HECTOR BJERNERSJÖ

AI DEVELOPER

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PROGRAMMING LANGUAGES

- Python
- C#
- HTML
- CSS
- Javascript
- PHP

PLATFORMS AND TOOLS

- Tensorflow
- Numpy
- YOLO
- Asp .NET
- Azure
- React
- Flask
- Entity Framew.
- Signal-R

OTHER SKILLS

- Fluent in Swedish and English
- Strong in math
- Loves problem solving
- Proficient in Linux

PROFILE

Full-stack developer with a high school diploma from the technical program with an AI focus at Tullängsgymnasiet, where I received a scholarship for top grades. I am seeking a position in software development, preferably with a focus on AI. My primary experience lies in Python and C#, but I have also worked on projects in several other programming languages and always enjoy learning new technologies. I have programmed extensively in my free time, both as a hobby and for client projects. I am especially passionate about AI, whether that is developing with LLMs or Machine learning.

PROJECTS

AI product researcher — 2024

- Web app that helps users find and evaluate product using AI agents.
- Technologies: C# - DotNet, Entity framework, Gpt-4 api, Docker, Azure web apps, Azure SQL server, DotNet identity, Signal-R, Selenium browser for the agents to control, HTML, CSS and JavaScript.

LLM RAG Chat — 2024

- Web app that lets you chat with AI about the content of a group of websites using rag-search and vector databases.
- Technologies: Python, Flask, React native, OpenAI and Anthropic api, Faiss vector database, Azure web apps.

AI Volleyball game tracker (Currently working on) — 2024

- A program that uses object-detection models together with custom trained ML embedding models to identify and track the players and ball in a video of a volleyball game and eventually generate statistics.
- Technologies: Python, Tensorflow, YOLO, opencv

Game Development — 2016-2020

- Developed mobile games that collectively gained over 60,000 downloads
- Technologies: C#, Unity3D, Android/IOS

Other machine learning development — 2021-2024

- Experimented with lots of other machine learning projects, including object detection, image classification, prediction of stock prices and neural network model implementation from scratch including gradient descent
- Technologies: Python, Tensorflow, PyTorch, YOLO, Pandas, Numpy, Matplotlib

AI video generator 2023

- An app that automatically downloads Reddit posts, reads them with OpenAI text-to-speech, generates a video and thumbnail, and uploads it to YouTube.
- Technologies: Python, FFmpeg, Openai text-to-speech och GPT-4 API, YouTube API

GPT Coding assistant 2024

- Developed an application that allows an AI agent to write, run, and test code using the GPT-4 and Claude (Anthropic) API.

You can read more about the projects: AI product researcher, LLM RAG Chat and AI volleyball game tracker on my blog: https://blog.firefrogstudio.se. There you can also find links to try out some of them.

WORK EXPERIENCE

Fire Frog Studio (https://firefrogstudio.se) 2020 - Now
Entrepreneur

- Ran my own web agency, where I developed and maintained websites from scratch for clients.
- Managed projects from start to finish, including sales, client communication, design, development, and maintenance.
- Maintained strong relationships with satisfied clients, leading to recurring assignments and positive feedback.

Fiverr, (https://fiverr.com/hectorwp) 2020 - Now
Freelancer

- Developed and maintained websites in WordPress and WooCommerce.
- Helped clients streamline their work with Python scripts and Excel-based data analysis.
- Consistently high reviews from clients for my commitment and quality of delivery.

EDUCATION

Tullängsgymnasiet, Technical program with AI focus 2021 - 2024

- High school education focused on algorithms, problem-solving, and AI.
- SEB scholarship for top grades.

Courses

- Supervised Machine Learning: Regression and Classification - 3-week Coursera course by Andrew Ng.
- Advanced Learning Algorithms - 4-week Coursera course by Andrew Ng.

