ANDREA ESPOSITO

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EXPERIENCE

TESLA July 2023 – July 2025

Sr Technical Program Manager, Optimus (Humanoid Robot) and Charging. Palo Alto, CA

Optimus, Hand Mechanical Design (70% program management, 30% design and prototyping)

- Oversaw development of Gen4 hand (22 DOFs, tendon-driven actuation, embedded tactile sensors) coordinating the work of 12 mechanical engineers and 9 cross-functional teams including AI, manufacturing engineering and reliability.
- Translated AI requirements into hardware specifications for Gen5 hand and forearm, supporting advanced manipulation use cases. Personally designed and built test fingers to evaluate dexterity gains from increasing the number of tendons.
- Analyzed 100+ human tasks on the Fremont factory line to define dexterity requirements, guiding hardware design for human-equivalent task execution and informing 2025 strategy to deploy Optimus in manufacturing operations.
- Led DOE to resolve early tendon failures, extending system life by 100x (from 16 hours to 3 months of operations). Personally contributed to design optimizations on contact points, improving parts geometry to minimize tendon wear.
- Reduced assembly time by 90%, in close collaboration with manufacturing engineering, cutting number of components by 30%, decreasing electrical connections from 53 to 8, and eliminating all 27 tendon and FPC threading operations.
- Condensed design progress for weekly CEO and VPs review, presenting results and risks to inform program decisions.

Charging Technologies, Supply Chain

- Led mechanical and electromechanical supply chain development for Tesla's next-gen charging platforms from concept validation to factory ramp: Supercharger, Semi Megacharger, Cybercab Wireless Charger, and Optimus charging dock.
- Managed selection, onboarding, and industrialization of 30+ global suppliers for 500+ components across high and low voltage electronics, casting, injection molding, wire harnesses and more, ensuring DFM, PPAP, and ramp-readiness.
- Played a key role integrating Wiferion (now Tesla Black Forest), an acquired German startup developing wireless charging, by serving as their main US counterpart and ensuring alignment with Tesla's infrastructure and processes.
- Ensured successful product launches by owning cross-functional timelines, coordinating part release and tooling kickoff, and mitigating build risks across engineering, supply chain, and factory teams.

GE AEROSPACE Mar. 2019 – Apr 2022

Rotational program in manufacturing operations (OMLP) from March 2020 to April 2022.

Production Manager, Gears Manufacturing. Turin, Italy

- Supervised 45 production associates and 3 manufacturing/quality engineers on high-mix aerospace machining line.
- Increased line productivity by 15% implementing technical solutions developed in collaboration with mfg engineering.
- Developed algorithm suggesting optimal production mix based on wip inventory status. Raised on-time delivery 30%.

Technical Program Manager, Advanced Manufacturing Engineering. Turin, Italy

- Coordinated 9 design and manufacturing engineers in a strategic initiative to simplify legacy gear production processes.
- Eliminated 25 days' worth of processes, reducing wip inventory (45%) and labor cost (10%) while improving yield.
- Successfully navigated technical difficulties and conflicts combining communication and problem-solving skills.

Lean Manufacturing Engineer, Materials Acceptance. Naples, Italy

- Streamlined materials inspection, reducing inventory by $7M through digital initiatives and stakeholders' engagement.
- Led the introduction of a new SAP module to further improve visibility and control over inbound materials.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA 2022 - 2023

MS, Industrial Engineering (Supply Chain Management), GPA: 4.9/5

Relevant coursework: Introduction to Robotics (prof. Harry Asada). Designed and built a robotic arm for the final project.

POLYTECHNIC INSTITUTE OF TURIN, Turin, Italy

MS, Mechanical Engineering, GPA: 104/110 2016 - 2018

BS, Mechanical Engineering, GPA: 99/110 2013 - 2016

SKILLS

Mechanical Design: Certified SolidWorks Professional (CSWP), GD&T, DFM/DFA, tendon-driven actuation.
Prototyping/Manufacturing: 3D printing, CNC machining, manufacturing process development, supplier coordination.
Project Management: Jira, Confluence, MS Project, Lean Six Sigma Green Belt.
Talking to people: native Italian, fluent Spanish, basic French. **Talking to machines**: Python, Matlab, SQL, HTML/CSS.
Brazilian Jiu Jitsu: 2018 European Championship 2nd place. Started a club at MIT which succeeded past my wildest dreams.