

# ZACHARY KNOWLAN

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## Education

### Bachelor of Science in Mechanical Engineering (May 2024)

Rensselaer Polytechnic Institute (Troy, New York)

- Cumulative GPA: 3.89 (Magna Cum Laude)
- Relevant coursework includes Intro to Finite Elements, Numerical Methods and Programming (python), Heat Transfer, CFD, General Manufacturing Processes, CAD, Strengths of Materials.

## Experience

### Design Engineering Intern (January 2023 – August 2023)

Pratt & Whitney (North Berwick, Maine)

- Designed the high-pressure compressor inner cases and stators egress alongside MTU for a clearance engine.
- Collaborated on various engine core upgrade tasks including segmented stator circumferential gapping and damper sizing structural analysis.
- Led a TF33 vane peening-requirement blueprint change.
- Wrote a visual basic program to analyze exit guide vane W-Seal wear data.

### Electrical Engineering Intern (June 2019 – August 2019)

RLC Engineering (Hallowell, Maine)

- Selected as 1 of 8 students in Maine for a NASA-funded high school intern program.
- Created an Excel program that calculated the minimum battery storage system size needed to redistribute load from non-peak to peak hours on an underpowered grid.

## Projects

### Mobile Agricultural Heat Exchangers (RPI Capstone, Fall 2023)

- Designed 4 heat exchangers to pasteurize milk and apple juice concentrate as part of an effort by the New York State Government to reduce waste during supply chain breakdowns. Recognized as one of the top 5 students in the Fall 2023 capstone class.

### Pothole Filling Machine (RPI Class Project, Spring 2022)

- Built a float-sensor circuit to notify the user when the pothole was full and implemented a syringe-based hydraulic system to actuate various machine valves and parts.

## Research

### Computational Modeling of Viscoelastic Glass (November 2023 – May 2024)

- Implemented a 1-D and 3-D integration algorithm into FEniCSx to quantify the impact of boundary condition uncertainties on the stress response of glass for Corning Inc. under Professors Antoinette Maniatty and Jacob Merson.

## Skills

### Technical:

- Proficient in Siemens NX CAD (and NASTRAN), Python, Visual Basic, HyperWorks CFD, and the Microsoft Suite, FEniCSx.
- Fundamental understanding of design for manufacturing.
- Experienced in the interpretation and drafting of Geometric Dimensioning and Tolerancing.

### Professional:

- Effective communicator in both speech and writing.
- Excellent time management skills.