LARA CHOURAQUI

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SUMMARY

Dedicated Mechanical and Aerospace Engineer with a dual master's degree from the Illinois Institute of Technology (IIT) and the Polytechnic Institute of Aeronautics and Advanced Sciences (IPSA). Strong background in mechanical design, structural analysis, and finite element simulations (FEM) with practical experience in experimental validation and documentation. Proficient in CATIA V5 for 3D modeling and detailed technical drawings, and experienced with Ansys Workbench and Abaqus for static, dynamic, modal, fatigue, and thermal analyses. Demonstrated ability to design and optimize load-bearing components, conduct structural assessments, and support manufacturing and testing processes through accurate engineering deliverables. Bilingual in French and English, recognized for teamwork, adaptability, and problem-solving, and eager to contribute to innovative projects in mechanical and aerospace engineering.

EDUCATION

Illinois Institute of Technology, *Chicago, IL* AUG 2023 - AUG 2024
Master of Engineering in Mechanical and Aerospace Engineering, GPA 3.58/4.00
Relevant coursework: Finite Element Methods (FEM), Computer Aided Design (CAD), Advanced Dynamics, Advanced Mechanics of Solids, Additive Manufacturing.

IPSA - Polytechnic Institute of Aeronautics and Advanced Sciences, *Paris, France* SEPT 2019 - AUG 2024
Bachelor's and Master's Degree in Aerospace Engineering
Specialization in Vehicles: Mechanics and Materials Science
Relevant coursework: Aircraft Structural Design, Composite and Metallic Materials, Plates and Hull Theory, Finite Element Analysis (FEA), Computer Aided Design (CAD), Fluid Mechanics, Thermodynamics.

University of California Riverside, *Riverside, CA* SEPT 2022 - DEC 2022
Semester abroad in Mechanical Engineering
Relevant coursework: Thermodynamics, Mechanical Behavior of Materials, Materials Science.

SKILLS

- **TECHNOLOGY**: CATIA V5R21/V5R19 | 3DExperience | Ansys Workbench| MSC Patran/Nastran | SolidWorks | Star-CCM+ | Abaqus | XFLR5 | MATLAB | Python |
- **OTHER**: Proficient in MS Office suite | Microsoft Power Query | Microsoft Power Automate |
- **LANGUAGES**: French (native), English (fluent), Spanish (basic proficiency).

WORK EXPERIENCE

CARDIOVASCULAR MODELING RESEARCH INTERN, *Illinois Institute of Technology, Chicago, IL* DEC 2024 - AUG 2025
- Developed parametric methods and FEM simulations to synthesize Photoplethysmography (PPG) signals for blood pressure estimation
- Simulated dynamic cardiovascular behavior, analyzing pressures, inflows, and variability, with experience in time-dependent mechanical systems and analytical validation.

AIRCRAFT DESIGN RESEARCH INTERN, *Illinois Institute of Technology, Chicago, IL* NOV 2023 - NOV 2024
- Designed an aircraft using XFLR5 and UIUC Data, performed structural, aerodynamic, propeller, and stability analyses.

MAINTENANCE OPERATIONS INTERN, *RATP Group, Paris, France* JUN 2023 - AUG 2023
- Optimized track maintenance operations using Power Query and Power Automate for improved efficiency and data tracking.

AIRPORT OPERATIONS INTERN, *Cannes-Mandelieu Airport, Cannes, France* JUN 2021 - JUL 2021
- Supported operational analysis, just-in-time commercial handling, and safety verification of runway lighting systems.

PROJECT EXPERIENCE

Illinois Institute of Technology, *Chicago, IL* JAN 2024 – MAY 2024
Cost-Optimized Plastic Bracket Design (Ansys Workbench)
- Designed and optimized a load-bearing plastic bracket (150 lbs) using topology optimization and FEA to optimize load-bearing performance.
- Performed structural analysis, validated safety factors greater than 12, and reduced part cost by 83%, demonstrating efficiency in design under constraints.

Aluminum Bladed Disk Dynamic Analysis & Optimization (Ansys Workbench)
- Conducted stress and fatigue analysis of a 24-blade aluminum disk under operating loads.

- Ensured structural integrity, controlled deflection, and validated safety factors while performing modal and parametric studies.

IPSA - Polytechnic Institute of Aeronautics and Advanced Sciences, *Paris, France* FEB 2023 – JUN 2023

Finite Element Method Projects (MSC Patran/Nastran)

- Performed static and thermal FEM on metallic components under high loads; analyzed stress, thermal effects, and deformation; validated results against analytical methods.
- Conducted stress concentration studies, 3D bending/axial simulations, and thermal FEM of cylindrical and planar structures to assess and validate structural integrity.

Advanced Materials & Composite Analysis (Abaqus)

- Compared metallic (AISI301) and composite (graphite/epoxy) structures under tensile loading.
- Built 2D and 3D RVE composite models to reduce computational cost while maintaining stress prediction accuracy.

3DExperience Project (3DExperience)

- Collaborated with a team on a project using CATIA-based 3DExperience to design and assemble six parts modeling a GPS satellite.

Application Creation Project JAN 2021 - APR 2022

- Developed a mobile application with a team to assist elderly users in learning smartphones and staying socially connected.

HONORS AND ACHIEVEMENTS

- Aeronautical initiation certificate with honors. JUN 2017