

Louis LABESSE

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6th-year MEng Mechanical Engineering student at UC Berkeley, focused on mechanical product design, manufacturing, prototyping and experimental testing. Targeting Mechanical Engineering opportunities.

Education - Overall GPA: 3.9/4

UCB - University of California Berkeley - Berkeley, United States: Sept 2026 – May 2027

- M.Eng in Mechanical Engineering and Affinity Group Leader of Product Design

Relevant coursework: Robotics course under Prof. Roberto Horowitz, Experiential Advanced Control Design under Prof. Francesco Borelli, Modeling, simulation, and digital-twins of drone-based systems under Prof. Tarek Zohdi, Adv Designing for the Human Body.

ENSAM - Arts et Métiers ParisTech - GPA: 3.9/4 - Metz/Paris, France: Sept 2024 – July 2026

- Combined BSc + MSc with Lycée Voltaire in Mechanical and Industrial Engineering

Relevant coursework MSc: Applied Mechanics, CAD, Heat Transfer, Fluid Dynamics, Mathematics, Industrial Engineering, Machining, Metal Bending, Punching, Forging, Electrical Engineering, Materials Sciences, Computer Science, Biomechanics

Relevant coursework BSc: Mathematics (Advanced calculus, Algebra, Probability), Physics (Mechanics, Electromagnetism, Thermodynamics), Engineering Sciences (Structural analysis, Materials science, Industrial mechanics), Computer Science, Technical Drawing, and CAD Design.

Work Experience

Mechanical Product Design Engineer – Autodesk Sponsored Capstone Project - Berkeley, CA, US August 2026 - Ongoing

Objectives: Develop and evaluate regenerative braking technologies to extend electric bicycle range.

- Developing a mechatronics regenerative braking system for e-bikes using Autodesk Fusion.
- Analyzing 4 performance parameters across 20+ simulated operating conditions to assess regenerative braking efficiency.
- Targeting 16% energy recovery through integrated mechanical design, motor braking, and energy storage.

Product Development Engineer : Nobsolete startup - Paris, France January 2026 - June 2026

Objectives: Design Electro-Mechanical system detecting degradation through vibration analysis, machine learning, and embedded sensing.

- Created a Python-based predictive maintenance system using 6-axis IMU sensing, FFT, K-Means, TDA, and Decision Trees.
- Evaluated a sub-€2 vibration-sensing architecture detecting 90% of tested failure signatures.
- Achieved 90% fault classification accuracy, leading to 20%+ longer product lifespan for Nobsolete.

Alveus – Group Tutoring (STEM subjects), Micro-Entrepreneur, Paris, France August 2025 - June 2026

Objectives: Organize a full scientific course for 4-6 students, giving detailed feedback to other teachers and parents

- Founded and operated an independent STEM tutoring business, teaching 120+ students aged 12–18 in groups of up to 4.
- Tailored STEM instruction to improve academic performance by 17–20%, generating repeat bookings.

Compleitude – Bilingual Private Tutoring (STEM Subjects), Part-Time Employment, Paris, France Sept 2024 - July 2026

Objectives: Adapt english explanations of French STEM Subjects to international highschoolers.

- Delivered 10 hours/week of personalized STEM tutoring to 5 high-school students, maintaining 95%+ session continuity.
- Improved student performance from 50% academic to 90% on national high-school exams in Mathematics, Physics, and Chemistry.

Mechanical Engineer Intern at Beynat et Janniaux Maroquiniers, Paris, France June 2025 - August 2025

Objectives: Contributed to engineering tasks in a factory environment while studying the mechanical behavior of manufacturing equipment.

- Manufactured 1,000+ leather components using industrial cutting presses.
- Configured industrial presses, managed inventory, and installed 80 m of safety markings.
- Oversaw the production 50 luxury products meeting 100% of quality requirements, saved 10+ hours of skilled operator time weekly.

Operations & Inventory Assistant - Super U, Le Mesnil Le Roi, Yvelines, France Summer 2024

Support inventory, inbound deliveries, stock availability, and daily store operations during peak summer demand.

