Tjeerd Bakker

Electrical Engineer & Software Developer

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Interests: IOT, Electronics, Automation, Robotics, ML/AI, Embedded

A resume should speak for itself but this special occasion warrants a quick introduction. Electrical Engineering at UTwente is tough and fairly unpredictible in terms of time consumption. This makes it difficult to be a reliable member for student teams or other fun extracuricular pastimes. Since I still want to make cool tech I decided to realize a bunch of passion projects. From a massive home-automation system to an app to learn reading sheetmusic as fast as possible, every waking moment that I am not busy with university, friends or family I spent working on personal projects. I also turned my hobby of electronics and software development into a very flexible part-time job for when I do not have much inspiration for my own projects by starting my own business and providing custom technology to solve client's problems.

As you can see, sitting still is a skill I have yet to learn!

Education

University of Twente — **2019 - present**

Bachelor Electrical Engineering

Marnix College — **2012 - 2018**

Bilingual Pre-University Education (Tweetalig VWO)

Volunteer work

Electrical Engineering promotor at UTwente — **2019 - present**

- Visiting high schools to give presentations about Electrical Engineering to prospective university students
- Representative at open days for Electrical Engineering
- Speaker at EE matching days to inform students about the more technical aspects of the study

Panel member for EE program accreditation — **2020**

- I was part of the panel of students that was interviewed by an accreditation institute to verify the quality of education at the University of Twente (the university passed the accreditation with flying colors!)

Active member of European Youth Parliament

2015 - 2018

Even though this was during high school, it is still something I am very proud of

- Travel around Europe to debate about political, technical and social issues on European scale in many different EU countries.
- Chairperson of multiple technical committees in Norway, Ireland, and France. Carrying responsibility for a group of young adults to present a clear solution to a plethora of global problems.
- Vice president of an EYP session in Romania

Experience

Extendas BV, Enschede

2020 - present

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 server racks for data centers

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

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

Personal Projects

These are my largest projects; I have dozens of smaller projects that do not fit here but I would love to discuss 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 focused 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 focused 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 the COVID-19 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.