OTHER

- Competed in Robot-SM 2024.
- Proficient in Linux - have used it as my primary operating system for over six months.
- Interested in security/hacking, learned about common vulnerabilities on TryHackMe and HackTheBox.
- Finished the high school technical program math courses 1, 2 and 3c in graduate school with max grades

REFERENCE

Fredrik Ekblad

Teacher and mentor at Tullängsgymnasiet

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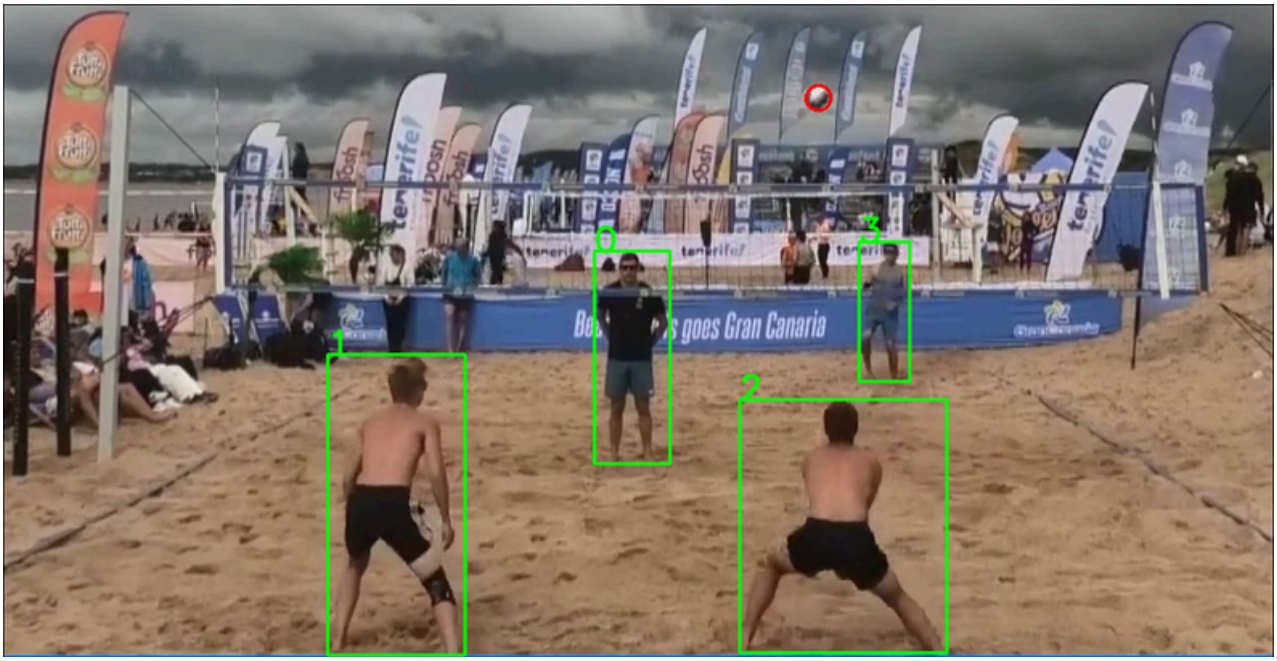
APPENDIX - MY AI VOLLEYBALL PROJECT

Since this is the project I'm currently working on I thought I'd share a little about it here. I'm currently building an AI application that will generate statistics on how you performed in your beach volleyball game based on just a video. Here's how it works and where I am so far:

First, the program uses YOLO to detect all the people in each frame of the video. For each detection, it generates an embedding using a custom TensorFlow model I've trained. This embedding is designed to capture recognizable characteristics like body shape, hair color, and clothing, allowing the program to identify the same player across different frames.



Thats me in the bottom left playing beachvolley SM :)

The model uses a modified version of the MobileNet architecture, trained on a large number of images of a specific set of people. By removing the classification layer, the model is transformed into an embedding model, which outputs embeddings that represent features rather than specific classifications, making it capable of identifying any person (not just the ones used in training). While training the model I also used data augmentation techniques like brightness adjustment, rotation and zoom to artificially expand my training set size.

Once the embeddings are generated, they are added to a vector database representing each player. To determine which detection corresponds to which player, I implemented an algorithm that compares each detection's position and embedding to the players previous embeddings and positions.

To detect the ball I initially used YOLO's pretrained model for "sports balls", but it only detected the ball in a fraction of the frames. Luckily it was quite easy to fine-tune the YOLO model on a custom dataset. I started off by having the pretrained model generate data for me. Something that actually worked better than expected. However, this only gave some more data and mostly for the frames where it was easier to find the ball. So, I supplemented this data with some open source datasets and also manually labeled some data which significantly improved performance.