Marco Ulise Tighiliu

ENGINEER & MAKER

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I use the best tool for the job, if the best tool for the task at hand is not already in my toolset, I learn it while actively pursuing the task.

Personal Profile

age 23

A heartfelt engineer who strives to gain a full understanding of systems. I believe that the more you learn, the more you realize how much you don't know. I relish working in Software development and Mechatronics engineering, always juggling between Full-Stack Development, 3D object design and manufacturing, and Robotics.

Skills

Programming	C++, JavaScript, TypeScript, Python, Java, SQL, HTML, CSS.
Technologies	Node.js, bun.js, Tensorflow, OpenCV, Angular, Spring, Hibernate, Unity Game Engine with C#, Web-Sockets, Multi-Threading, Computer Vision, Git, Linux, AWS, Google cloud, Bluetooth, Solidworks, Onshape, 3D printing, Robotic Systems Maintenance Repair & Troubleshooting (Specializing in 3D Printers), Machining, Soldering, Welding, LaTeX, Markdown.
Critical Soft Skills	Pathfinder, Machine Learning, Robotics System Design, Cooperation & Peer Value Understanding, Dynamic Perspective Shifter. Fast Learner, Strong Problem Solving, Self-driven, Logical reasoning, Compassionate Team Player, Conflict management.

Latest Experiences and Education

3Dinbox

Bucharest, RO

3D Printing Technician

Full-time since November 2024

- Independently led the technical direction of the company, serving as the primary authority on all aspects of **3D printing**, including **client consulting**, **3D printing services**, **3D printer maintenance**, and professional **technical consultation and training** on additive manufacturing methods and machines.
- Managed end-to-end **3D printing projects**, from **prototyping** to **production**, across industries such as **aesthetics**, **robotics**, and **functional manufacturing**.
- Designed and edited **3D models**, working with both **CAD-based parametric models** and **organic sculpted models** to fulfill client specifications and ensure optimal printability.
- Worked with a variety of **3D printers**, including **desktop FDM**, **industrial FDM**, and **large-volume 3D printers**, like **Raise3D Pro3**, **Zaxe Z3S**, **Snapmaker J1S**, **Tractus T2000**, **Bambu Lab (all models)**, **Creality**, and **FlSun**.
- Processed and optimized prints using a wide range of **materials**, including **PLA**, **PETG**, **ABS**, **TPU**, **Nylon**, **Polycarbonate**, **Carbon-fiber**, **Glass-fiber composites**, **Marble**, **Wood**, and other **specialized composites**.
- Specialized in **multi-material 3D printing**, including:
  - **ASA + ABS-GF**: Optimized for high-strength, weather-resistant parts.
  - **PETG + TPU**: Combined rigid and flexible materials in a single print for advanced functional applications.
  - **Mechanically bonded multi-materials**: Worked with material combinations that do not adhere chemically but instead interlock through **mechanical adhesion** techniques.
- Provided **technical consultations** to clients, ensuring the best printing solutions for both **single-unit prototypes** and **large-scale production runs**.
- Serviced and repaired **customer 3D printers**, troubleshooting hardware and software issues to restore full functionality.
- Developed **custom scripts** for generating **custom dynamic G-code**, enabling advanced **Z-axis movement** beyond traditional layer-by-layer constraints, allowing for continuous and adaptive height changes during printing.
- Advised clients on integrating **3D printing** into various domains, guiding them in selecting the right **machines** and optimizing their **printing processes** from **project initiation** to **completion**. Also took over **manufacturing processes** when needed to help clients achieve their **end goals**.
- Oversaw **printer maintenance**, **calibration**, and **upgrades** to ensure consistent **production quality** and **efficiency**.

Fontys School of Applied Sciences

Eindhoven, NL

Bachelor in Mechatronics

Since 2021

- **Fontys Simulated Industrial Manufacturing**, a 3-quarter project featuring a Robotic Arm vehicle able to displace objects. We designed and manufactured a **3D printed** Inverse-**Kinematics Robot Arm** with free 360°+ rotation, commanded via **Bluetooth**.
  Presented the project to a medium audience, showcasing my **presenting** skills by utilizing human movement as an easy to grasp example of inverse-Kinematics.
  Followed the industry-proven **V-model Systems Development Life-cycle**.
  Employed **computer vision** and **OCR** technologies to identify the payload landing zone.
- **Human Detection model**, part of a bigger project, Industrial Automated Cleaning Robot, in collaboration with a respected local firm. A Machine learning model that detects people in frame using a live-feed camera, developed & implemented on a official **NVIDIA** development board. Learned to work with **machine learning** models on the **GPU** using official **PyTorch CUDA Drivers**.
- **Relevant modules:** Calculus, CAD, Robotics System Design, IoT, AI, Machining, Electrical Engineering.

Passion Projects

GitHub

Lemon2311

- **MicroAPIgRESTion**, a library designed for easy **HTTP** route handling on **microcontrollers** with less than **21kB memory** available. Useful for creating asynchronous **REST APIs** and **serving websites**, enables microcontrollers to make their resources accessible to other devices efficiently.
- **IoTFleet.js**, easy-to-use solution for **robotics applications** in which multiple devices need to communicate seamlessly **over-air** with **non-blocking IO**.
- **ZestOnScreenCapturer.py**, a high-frame-rate application frame capture solution designed to capture **live video feed** from applications in Python at **60 fps**. This **exceeds** the **25** frames per second offered by **OpenCV**. Initially developed for smooth video game feed acquisition for **AI model** gameplay implementation and training.
- **RewindMaze**, a game I made for the **Brackeys game jam** with the theme rewind featuring **randomly generated mazes**, and the ability to rewind time. Featured on **Google Play** till the 16th of March 2024.

Other Experiences

Rainbow Bucharest *Bucharest, RO*

Back-End Developer, Mechanical Designer *Freelance projects in 2023*

- Recovery of potential clients from newsletter subscription failure.
- **IMAP Javascript** bot to **Asynchronously** scrape client data from automated newsletter subscription notifications.
- Worked alongside lead of marketing and CEO to solve the issue.
- Designed custom replacement parts not available on the market using **CAD** software, including two **Motor Stator** models used in the Rainbow D4 & eSeries intended for **production 3D printing.**

Fontys School of Applied Sciences *Remote from Eindhoven NL & Bucharest RO*

Scientific Writer Helper *Freelance project in 2023*

- Wrote the answer book for the Mechatronics Math2 course modules & learned **LaTeX** on short notice to solution the task at hand in due time.

Other Education

Certified SOLIDWORKS Associate in Mechanical Design *Eindhoven, NL*

Computer Aided Design with a focus on Mechanical Systems *2023*

For further references **https://www.solidworks.com/certifications/mechanical-design-cswa-mechanical-design**

Software Development Academy *Bucharest, RO*

Java from Scratch Course *Graduated on 26th of October 2020*

- Full-Stack Java programming course taught in an Agile environment, with focus on Spring, Angular, and design patterns.
- For further references **https://sdacademy.ro/lista-de-cursuri/java/**

C.A. Rosetti High School *Bucharest, Romania*

Romanian Baccalaureate Diploma *Sept 2017 - June 2021*

- Studied Imperative Programming in C++, Graph Theory, Calculus.