Tjeerd Bakker

Electrical Engineer & Software Developer

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Interests: IOT, ML/AI, Embedded, Web

Education

University of Twente — **2019 - now**

Bachelor Electrical Engineering

Marnix College — **2012 - 2018**

Bilingual Pre-University Education (Tweetalig VWO)

Experience

Extendas BV — **2020 - now**

Fullstack Developer and Residential Electrical Engineer

- Frontend and backend developer on a large monitoring system for devices at gas stations
- Creating a simulator for electric vehicles to test internal systems
- Creating a car-wash controller, including reverse engineering communication protocols

ZT-Systems Almelo — **2018**

Quality Control Engineer

- Testing and repairing of newly built serverracks

Skills

Programming

Frontend: EmberJS, VueJS, TailwindCSS, Typescript, HTML/CSS/JS

Python: Backend (FastAPI), AI/ML (Tensorflow), Computing (MatPlotLib), Several DB interfaces

Misc: C/C++, Flutter, MatLab, MicroPython, Bash, Linux in general, Assembly, Arduino

Tools

Software: Git, GitHub, Docker & Docker-compose, VSCode, LTSpice, Fusion360

Network: Deployment on Google Cloud Platform, I also run a dedicated Linux server

Looking good so far? Check out the other side of this page for some of my personal projects!

Personal Projects

These are my largest projects; I have dozens of smaller (but awesome) projects that don't fit here, I would love to further explain some projects in real life!

Home automation system (300+ hours)

Complete home automation system from scratch that runs disconnected from the internet. Includes a backend server that allows for total automation, frontend (to be displayed on a tablet) and many custom devices (switches, digital radiator valves, humidifiers, plant watering pumps, temperature and humidity sensors). Primarily written in Python, MicroPython and VueJS. Includes custom circuits for some devices. I wrote this when HomeAssist was focussed on more expensive devices and I managed to cut the costs of a completely automated home by ~80%.

Pianotes (~150 hours)

Tool to learn sightreading (play the piano by directly reading notes from sheet music). Basically a mix of Synthesia, Piano Tiles and Sheet music. Randomly generated notes would appear in the screen and need to be 'played away' by pressing the corrosponding piano keys. Includes support for both MIDI and audio (I wrote a real-time pitch detection AI). Written in Python with Pygame and Tensorflow.

Bierlijst (~80 hours)

A digital tool for student houses to keep track of how much beer everyone has so that the beer can be stored in a single fridge. I focussed on security, expandability (thousands of users should be able to use it simultaneously), and responsive web design. Written in Python with FastAPI and EmberJS.

Stock and Crypto tracker, Dashboard (~40 hours)

Actually 3 projects. 1) Loads a transaction CSV of a DeGiro User and calculates the portfolio value for every day since first purchase. 2) Uses the BitVavo API to keep track of cryptocurrency portfolio value over time. 3) A dashboard to display both portfolios as well as the time, date, and weather predictions. Written in Python and VueJS with Vuetify.

PerscoBingo (~20 hours)

A website to play randomly generated bingo cards during 'Persconferenties' in Covid pandemic. At its peak it had ~1800 simultaneous players. Written in VueJS with a tiny Python backend to track user statistics.

Dedicated Linux Server (Running since 2019)

I refurbished an old PC to act as a personal Linux server. I use it to deploy projects (cheaper than GCP or AWS), as a VPN server, PiHole to block ads on my network, bitwarden for password management, and to host game servers for some friends.