Andrea Grandieri

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Research Statement

My research interests are centered on space engineering, with particular attention to mission design, orbital mechanics, trajectory analysis, satellite systems, and the computational tools required to support space missions. I am currently completing a bachelor's degree in Computer Engineering at Politecnico di Milano, but my future goal is to move toward a more direct space-engineering profile, combining it with my current software and systems knowledge.

In this direction, I see computing not only as a support tool, but as an essential part of modern space engineering: simulations, numerical methods, optimization, high-performance computing, and robust software architectures are fundamental for designing, testing, and operating complex missions. A major area of interest for me is mission analysis and trajectory design. At the master's level, I intend to strengthen my knowledge of these topics and progressively connect them with my existing technical background. At the same time, I am interested in the computational systems used in space missions, including onboard and embedded computing for spacecraft and satellites.

Within computer engineering, my interests include low-level programming, digital logic systems, hardware/software interaction, optimization algorithms, distributed and backend systems, and the design of reliable software for complex technical environments. Through academic and personal projects, I have worked on algorithmic efficiency in C, digital design with VHDL, Java client-server architectures, backend development with FastAPI and Django, relational databases, Linux-based infrastructure, and self-hosted services. These experiences strengthened my interest in robust, efficient, and well-structured computing systems, especially when software must interact with hardware constraints, real-world data, or operational requirements.

Overall, my objective is to build a research profile that remains strongly grounded in computer engineering while progressively moving toward space engineering. I am also strongly motivated by applied innovation and entrepreneurial environments, and I am interested in research that can evolve into practical technologies, prototypes, and real-world engineering systems.

Current Projects

I am currently involved in a project in the field of health technologies, focused on software architectures for heterogeneous health-data integration. My contribution is mainly focused on the architectural side of the system, with attention to the integration of sources such as Apple HealthKit and Garmin, ingestion and synchronization flows, and backend infrastructure.