

Jeffrey Roberge

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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

jeffrey-roberge
 jrr07008

PROFESSIONAL EXPERIENCE

Jul. 2024 –
Present

Pratt & Whitney
PRINCIPAL MECHANICAL ENGINEER
System Engineering Tools & Methods

East Hartford, CT



- 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
SENIOR MECHANICAL ENGINEER
System Engineering Tools & Methods

East Hartford, CT



- 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
MECHANICAL ENGINEER
Engineering Development Program

East Hartford, CT



- 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
GRADUATE ASSISTANT / TEACHING ASSISTANT
UConn Mechanical Engineering Department

Storrs, CT



- 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.