

Frameworks & Libraries: PyTorch, Pytorch Lightning, CUDA, YOLO, Keras-OCR, OpenCV, Unsloth, Hugging Face, Monai, Hydra, LangChain, LangGraph, Pandas, NumPy, Scikit-learn, React.js, Node.js, Express.js, MongoDB, Flutter

Tools: Git, SLURM, Command Line (Linux), LaTeX, Gephi, Postman, Unity, Figma

Techniques: Deep/Machine Learning, Multimodal Vision-Language Models (VLMs/LLMs), Distributed Training, Prompt Engineering & AI-Assisted Coding, Computer Vision, Object Detection, Segmentation, Image Processing, OOP

Publications

ERDES: A Benchmark Dataset for Retinal Detachment Classification in Spatiotemporal Ocular Ultrasound, *Nature Scientific Data* — Under preparation, July 2025

Pouyan Navard, ***Yasemin Ozkut***, Sirikar Adhikari, Alper Yilmaz

Experience

Photogrammetric Computer Vision Lab (PCVLab) — Aug 2023 – Sept 2023
Graduate Research Assistant — Columbus, OH
- Research on multi-modal learning, VLMs, and Computer Vision (see **Projects** section for details).

DAI-Labor — Jul 2023 – Sept 2023
Artificial Intelligence Researcher Intern — Berlin, Germany
- Built real-time object detection system for supermarket products (see **Projects** section for details).

Further Network — Jul – Aug 2022
Software Developer Intern — Istanbul, Turkey
- Enhanced Furtherpass (pandemic travel-planning React Native app) by adding a password visibility toggle and an email-confirmation workflow for registered but inactive new users.

Projects

ERDES Benchmark, PCVLab — Jun 2025 – Jul 2025
- Debugged and extended an existing Lightning-Hydra training pipeline adapted by a colleague, enabling stable distributed training and flexible experimentation.
- Generated stratified train/val/test splits for binary tasks: Normal vs. Retinal Detachment and Macula-Off vs. On.
- Tuned hyperparameters and trained 16 models across 8 architectures (ViT, UNETR, SwinUNETR, V-Net, UNet++, SENet154, 3D ResNet, and 3D UNet) to develop a two-stage diagnostic pipeline, achieving accuracy ranges of **0.937–0.991** (Normal vs. RD) and **0.725–0.882** (Macula status).

Semantic Person Re-Identification (ReID) via LangGraph and Vision-Language Reasoning, Personal Project Jul 2025

- Built a LangGraph workflow for person detection, cropping, description generation, matching, and ID assignment.
- Integrated YOLOv8 detector within LangGraph to crop person bounding boxes from each frame.
- Crafted structured JSON prompts for Qwen2.5-VL-3B-Instruct to extract rich semantic attributes (hair, clothing, face shape, accessories, etc.) from person crops.
- Built a persistent memory of {`global_id`, `description`} pairs for all recognized and newly added identities.
- Implemented an LLM matcher node using Qwen2.5-7B-Instruct to compare new descriptions with memory and assign matches or new IDs.
- Logged detailed outputs for each match, including description, current memory, confidence, and reasoning, to support explainability and debugging.

Multimodal Learning for Chest X-Ray Interpretation, PCVLab Aug 2024 – Present

- Curated and preprocessed MIMIC-CXR from 377K images / 228K studies to 100K images / 50K studies, pairing frontal–lateral views with structured findings and impressions.
- Built and fine-tuned a multi-modal chest X-ray VLM (ViT encoder + GPT/LLaMA 3.2 via Unsloth) for joint image–report understanding and automated report generation.
- Built custom single-/dual-view dataset classes and implemented masked patching to boost visual feature learning.
- Scaled multi-GPU training on HPC clusters using Hugging Face Accelerate, CUDA, and SLURM.

Live Object Detection for German Market Products, DAI-Labor Jul 2023 – Sept 2023

- Conducted a comprehensive literature review to identify the best product recognition model.
- Collected and annotated **1,235** product images, expanded to **3,503** with augmentations in Freiburg Groceries Dataset using Roboflow.
- Developed a live web-camera object-detection model with Python and YOLOv8, achieving **87.2%** accuracy in identifying custom German supermarket products, with plans to guide users to the correct storage location.
- Integrated an OCR algorithm (Keras-OCR) with word slicing for German-labeled products.
- Evaluated model performance using confusion matrices, F1 scores, and loss graphs for comparison.

Serious Game for Children with Cerebral Palsy , Sabanci University Feb 2023 – Feb 2024

- Developed a serious game in Unity using C# for balance physiotherapy sessions in children with Cerebral Palsy.
- Collected live data from Wii Balance Board for each game session and stored it into MongoDB.
- Generated visual reports from the processed data using Python and Flask.

Spotify Music Artist Success Collaboration Network, Sabanci University Feb 2023 – June 2023

- Manually extracted and preprocessed artist, collaboration, and song data from Spotify and Kaggle.
- Built a collaboration network in Python using Networkx with 8624 artists (nodes) and 13318 connections (edges) incorporating genre, popularity, followers, and centrality metrics.
- Applied clustering and centrality algorithms to identify key influencers and measure success within the network.
- Visualized the network with Gephi and analyzed the network using Python visualization tools.

Agile Full Stack Software Development Project, Sabanci University Oct 2022 – Jan 2023

- Implemented a full stack web application including statistics, data for visualization, better referee assignments, and better GUI design for Turkish Football Federation using MongoDB, Express.JS, React.JS, Node.JS (MERN Stack).
- Gained hands-on experience with version control, scrum meetings, sprint management, deployment, and full stack web development from scratch, while improving teamwork skills.
- Conducted automated testing with Selenium, API documentation with Swagger, and web scraping.

Membership & Volunteer Work

Hiphop Dancer (2015–Present); **Board Member**, SuDance Club, Sabancı University (2019–2023); **Contestant**, Peak Games Unithon (2022); **Tutor**, Civic Involvement Project – 4th-grade students (2020)