

# ANIL CELIK MARAL

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## Education

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### Technical University of Munich

Master of Science - MS, Informatics: Games Engineering

April 2022 – March 2025

2.065 / 5

### University of California, Santa Cruz

Bachelor of Science - BS, Robotics Engineering

June 2015 – June 2019

1.3 / 5

## Experience

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### C++ Developer

Dassault Systemes

April 2024 – Present

Munich, Germany - Hybrid

- Working in the 3D Preparation Operators team that develops the xOptimizePro / DataPrep operations for the **3DEXPERIENCE** app using C++.

### Game Developer

Peanut Entertainment

May 2022 – Jan 2024

Ankara, Turkey - Remote

- Developing games using **Unity**, **Unreal Engine** and **Blender**.

### Robotics Engineer

ERISIM A.S.

Jan 2020 – Apr 2022

Ankara, Turkey - On Site

- Drew and designed the **P & ID / flow diagrams** for **gypsum production, gypsum based dry-mix production and plasterboard production plants**. This process included analyzing the input material with regards to its chemical composition, keeping in mind the desires of the customer and necessities of the project.
- Wrote programs for the **PLC automation systems** used in gypsum production, gypsum based dry-mix production and plasterboard production plants.

### Embedded Systems Engineer Intern

Archer Components

Sep 2019 – Dec 2019

San Francisco Bay Area - On Site

- Developed automation solutions using **IoT**.
- Utilizing **AWS**, **Arduino**, **ZigBee**, **C** and various other microcontrollers and programming languages.

### Mechanical Test Engineer Intern

ERISIM A.S.

Jun 2018 - Sep 2018

Ankara, Turkey - On Site

- Tested various types of machinery designed by mechanical engineers using standard and nonstandard mechanical tests.
- Used data acquisition software/hardware to prepare reports of tested machinery.
- Helped in the CAD design (**SolidWorks**) and manufacturing of various test fixtures.
- Operated power and light duty machine tools.

### PLC Programmer Intern

Epromak

Jun 2017 - Sep 2017

Ankara, Turkey - On Site

- Wrote programs for the **PLC automation systems** used in gypsum and dry-mixing plants mostly for **SIEMENS S7-300 PLCs**.
- Tested the programs.
- Documented and organized the programs to be ready to be commissioned on site.

### Undergraduate Researcher

University of California, Santa Cruz

Nov 2015 - Jul 2017

Santa Cruz, California - On Site

- Worked under computer engineering professor Mircea Teodorescu and **modeled** the **tensegrity robots** and sketched them in **AutoCAD Inventor**.
- Did **stress analysis/simulation** of the tensegrity robots using **NASA Tensegrity Robotics Toolkit (NTRT)**.
- Built the prototypes of the tensegrity robots by **3D printing/prototyping** for testing purposes.

## Projects

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### Differentiable Finite Volume Method

- In my master's thesis, I worked on **computational fluid dynamics (CFD)** simulations using the **finite volume method (FVM)**. I developed and coded the **finite volume method (FVM)** solutions for  $\Phi_{Flow}$ , a differentiable PDE solving framework for machine learning, and then published my results.

### Chaos Coaster Video Game

- Developed an 3D FPS in **Unity**. Models were designed in **Blender**. The enemies were trained using machine learning using **Unity's ML-Agents**.

### Stellaris Mod - The Veiled Cluster

- Developed a mod to play in an extra-galactic cluster. The mod comes with story driven events and an additional species trait.

### Implementation of the KinectFusion 2011 by Richard A. Newcombe et al Research Paper

- Implemented the 2011 research paper titled KinectFusion: Real-Time Dense Surface Mapping and Tracking by Richard A. Newcombe et al. using **C++**, **OpenCV** and **CUDA**. Additionally, utilized **Eigen3** and **FreeImage 3 C++** libraries.

### The Custodian Video Game

- Developed a card based, continuous timed 2D action RPG in **Unity**.

### DeepMap Autonomous Mobile Robot Project

- Volunteered in DeepMap's autonomous mobile robot project.
- Coded in **C++** and **Python** to interact with DeepMap's maps and sensor rig, that consists of a **GPS**, a **LIDAR**, an **IMU unit** and two **stereo cameras**, to autonomously drive the DeepMap autonomous mobile robot.
- Integrated ROS, DeepMap's API and our own code, to have the ability to navigate on roads and simulated our robot in Gazebo ROS before deployment.
- **Designed** the robot using **SolidWorks** and doing **statics** and **kinematics** calculations.