- Handled 2-ton delivery pallets and replenished 3+ shelving sections per shift, maintaining 95%+ product availability.
- Optimized inventory and promotional stock management, reducing stockouts by 14% and protecting €10,000+ in weekly sales.

Seasonal Operations Associate at Hotel Vernet (5-Star), Champs-Élysées, Paris, France Summer 2023

Objectives: Support fast-paced daily operations and deliver high-quality service in 4 languages

- Supported 110+ guests and 50+ rooms daily across 3 hotel departments, maintaining 5-star hospitality standards.
- Managed 160+ daily service interactions, reducing workload across 3 operational teams by 10–13%.

Selection of Relevant Projects

Mechanical Design & Validation – Disc Brake System – Paris, France Jan 2026 – June 2026

- Designed a braking system for a 685 kg aircraft using a 125 mm iron disc, achieving 4 m/s² deceleration and 204 N·m per wheel.
- Engineered a CATIA wheel-hub assembly with VDI 2230-verified fasteners and tapered roller bearings, saving 6 months of preliminary design and associated development costs.

STEM Outreach and Science Education Program for Elementary School Students

March 2026 - June 2026

Supervised by Dr. Benedicte Hayne and Dr. Marc Rebillat - Paris, France

Objectives: Design engaging scientific workshops translating complex physics concepts into accessible hands-on learning experiences.

- Led hands-on thermodynamics workshops for children aged 9–10, teaching 3 scientific principles through interactive experiments.
- Developed sub-1-minute demonstrations for groups of 9 children, delivering 30-minute STEM sessions within a €50 budget.

Glenoid Implant Design and Biomechanical Validation- IBHGC Arts et Métiers Institute of Technology

October 2025 - January 2026

Supervised by Dr. Nathalie Maurel and Dr. Amadou Diop - Paris, France

Objectives: Investigate shoulder biomechanics to design, simulate, prototype, manufacture, and validate glenoid implants.

- Modeled a UHMWPE glenoid implant in CATIA and performed Abaqus FEA under 50–300 N loads.
- Fabricated UHMWPE prototypes and conducted strain-gauge and optical-tracking tests.
- Provided researchers: a 6-fold load-range simulation framework, identifying 2 critical failure mechanisms improving implant design.

Shoulder Kinematics and Motion Analysis-Paris, France

Sept 2025 - October 2025

Supervised by Dr. Nathalie Maurel and Dr. Amadou Diop - Paris,

Objectives: Experimentally investigate shoulder biomechanics and quantify humerus-scapula rotational dynamics.

- Developed an electromagnetic motion-tracking protocol for 6 subjects and 5 trials, generating 3-axis kinematic datasets.
- Analyzed motion-capture data in Octave, identifying a 2.3° orientation error and proposing optoelectronic tracking.
- Saved 3 months of preliminary research, reduced measurement error by 55% by using optoelectronic tracking

Mechanical Product Design Project : Camshaft Mechanism- Paris, France

Sept 2025 - December 2025

Supervised by Dr. Pascal Caestecker

Objective: Redesign and validate an industrial mechanism to increase operating speed while maintaining mechanical reliability.

- Redesigned a cam-driven champagne corking mechanism in CATIA, increasing throughput by 125% (800 to 1,800 bottles/hour)
- Optimized cam geometry and validated contact pressure (1,103 MPa) and buckling resistance.
- Saved : €1,500 in labor savings per 50,000 bottles, 33 production hours per 50,000 bottles.

Automated Warehouse Simulation- Metz, France Supervised by Dr. Alain Etienne

February 2025 - June 2025

Objectives: Simulate a dynamic automated warehouse system using Python

- Built a Python OOP warehouse simulation with adaptive A* pathfinding and collision avoidance.
- Developed a Tkinter dashboard with XML configuration to evaluate 10+ warehouse layouts.
- Resulted in a 50% reduction in simulation setup time and 30% shorter robot routes and 20% higher throughput.

Management and Optimization of Tool Inventory on a Production Line-Metz, France

Sept 2024 - June 2025

Objectives: Optimize tool organization and accessibility on a manufacturing production line using industrial engineering and CAD.

