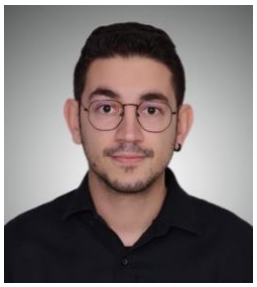
Ali Cem Çatal



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PERSONAL INFORMATION

I'm completed my BSc. & MSc. in civil engineering in Middle East Technical University (METU). I am continuing my research in PhD. studies in METU Civil Engineering Water Resources Department. I'm highly skilled in numerical weather prediction, programming, data analysis and machine learning, web development and cross-platform mobile application development.

EDUCATION

2025 – 2028 **Civil Engineering – Water Resources Laboratory**
Middle East Technical University
Doctorate 4.00 / 4.00

2022 – 2024 **Civil Engineering – Water Resources Laboratory**
Middle East Technical University
Master's 3.71 / 4.00

2015 – 2020 **Civil Engineering**
Middle East Technical University
Major 3.17 / 4.00

2018 – 2021 **Environmental Engineering**
Middle East Technical University
Double Major 3.29 / 4.00

EXPERIENCES

August 2021 – … (Full – Time) **NWP Specialist & Data Analyst and Machine Learning Scientist & Web and Mobile App Developer at Hidromod**
Currently working at Hidromod Company at METU Teknokent

- Building & running numerical weather prediction models.
- Creating & maintaining databases
- Analyzing meteorological data & applying ML algorithms
- Building websites, mobile applications and web APIs
- Configuring operationally working systems

September 2020 – June 2021 (Part – Time) **Teaching Assistant at METU**

- CE461 - Computer Applications in Foundation Engineering
- CE4009 - Special Studies: Estimation and Analysis of Spatio-Temporal Hydrometeorological Data

October 2019 – September 2020 (Part – Time) **Undergraduate Assistant at METU**
Civil Engineering IT Department

- I worked as a junior developer in IT department.

PROFESSIONAL PORTFOLIO

- **Climate Modeling & Numerical Weather Prediction**

- I am using WRF as an NWP model especially for **climate modeling** and **short-term weather forecasting**. I have proficiency in building and running **WRF NWP model and** analyzing its outputs. I have built and run the WRF model by using GNU (gcc), PGI (nvidia-nvcc), and Intel (icc&icx) compilers numerous times. I have experience with **Slurm** and **PBS** based High Performance Computing (HPC) systems. I have run WRF models using **Tübitak TRUBA HPC** with over two million core-hour usage. I have carried out excessive benchmark tests **Karolina HPC for EuroHPC**. Also, I built an operationally working system for real-world usage. I designed an API to use the database and make the data available to customers. Also, I built a mobile app for weather forecasting in Türkiye which also uses the NWP outputs.

- **Web Development**

- I built a website for Hidromod Company. I built this project as a **NodeJS** app using **EJS**, besides **HTML**, **CSS**, and **JavaScript**, to ease the possible changes in the future. A professional-looking **UI design** and user-friendly **UX Design** principles are applied to catch the customers' attention.

- I built an API page for the same company to commercialize their products securely. I build a **serverless API** using **Google App Engine (GAE)**. I used **Python** with **Flask** to render HTML, CSS, and JavaScript files on GAE. I used **R programming** to read the data files and execute the company's code. I built a custom Ubuntu image using **Docker** and pushed it to GAE. The outputs of the NWP model can be accessed via this API. Users can get their data with their unique API keys.

- I built my personal website to use it as an online resume. I used HTML, CSS, and AosJS package to have a responsive website with minimal effort.

- **Mobile App Development**

- I developed "HavaTahmin" application for Android, iOS and MacOS devices using **Flutter** and **Dart** languages for Hidromod. I developed a system for regularly analyzing satellite data with WRF numerical weather prediction model and transferring high-resolution outputs to the database I created on the cloud. I **optimized** the code so that **this large data can be processed quickly** and transferred to the application with the shortest possible app-launch time. I have prepared the application to process the relevant data in the database quickly and present hourly weather forecasts all over Turkey with a good UX and a clear UI.

- I built "Smart Assistant" app for both iOS and Android devices and published it on both Play Store and App Store. This app requires paid **subscription** via Google Pay or Apple Pay (monthly or annually). I have implemented Apple, Google, Facebook, and email **authentication** for login. I used different APIs to get data and limit their usage to prevent bottleneck. All the data associated with the user is **encrypted** and stored in **Firebase Cloud Firestore** and shared across the user's devices.

- My first project, "Blocks" game, can be downloaded from Play Store and App Store. This project involves **advertisement implementation**.

- **Data Analysis and Machine Learning**

- I analyze the remote sensing **(GFS, CFS, IFS, ERA5, MODIS)** data by preprocessing, applying **dimension reduction** building various regression and classification **machine learning models**, finetuning the models, and decide the suitable models. Then use this model to improve the quality of the final product. I have also utilized the **Explainable Artificial Intelligence (XAI)** models to understand the behavior and decision making behind the models.

CERTIFICATES

Specialization	Certificate Name	Date	Hours
Programming	The Complete 2020 Web Development Bootcamp *	Apr, 2020	54
	Machine Learning A-Z: Hands-On Python & R In Data Science *	Oct, 2021	45
	The Complete C# Masterclass *	Mar, 2021	34
	The Complete 2020 Flutter Development Bootcamp with Dart *	Aug, 2020	28
	Getting Started with Python *	Oct, 2020	19
	The Complete App Design Course - UX, UI and Design Thinking *	Apr, 2020	3
GIS, Mapping, and Spatial Analysis Specialization*	Introduction to GIS Mapping *	May 2021	14
	GIS Data Acquisition and Map Design *	May 2021	20
	Spatial Analysis and Satellite Imagery in a GIS *	Jun, 2021	14
	GIS, Mapping, and Spatial Analysis Capstone *	Jun, 2021	11

- Certificates can be found by the * hyperlinks.

COMPUTER SKILLS

Windows	★★★★★	MATLAB	★★★★☆	Shell Script	★★★★★
Ubuntu	★★★★★	HTML	★★★★★	NoSQL	★★★★☆
MacOS	★★★★★	CSS	★★★★★	SQL	★★★☆☆
Python	★★★★★	JavaScript	★★★★★	ArcGIS	★★★☆☆
R	★★★★★	jQuery	★★★★★	C++	★★★☆☆
Flutter	★★★★★	NodeJS	★★★★★	C#	★★★☆☆
Dart	★★★★★	ReactJS	★★★☆☆	Unity	★★★☆☆

INTERPERSONAL SKILLS

- In Hidromod company, I have a hybrid working style. Since I have **strong time management skills**, I am free to work remotely. Depending on the type of the task, I work from home alone or work in the office **as a team**.

- I am a Wing Chun self-defense instructor. For 6 years, I have given self-defense training with both personal and group lessons. Therefore, I was able to develop **strong leadership and communication skills.**

HONORS & AWARDS

- 5th Science Festival – 1st Place in Environmental Branch
- Honor Student in Civil Engineering & Environmental Engineering

LANGUAGES

Turkish	Reading: 5/5	Speaking: 5/5	Writing: 5/5
English	Reading: 5/5	Speaking: 4/5	Writing: 5/5

SOCIAL ACTIVITIES

2022 - Still	Tennis
2012 - 2022	WingTsun Martial Art
2013 - 2017	Kali - Escrima Martial Art
2017 - 2018	METU Archeology Society