## Skills

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**Unity:** 2 Years of Experience

**Unreal Engine:** 2 Years of Experience

**Blender:** 2 Years of Experience

**C++:** 8 Years of Experience

**C#:** 2 Years of Experience

**C:** 9 Years of Experience

**Python:** 9 Years of Experience

**Java:** 9 Years of Experience

**MIPS Assembly:** 9 Years of Experience

**Verilog:** 8 Years of Experience

**PLC Ladder Logic:** 8 Years of Experience

**Matlab:** 9 Years of Experience

**AutoCAD:** 7 Years of Experience

**Autodesk Inventor:** 9 Years of Experience

**SolidWorks:** 6 Years of Experience

**Robot Operating System (ROS):** 6 Years of Experience

**Gazebo ROS:** 6 Years of Experience

**OpenCV:** 6 Years of Experience

**CUDA:** 2 Years of Experience

## Languages

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**English:** Native or Bilingual Proficiency

**Turkish:** Native or Bilingual Proficiency

**German:** Elementary proficiency

## Courses

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### **3D Scanning & Motion Capture**

IN2354, Technical University of Munich

### **3D User Interfaces**

IN2111, Technical University of Munich

### **Additional Advanced Practical Course, Computer Games Laboratory**

IN2257, Technical University of Munich

### **Advanced Practical Course, Computer Games Laboratory**

IN2106, Technical University of Munich

### **Advanced Programming**

CMPS 109, University of California, Santa Cruz

### **Advanced Seminar Course, Master Seminar - Recent Highlights in Computer Graphics and Visualization**

IN2107, Technical University of Munich

### **Algorithms and Abstract Data Types**

CMPS 101, University of California, Santa Cruz

### **Applied Discrete Mathematics**

CMPE 16, University of California, Santa Cruz

### **Augmented Reality**

IN2018, Technical University of Munich

### **Basic Mathematical Methods for Imaging and Visualization**

IN2124, Technical University of Munich

### **Calculus for Science, Engineering, and Mathematics**

MATH 19A, University of California, Santa Cruz

### **Calculus for Science, Engineering, and Mathematics**

MATH 19B, University of California, Santa Cruz

### **Computer Systems and Assembly Language**

CMPE 12, University of California, Santa Cruz

### **Computer Systems and C Programming**

CMPE 13, University of California, Santa Cruz

### **Concepts of C++ Programming**

IN2377, Technical University of Munich

### **Database Systems on Modern CPU Architectures**

IN2118, Technical University of Munich

### **Distributed Systems**

IN2259, Technical University of Munich

### **Feedback Control Systems**

CMPE 141, University of California, Santa Cruz

### **Fundamentals of Robot Kinematics and Dynamics**

CMPE 10, University of California, Santa Cruz

### **Game Engine Design**

IN0038, Technical University of Munich

### **Game Physics**

IN0037, Technical University of Munich

### **Geometry Processing**

IN2297, Technical University of Munich

### **Image Synthesis**

IN2015, Technical University of Munich

**Individual Study or Research**

CMPE 198F, University of California, Santa Cruz

**Introduction to Data Structures**

CMPS 12B, University of California, Santa Cruz

**Introduction to Electronic Circuits**

EE 101, University of California, Santa Cruz

**Introduction to European Visual Culture**

HAVC 30, University of California, Santa Cruz

**Introduction to Mechatronics**

CMPE 118, University of California, Santa Cruz

**Introduction to Physics I**

PHYS 5A, University of California, Santa Cruz

**Introduction to Physics III**

PHYS 5C, University of California, Santa Cruz

**Introduction to Physics III**

PHYS 5C, University of California, Santa Cruz

**Introduction to Statics, Dynamics, and Biomechanics**

CMPE 9, University of California, Santa Cruz

**Introductory Macroeconomics: Aggregate Economic Activity**

ECON 2, University of California, Santa Cruz

**Linear Algebra**

MATH 21, University of California, Santa Cruz

**Logic Design**

CMPE 100, University of California, Santa Cruz

**Mathematical Methods for Engineers II - Differential Equations**

AMS 20, University of California, Santa Cruz

**Microprocessor System Design**

CMPE 121, University of California, Santa Cruz

**Models of Robotic Manipulation**

CMPE 215, University of California, Santa Cruz

**Probability and Statistics for Engineers - Introduction to Probability**

CMPE 107, University of California, Santa Cruz

**Requirements Engineering**

IN2394, Technical University of Munich

**Robot Automation: Intelligence through Feedback Control**

CMPE 8, University of California, Santa Cruz

**Robot Motion Planning**

IN2138, Technical University of Munich

**Senior Design Project I**

CMPE 129A, University of California, Santa Cruz

**Senior Design Project II**

CMPE 129B, University of California, Santa Cruz

**Sensing and Sensor Technologies (Sensor Design)**

CMPE 167, University of California, Santa Cruz

**Signals and Systems**

EE 103, University of California, Santa Cruz

**Technical Writing for Computer Engineers**

CMPE 185, University of California, Santa Cruz

## **Virtual Reality**

IN5701, Technical University of Munich

## **Visual Data Analytics**

IN2026, Technical University of Munich

## **Organizations**

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### **Tau Beta Pi, The Engineering Honor Society**

*Member*

May 2018 - Present