CARLES PASCUET CUESTA

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EDUCATION

Purdue University, Bachelor of Science in Mechanical Engineering. **August 2021 – December 2025**

- Minor in Business Economics | Certificate in Entrepreneurship & Innovation.
- 1st Place Purdue ME Senior Design Capstone Project, Malott Innovation Award Winner.

TECHNICAL EXPERIENCE

AMAZON | Area Manager Intern (Manufacturing Engineer) | Miami, FL **May 2025 – July 2025**

- Redesigned facility layout using **lean manufacturing** and **value stream mapping**, improving performance by **12%**.
- Implemented QR-coded workstations with integrated scanning hardware, **standardizing** package routing.
- Developed **Python** predictive staffing application leveraging historical throughput data and statistical modeling.
- Improved equipment utilization **8%** through workstation **rebalancing** and lane reconfiguration, reducing idle time.
- Conducted **time-motion studies** and **process flow analysis** on operations handling **130,000 units daily**.
- Implemented signaling and visual displays for real-time equipment status monitoring, reducing **cycle time bottlenecks**.
- Delivered process standardization improvements, achieving projected annual **cost savings of $169,000**.

PURDUE UNIVERSITY CAPSTONE PROJECT | Mechanical Engineer | West Lafayette, IN **April 2025 – December 2025**

- Led design of **award-winning, patent-pending** Modular AGV achieving **50 lb.** payload at **4 mph** with **12V DC motors**.
- Designed stepper motor-driven hexagonal shaft system with **3:1 gearbox** enabling motorless module power transmission.
- Engineered custom bearing assemblies using angular-contact, deep-groove, and thrust-bearing stacks.
- Conducted **FEA validation** on critical shafts achieving **safety factor of 4** with 0.25mm deflection.
- Programmed **Arduino Mega** and **ESP32** for autonomous **PID**-controlled line-following with IR/ultrasonic sensors.
- Manufactured **218 components** using **lathe**, **mill**, **waterjet**, **laser cutter**, and **CNC** over 50+ hours.

AMAZON | Area Manager Intern (Process Engineer) | Kansas City, KS **May 2024 – July 2024**

- Managed **100+ hourly associates** across stowing, picking, and shipping in high-volume fulfillment environment.
- Made data-driven decisions on labor allocation and production scheduling to meet throughput targets.
- Conducted **root cause analysis** on package handling workflows, identifying cart loading inefficiencies.
- Designed custom cart fixture in **AutoDesk Fusion** to optimize package distribution, achieving **2% throughput increase**.

TALGO (High-Speed Train Manufacturing) | Mechanical Systems Engineer Intern | Madrid, Spain **May 2023 – July 2023**

- Conducted supplier **quality audits** and factory inspections for train components ensuring EN compliance.
- Performed **brake system calculations** including braking force, stopping distance, and deceleration rates for 3 train models.
- Validated component specifications during testing and commissioning phases of electrical system development.
- Optimized **HVAC** designs in **NX**, improving thermal performance **3%** and reducing manufacturing part count by **2%**.
- Created pneumatic and mechanical schematics in **Visio** for brake and emergency handle systems.
- Managed 150+ engineering documentation and version control in **SAP** and **Teamcenter PLM**.
- Streamlined data accessibility and design traceability, ensuring systems reliability across rolling stock.

INVOLVEMENT AND EXTRACURRICULARS

PURDUE GRAND PRIX | Mechanical Engineer | West Lafayette, IN **August 2023 – May 2024**

- Conducted dynamic analysis of pinion gear assembly in **CREO**, optimizing gear ratio and improving lap time by **2.39s.**
- Managed **sourcing** and **replacement** of drivetrain components including rear axle, clutch, and chains after collision.
- Designed gear system mount and performed **tolerance stack-up** analysis to improve gear mesh alignment under racing loads.

PURDUE FORMULA SAE | Manufacturing Engineer | West Lafayette, IN **August 2021 – May 2022**

- Designed and manufactured a **5.5L** aluminum fuel tank with integrated baffles to prevent sloshing during high-G cornering.
- Achieved **4% weight reduction** versus previous design while meeting all **FSAE safety regulations**.
- Developed **CAD** models and drawings in **SolidWorks**, specifying **GD&T tolerances** for fuel pickup and mounting interfaces.
- Fabricated fuel system components using **lathe**, **mill**, and **welding**, conducting leak and pressure **testing**.

AINA SUMMER CAMP | Instructor (Team Leader) | Canillo, Andorra **August 2019 – August 2022**

- Coordinated logistics for **100+ children**, managing schedules, route planning, and resource allocation for mountain activities.
- Developed **risk assessment** protocols for instructors and **emergency response procedures** for outdoor activities.

SKILLS

- **Software/Technical Tools:** Python, C, Matlab, LabView, Simulink, Excel, HTML, CSS, JavaScript, Visio, SAP and PLM.
- **CAD/Simulations:** PTC CREO, SolidWorks, AutoDesk Fusion, Onshape, SIEMENS NX, CATIA and ANSYS.
- **Languages:** English (Native), Spanish (Native), French (Professional Proficiency), Catalan (Native).
- **Engineering:** GD&T, tolerance analysis, material selection, FEA, Design for Manufacturability (DFM), Design for Assembly (DFA), engineering drawings, prototyping, mass-production, problem solving, and data analysis.