# Francesco Salvatore

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## EDUCATION

**Technological University Eindhoven** — Eindhoven, NL
*Bachelor of Mechanical Engineering* — *Aug. 2024 – present*
- Relevant Coursework: Dynamics and Control of Robotics systems, Dynamics and control of mechanical systems, Solid Mechanics, Thermodynamics, Material Properties & Principles of Design

**Sutton Park School** — Dublin, IE
*CGPA: 625/625* — *Aug. 2020 – June 2024*
- Relevant Coursework: Computer Science, Design Communication Graphics, Applied Mathematics, Physics & Mathematics

## EXPERIENCE

**Automation Engineer** — July 2025 – August 2025
*Kellogg's* — *Mechelen, BE*
- Developed and deployed **a plant-wide TCP Diagnostics Tool** for 36 Device Level Rings circuits using custom Add-On Instructions (AOI) to monitor real-time metrics including CIP timeouts, link status, and media errors
- **Programmed industrial controllers** using **Ladder Logic** and **Structured Text** to refactor diagnostic logic for Allen-Bradley ControlLogix and CompactLogix PLCs
- **Integrated mechatronic hardware** including **Variable-Frequency Drives (VFDs)** and Stratix managed switches into a unified monitoring ecosystem via FactoryTalk View SE.
- **Optimized system architecture** by integrating three additional communication PLCs to overcome memory footprint constraints while maintaining a **zero-downtime requirement**

**Engineering Intern** — June 2023 – July 2023
*Studio Falconio* — *Naples, IT*
- **On-Site Technical Analysis:** Conducted site inspections for high-profile infrastructure projects, such as the Naples Metro (Poggioreale Station), to monitor technical progress and analyze complex construction sequences.
- **Engineering Cost Estimation:** Performed comparative cost analyses and prepared Estimated Metric Computations using Primus software to determine project feasibility and component selection
- **Regulatory & Safety Compliance:** Analyzed site safety protocols and gained practical insight into the technical responsibilities of the Safety Coordinator and Static Tester within large-scale engineering projects

**Tech United Eindhoven** — September 2025 – present
*Robotics Engineer* — *Eindhoven, NL*
- Architecting **software migration** from Middle Size League (MSL) to Humanoid League for **8x RoboCup World Champion** team, redesigning Local world model and ball model systems for autonomous robots using **ROS 2, C++, and C**
- Built **Sequential Clustering algorithm** for ball selection and tracking, featuring hypothesis expansion algorithms and Bayesian filtering in collaboration with PhD researchers and Avular robotics engineers.

## PROJECTS

**Autonomous Construction Material Sorting** | *Matlab, Simulink, Raspberry pi, Control Theory* Jan 2026 – April 2026
- Engineered an autonomous robotic system using Stateflow to coordinate camera-based object detection, picking, and high-precision stacking of 3D-printed and laser-cut construction materials.
- Designed and implemented a Feedback Controller using the ShapeIt loop-shaping tool, achieving stable system bandwidths of 10-20 Hz while meeting strict robustness criteria (PM $\geq$ 30°, GM > 6dB).
- Optimized real-time performance by implementing dynamic trajectory planning with quintic polynomials and fine-tuning pick-up timing through state-machine logic.

## TECHNICAL SKILLS

**Design & Simulation**: Siemens NX (Motion), SolidWorks, Onshape, Fusion 360, FEA Analysis, MarcMentat
**Robotics & Controls**: ROS2, Matlab/Simulink (Stateflow, Control System, Robotics system, Signal Processing, Computer Vision, Image Processing Toolbox ), Kinematics, PID Control
**Embedded & Software**: Python, C/C++, JavaScript, Git, Docker, ESP32, Arduino, Raspberry Pi
**Fabrication & Hardware**: Additive Manufacturing, CNC Routing, Laser Cutting, Electronic Prototyping