U.S. & French Citizen **Henry A. Le Berre** As of January 17, 2026

WORK EXPERIENCE

SpaceX **Space Exploration Technologies Corp.** Hawthorne, CA, USA

Propulsion Software Engineer II	Raptor Combustion Simulation: HPC Combustion CFD	Dec. 2025 — Present
Propulsion Software Engineer	Raptor Combustion Simulation: HPC Combustion CFD	Jan. 2025 — Dec. 2025
Software Engineering Intern	Raptor Combustion Simulation: HPC Combustion CFD	Aug. 2023 — Dec. 2023

- **25% speed up** of the **Raptor Combustion CFD Code** on production simulations with **CUDA C++ GPU kernel optimizations**.

Verkada **Verkada Inc.** San Mateo, CA, USA

Software Engineer Intern	Device Platform Team > Alarms and Intrusion	May — Aug. 2023

HONORS & AWARDS

- **Gordon Bell Prize Finalist** from the Association for Computing Machinery (ACM). | Press: **ORNL** & **HPC Wire** Jan. 2025
- ***Verkadathon*** (Verkada Hackathon) **Winner** for "Best Use of Verkada Products". Jul. 2023
- **President's Undergraduate Research Award (PURA) Travel** recipient from the Georgia Institute of Technology. 2022
- **HOPE Scholarship** recipient from the U.S. state of Georgia.

FEATURED PUBLICATIONS

Google Scholar

- Simulating **many-engine spacecraft**: **Exceeding 1 quadrillion *DOFs*** via information geometric regularization. **2505.07392**
- **MFC 5.0**: An **exascale** many-physics **flow solver**. **2503.07953**
- Open-Source Combusting Flow Simulation. **1853/78203**
- Method for **scalable and performant GPU-accelerated** simulation of **multiphase compressible flow**. **2305.09163**
- **Pyrometheus**: [...] XPU and automatically differentiated computation of combustion kinetics and thermodynamics. **2503.24286**

UNDERGRADUATE RESEARCH

CPG **Computational Physics Group** **Multi-Component Flow Code (MFC)** Nov. 2021 — Dec. 2024

- Implemented **reactive combustion flow modeling** and **case-specific compile-time optimizations**.
- **Accelerated** the Fortran/MPI solver via **OpenACC** on **OLCF Summit & Frontier**; Added CMake, integration testing, and CI.

SSDL **Space Systems Design Lab** **GT-II Satellite** Nov. 2021 — Dec. 2022

- Designed & implemented the satellite's Over-The-Air update (OTA) protocols, on bare-metal, from ground systems to in-orbit handling.

EDUCATION

GT **Georgia Institute of Technology** **Bachelor's in Computer Science (Diploma)** Summer 2021 — Fall 2024
GPA: 3.82 ("Highest Honor"). **Research Option**. Modeling & Simulation / Systems & Architecture Atlanta, GA, USA

Lavoisier **Lycée Lavoisier** **Baccalauréat Général with High Honors** 2021
Mathematics, Computer Science, Physics & Chemistry Paris, France

LEADERSHIP & SERVICE

- **Student Volunteer** at **Supercomputing (SC)** in Denver, CO, USA and Atlanta, GA, USA Nov. 2023 & 2024
- **Co-chair** of the **Georgia Tech French Club** Fall 2022 — Fall 2024

MISCELLANEOUS

- **Languages: English** (Native, U.S. Citizen) and **French** (Native, French Citizen)
- **Keywords:** C++ / CUDA, NCCL, MPI, Python, Bash, Lua, Fortran, CMake, Bazel, LaTeX, Vim, Slurm, ParaView, HPC, CFD ...

@henryleberre: **GitHub** | **LinkedIn** | **Google Scholar** **Contact:** henryleberre@gmail.com