# Jeffrey **Roberge**

💼 Principal Mechanical Engineer  ⊘ Active Secret Clearance

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## 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

**Jul. 2024 – Present**

**Pratt & Whitney**  East Hartford, CT 📍
PRINCIPAL MECHANICAL ENGINEER
System Engineering Tools & Methods

- Design and develop 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 predictions.
- Develop new hire skills in Agile software, finite element analysis, and computational mechanics as mentor.
- Partner with Human Resources and the leadership team to source top engineering talent for engineering.

**Dec. 2020 – Jul. 2024**

**Pratt & Whitney**  East Hartford, CT 📍
SENIOR MECHANICAL ENGINEER
System Engineering Tools & Methods

- 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 on a large multidisciplinary team.
- 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 – Dec. 2020**

**Pratt & Whitney**  East Hartford, CT 📍
MECHANICAL ENGINEER
Engineering Development Program

- Analyzed military high pressure compressor (HPC) static structures and cases during a preliminary design phase
- Iterated with Design and Structures teams as part of the military HPC heat transfer 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**  Storrs, CT 📍
GRADUATE ASSISTANT / TEACHING ASSISTANT
UConn Mechanical Engineering Department

- Developed computational modeling algorithms for obtaining the effective properties of bone scaffold implants & composites, and for designing patient-specific bone scaffolds to expedite rehabilitation of critical size bone defects.
- Performed experimental studies to determine design for additive manufacturing rules for printed plastic components.

# 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.