Matthew Dubea

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Education

University of Louisiana at Lafayette – B.S. Mechanical Engineering, Minor: Mathematics	May 2025
UCL, London, UK – Study Abroad in Energy Systems and Engineering Design	Summer 2024

Continuous Learning

FE (Fundamentals of Engineering) Exam – Mechanical (NCEES)	Expected: Aug 2025
CSWP (Certified SOLIDWORKS Professional)	Expected: Aug 2025
OSHA PSM (Process Safety Management)	Expected: Aug 2025

Projects

Design and Fabrication of Race Tricycle
mtdubea.github.io/trike   2025

- Designed racing trike in SolidWorks; validated 4130/1018 steel frame via FEA (Finite Element Analysis), FoS = 2.2
- Applied DFM/DFA to streamline TIG/CNC processes and cut assembly time by 25%
- CoG: 22" rear, 23" high; geometry: 4" cranks, 8.25" span, 19.5" track, 23.75" wheelbase
- Ran PFMEA (Process Failure Mode and Effects Analysis); revised gussets, bushings, weld prep to reduce fatigue risk
- Fabricated axle, bushings, and T-insert to ±0.005" tolerance for repeatable seat fit
- Reused MTB frame and components to reduce BOM (Bill of Materials) by 60%
- Placed 1st (3:31 fastest lap); 4/5 heats penalty-free; top speed: 14.5 mph; total cost: $211.94

Multi-Sensor Payload System
mtdubea.github.io/mechatronics   2024

- Coded Arduino system in C++/Python to release payload based on temp (≥ 32°C), distance, and water input
- Calibrated MPU-9250 IMU (Inertial Measurement Unit) and NTC thermistor
- Controlled SG90 via PWM (Pulse Width Modulation); implemented PID (Proportional–Integral–Derivative) logic
- Verified LCD output, tilt readings, and servo response during test flights
- Dual power: 6xAA (5V) logic, isolated 9V servo with backup
- Mounted to UAV (Unmanned Aerial Vehicle); ultrasonic sensor triggered buzzer/servo below 10" range

Autonomous Rescue Robot
mtdubea.github.io/robot   2023

- Led mechanical design and Python integration; completed 5-task autonomous course
- Earned 1st in judged design; 10th live due to early collision
- Fabricated boom with actuator and solenoid hook for target retrieval
- Tuned stepper PID logic to reduce overshoot 70%
- Built modular 6-script stack; resolved IR/magnetic interference with shielding/delay logic

Field Experience

Safelite AutoGlass, Scott, LA   *Auto Glass Technician*   2022 – 2024

- Replaced 2,600+ windshields (98% QA/QC); calibrated 1,500+ ADAS/LiDAR systems to OEM spec
- Reduced cycle time 15% via adhesive workflow and layout redesign
- Minimized rework by adhering to OEM calibration and installation specs

Ernest P. Breaux Electrical, New Iberia, LA   *Electrician / Machine Operator*   2019 – 2021

- Installed MV/LV (Medium/Low Voltage) panels, conduit, and tray on 34.5kV yard
- Assembled mechanical/electrical components with QC adjustments to meet install deadlines
- Logged uptime and supported MOC/PSSR/JSA (Management of Change / Pre-Startup Safety Review / Job Safety Analysis)

Certifications

Six Sigma Black Belt – Council for Six Sigma Certification (CSSC)	2025
CSWA (Certified SOLIDWORKS Associate) – Dassault Systèmes	2023
OSHA 10-Hour General Industry – U.S. Department of Labor	2019

Skills

Software: SolidWorks, AutoCAD, MATLAB, Python, C++, Power BI, MS Project, SAP/ERP, Aspen, Ansys Granta

Engineering: CAE, FEA, CFD, DFMA, PFMEA, GD&T, PID, PFDs, PCIU, P&IDs, RCA, CNC, BOM, FMEDA, Lean Six Sigma

Involvement

College of Engineering – S.A. Ambassador (ULL)	2024 – 2025
Louisiana Engineering Society (LES)	2024 – 2025
Society of Manufacturing Engineers (SME)	2024 – 2025
American Society of Mechanical Engineers (ASME)	2023 – 2025
American Society for Testing and Materials (ASTM)	2025