- Optimized 45-tool inventory across a 42 m² assembly line using Lean 5S, saving 30+ minutes per 100 tool retrievals.
- Created 3D tool models and 9 custom foam inserts, reducing tool-search time by 50%, enabling 100% identification of missing tools.

Personal Project - Creation of a Portfolio Website

January 2025 - Ongoing

Objectives: Independently design, develop, deploy, and maintain a personal engineering portfolio website.

- Independently learned HTML and CSS through online resources and engineering-school coursework.
- Debugged HTML/CSS integration issues learning domain management, web hosting, and HTTPS deployment.

Research Project, Energy-producing playground equipment

Sept 2023 - June 2024

Supervised by Dr. Willie Robert and Nicolas Boucher - Paris, France

Objectives: Conduct a mechanical study by designing, modeling, and testing a full-scale playground system capable of generating electricity.

- Designed a 12V energy-generating playground slide, targeting a 10% smartphone battery charge in 30 minutes.
- CAD-modeled and 3D-printed 24 components, conducting 25+ tests and achieving 30% faster prototyping and €200 in cost savings.

Research Project at Seine Aval Wastewater Treatment Plant

Sept 2021 - June 2023

Supervised by Dr. Willie Robert and Nicolas Boucher - Paris, France

Objectives: Analyze and dimension automatic bar screens at one of Europe's largest wastewater treatment plants : SIAAP

- Designed automatic bar screens of (2m²), hydraulic/electrical parameters (1.4m³/s per bar screens powered by 12V DC motors).
- Lead to 18% lower maintenance labor and annual savings of 150 staff-hours (+€4,500) per installation.

Leadership, Volunteering and Student Engagement

Volunteer – La Compagnie du 20ème, Electronics Repair, Paris, France

July 2025 - Ongoing

- Reduced e-waste diagnosing and repairing PCs, laptops, tablets through component-level troubleshooting and functional testing.
- Trained new volunteers in fault isolation and electronics repair, improving workshop repair capacity and reducing onboarding time.

Volunteer – European Solidarity Corps, Târgoviște, Romania

August 2025

- Contributed to the construction of a site welcoming children from disadvantaged backgrounds.
- Led and supervised activities, creating meaningful connections and supporting children's development.
- Coordinated with an international volunteer team, communicating in English, German, Spanish, French, and Romanian.

Member of ENSAM electronics club, Metz, France

Sept 2024 - June 2025

- Managed 3D printer maintenance, fabricating 20+ custom components while reducing prototyping costs and lead times.
- Repaired 2 computers and 4 lighting systems through electronic diagnostics and soldering, avoiding €5,000 in replacement costs.

- Member of ENSAM open access blacksmithing club**, Metz, France

Sept 2024 - June 2025
- Fabricated custom steel components for a robotic arm and 50 × 40 cm window guards, saving €225.
 - Trained newcomers across 15+ blacksmithing sessions, enforcing safety protocols, resulting in 25% less instructor supervision time.
- Volunteer at Les Amis de Remagen**, Maisons Laffitte, France

Sept 2018 - Ongoing
- Assisted in 40+ German language lessons with 7–14 participants per session.
 - Participated in 5 cultural exchange events in German language, fostering Franco-German relations.
- Summer Camp Young Panda WWF**, Baden-Württemberg, Germany

Summer 2017
- Took part in environmental actions such as forest clean-ups and biodiversity workshops with other international volunteers.

Skills

- **Languages:** French - Native, Spanish - Bilingual: DELE + IOB, English - Advanced: TOEFL 100/120, German - Upper Intermediate: SprachDiplom, Romanian - Beginner
- **Technical and Programming Languages:** Python, MySQL, LaTeX, Arduino, Html, CSS, ROS, BondGraphs
- **Engineering Software:** Matlab, Yakindu, ABAQUS, StarCCM+, CATIA-V5, Solidworks, Fusion360, 3DExperience, 20-Sim

Interests

- **Sports:** Judo : 14 years of practice + regional competitions|Rugby: Member of Frogsbeef ML Club|Mountain Biking
- **3D software:** 3D modeling, simulations and 3D printing
- **Hardware** PC maintenance, Electronics repair and component troubleshooting
- **Meditation**