Jeffrey **Roberge**

Principal Mechanical Engineer

Objective

Mechanical engineer with eight years of strong computational methods and software experience, looking to develop analytical applications for the purpose of aiding in structural and aero-thermal design of gas turbine engines.

Programming

Java · Python · C++ · Perl · Lua · MatLab · Bash

Mechanical Skills

FEA · ANSYS MAPDL · NX · NXOpen API · Simcenter Multiphysics · Abaqus · ISight · SmartUQ

Software Skills

Git · REST APIs · Agile Development and Scrum · Supercomputing · IBM LSF · LaTeX · Docker · AWS

Certifications

2024 AWS Cloud Practitioner

Interests

Computational Mechanics · Numerical Methods · Finite Element Analysis · Optimization

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PROFESSIONAL EXPERIENCE

July 2024–Present	**Pratt & Whitney** PRINCIPAL MECHANICAL ENGINEER · System Engineering Tools & Methods, East Hartford, CT 📍

- Designed and developed pre- and post-processing tools for finite element analysis (FEA), with a focus on low and high cycle fatigue lifing systems, fracture mechanics, creep, strength and burst preditions.
- As mentor, developed new hire skills in Agile software, finite element analysis, and computational mechanics.
- Partnered with Human Resources and the leadership team to source top engineering talent for engineering.

Dec 2020–July 2024	**Pratt & Whitney** SENIOR MECHANICAL ENGINEER · System Engineering Tools & Methods, East Hartford, CT 📍

- On a large multidisciplinary team, quantified powder nickel occlusion and fracture risk using a custom Monte Carlo simulation, and advised fleet management plans to mitigate this billion dollar flight safety issue.
- Increased engineers' analysis speed by developing nearly 40 software applications for a new FEA toolset.
- Built training and up-skilled engineers, helping with technical issues in the new FEA solver environment.

Dec 2016–Dec2020	**Pratt & Whitney** MECHANICAL ENGINEER · Engineering Development Program, East Hartford, CT 📍

- Analyzed military high pressure compressor (HPC) static structures and cases during a preliminary design phase
- As part of the military HPC heat transfer group, iterated with the Design and Structures group to provide an HPC configuration that satisfies material capability and blade tip clearance requirements.
- Studied secondary flow structure by carrying out computational fluid dynamic analyses of the HPC's scavenge paths.
- Performed part shape optimization via surrogate modeling.

Sep 2014–Sep 2016	**Structural Optimization Laboratory** GRADUATE ASSISTANT / TEACHING ASSISTANT · UConn Mechanical Engineering Department, Storrs, CT 📍

- Developed computational modeling algorithms for obtaining the effective properties of bone scaffold implants and composites, and for designing patient-specific bone scaffolds to expedite rehabilitation of critical size bone defects.

DEGREES

2016	**Mechanical Engineering** M.S. · UConn 🏛 4.17/4.00	
2013	**Biomedical Engineering** B.S. · UConn 🏛 3.76/4.00	

PUBLICATIONS

2018	Jeff Roberge and Julián Norato, "Computational design of curvilinear bone scaffolds fabricated via direct ink writing," *Computer-Aided Design*, Vol. 95, February 2018, Pages 1-13.

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