

# Zachary Hinkle



Active Secret Level Clearance

## **WORK HISTORY**

### **Structural Engineer—Compression Systems, F135 (i.e. F-35 Engine)**

*Pratt & Whitney, Middletown, Connecticut (Remote worker)*

November 2022–Present

- Conduct detailed fatigue and fracture analyses to evaluate damage tolerance and service life
- Apply probabilistic methods to quantify fleet-level risk when components fall short of life req'ts
- Leverage hand calculation techniques when results are needed quickly; refine later with FEA
- Defined wear limits for F135 components; co-developed standard work practices for wear analysis and now lead a team of outsourced engineers in execution
- Write APDL, Python, and Linux scripts to speed up pre- and post-processing of FE data
- Performed structural analysis of composite hardware to support repair and manufacturing efforts
- Headed team to address discovery of a part operating outside known fatigue limits
- Pioneered use of cohesive zone modeling (CZM) and XFEM for predicting delamination in composite ducts
- Developed new testing procedure for validating composite duct flanges

### **Lead Engineer/Graduate Student**

*Institute for Quantum Computing, University of Waterloo*

September 2020–September 2022

- Designed and managed build of quantum computer for performing physics experiments
- Performed structural and thermal analyses of hardware using FE and classical methods
- Drew CAD models and 2D technical drawings of custom vacuum parts in SolidWorks
- Supervised team of undergraduates building and performing experiments
- Conducted weekly meetings to track progress of build and drive action item closure
- Ensured all teams met deadlines through maintenance of Gantt chart
- Developed risk mitigation plans to ensure long-lead parts did not cause delay
- Created and maintain BOM and CAD models of all assemblies

### **Structural Engineer—Helicopter Rotor Systems**

*Bell Textron Inc., Fort Worth, Texas*

June 2019–September 2020

- Calculated safety margins using FE and classical analyses (net sections, T-over-4, etc.)
- Assisted detailed design efforts by strengthening parts with minimal weight gain
- Developed MATLAB scripts to better visualize and analyze fatigue stress
- Developed novel equations and methods to analyze bird strike on control components
- Wrote informal reports documenting analyses
- Developed stress equations to assist testing

## **EDUCATION**

- Master of Science in Quantum Information Systems, GPA: 86.25 (100.00 scale)
- Double Major in Mechanical Engineering and Physics Cumulative GPA: 3.819 (4.000 scale)

## **SKILLS AND INTERESTS**

- ANSYS Mechanical, APDL, Workbench, SolidWorks, NX, CATIA, Excel, MS Word, PowerPoint, LaTeX, MATLAB, Python
- Conversational fluency in German, basic understanding of Farsi
- Beekeeping, ham radio (extra class license), marathon running, juggling, unicycling