

Hadi S. Chouhdry

630-802-7631 | hadishahid11@icloud.com | LinkedIn | Naperville, IL 60540 | U.S Citizen

EDUCATION

Pennsylvania State University

Master of Science in Mechanical Engineering

State College, PA

January 2024 - May 2026

- GPA: 3.93
- Concentration in Aero-Thermal Fluids
- Thesis: Aerothermal study of shroud cooling on high pressure turbine blade

University of Illinois Urbana-Champaign

Bachelor of Science in Engineering Mechanics

Champaign, IL

August 2018 - December 2022

- GPA: 3.4

EXPERIENCE

Electromagnetics Engineer II - Power and Controls

Collins Aerospace - RTX

December 2025 – Present

Rockford, IL

- Lead electromagnetic design and analysis of high-voltage, high-power, variable and constant frequency, AC and DC motors/generators for onboard aircraft electrical power generation and engine starting applications
- Own electromagnetics engineering scope, including design maturation, prototype build support, and definition of test plans and instrumentation requirements
- Perform finite-element electromagnetic simulations using Siemens MAGnet and FEMM, assessing flux linkage, torque production, induced voltage, losses, and magnetic saturation, and develop Python-based automation tools (PyFEMM) to streamline analysis and results communication
- Support European Union and Airbus Clean Sky hybrid-electric aircraft demonstrator by developing a high-voltage, high-speed, high-power electrical machine for next-generation electrified propulsion
- Support project engineering functions for hybrid-electric demonstrator by overseeing program schedule tracking, test planning, and budget execution for testing, prototype part production, and travel

Aero-Thermal Fluids Engineer II - Turbine Systems

Pratt & Whitney - RTX

February 2025 – November 2025

East Hartford, CT

- Delivered safety-critical aero-thermal analysis supporting a root cause investigation on a commercial aero engine, assessing seal and component deterioration in high-pressure turbine secondary flow systems
- Contributed to a structured fault-tree root cause investigation, evaluating over 100 hypotheses and presenting physics-based findings, and risk mitigations through cross-functional technical reviews and executive-level forums
- Contributed to a structured fault-tree investigation, evaluating over 100 root-cause hypotheses and supporting down-selection through physics-based analysis and cross-functional technical reviews
- Developed and executed 1D and 3D coupled flow and thermal models using Siemens Simcenter to analyze compressor and turbine performance, predict component deflections, and assess thermal growth of disks, airfoils, and casings
- Assessed blade tip clearances, cooling flow distribution, and supply pressures by integrating thermal-mechanical analysis with system-level models to ensure adequate hot-section thermal protection and clearance margins

Aero-Thermal Fluids Engineer II - Turbine Durability

Pratt & Whitney - RTX

February 2024 – February 2025

East Hartford, CT

- Ensured uniformity in 1D thermal models by aligning geometries with 3D CAD models and nominal blueprints for the high pressure turbine (HPT). Rectified disparities ensuring 3D Computational Fluid Dynamics (CFD) and 1D thermal models are aligned for use in blade and turbine distress modeling
- Performed lifing analysis on gas-path components of PW1500G/1900G engine, utilizing operational engine data to forecast the lifespan of hot section gas-path components. Developed thermal models incorporating thermal resistance properties, and harmonizing life projections with real-world observations to locate critical areas for redesign and enhancement initiatives
- Evaluated Borescope Inspection (BSI) footage and imagery sourced from customer airlines, delivering expedited, comprehensive analyses to avert Aircraft on Ground (AOG) occurrences in coordination with the FAA ODAs. Executed meticulous assessments of select incoming engine HPT hardware during overhaul procedures at Maintenance, Repair, and Overhaul (MRO) facilities

- Maintained, expanded, and utilized an extensive HPT Distress Pattern Library, drawing from diverse operator and regional hardware distress data. Added new data to keep the library up to date, gaining further insight into specific distress modes previously unrecognized
- Employed sophisticated 3D CFD and Conjugate Heat Transfer (CHT) simulations using ANSYS Fluent and STAR-CCM+ to model prevalent distress scenarios derived from the library. Collaborated with cross-functional engineering teams to leverage analysis findings and field data, substantiating the expansion of distress limits and maintenance intervals of HPT aero components for the PW1500G/1900G engine

Aero-Thermal Fluids Engineer I - Turbine Aerodynamics

January 2023 – February 2024

Pratt & Whitney - RTX

East Hartford, CT

- Provided crucial support for certification of GTFA engine program through meticulously analyzing flight and sea-level test data, ensuring the integrity of instrumentation readings, and conducting comprehensive borescope inspections. Continuously updated and validated 3D CFD and 1D models to ensure testing accuracy and reliability
- Conducted steady and transient CFD studies for Ceramic Matrix Composite (CMC) vane design under material and manufacturing constraints, analyzed aerodynamic impacts on next-gen turbine vanes, including rough wall flow considerations
- Collaborated with Design and Structures engineers to refine CMC vane designs, determining optimal aero instrumentation placement for experimentation at PennState University START rig
- Developed and implemented multiple Python based productivity-enhancing tools, streamlining CFD setup processes for the in-house solver, resulting in significant time and resource savings - up to 50% in some cases
- Supported implementation of a new meshing algorithm through conducting and troubleshooting test cases, leading to significant improvement of CFD resolution in critical areas, as well as reducing model prep and processing time by up to 10%

RESEARCH

Undergraduate Research Assistant - Turbo-electric Propulsion

October 2020 – December 2022

University of Illinois Urbana-Champaign

Champaign, IL

- Investigated the viability of brushless doubly-fed reluctance machines for electric aircraft propulsion within the Electrical and Computer Engineering Department
- Developed parametric design solutions using Python in ANSYS SpaceClaim to conduct rapid multi-physics analysis in ANSYS Workbench
- Set-up and conducted two-way system coupling between electromagnetic, thermal, and structural models using ANSYS Maxwell and ANSYS Mechanical within the ANSYS Workbench environment

PUBLICATIONS

1. Agrawal, Shivang, **Chouhdry, Hadi**, Banerjee, Arijit. "Modeling of rotor flux barriers in a brushless doubly-fed reluctance machine." 2021 IEEE Energy Conversion Congress and Exposition (ECCE), 2021, <https://doi.org/10.1109/ecce47101.2021.959554>
2. Agrawal, Shivang, **Chouhdry, Hadi**, Banerjee, Arijit. "Impact of rotor flux-barriers on coupling coefficient in a brushless doubly-fed reluctance machine." IEEE Transactions on Energy Conversion, vol. 38, no. 2, 2023, pp. 927–938, <https://doi.org/10.1109/tec.2022.3230628>.
3. S. Agrawal, **H. Chouhdry**, D. Mukherjee and A. Banerjee, "Modeling and Design Optimization of Rotor Flux-Barriers in a Brushless Doubly-Fed Reluctance Machine," in IEEE Transactions on Industry Applications, vol. 60, no. 2, pp. 3131-3142, March-April 2024, doi: 10.1109/TIA.2023.3348076.

TECHNICAL SKILLS

Languages: Python, MATLAB, C

CAE Tools: TecPlot, XFOIL, ANSYS Workbench, ANSYS Fluent, ANSYS Mechanical, ANSYS Maxwell, Siemens SimcCenter, Altair Hypermesh, Altair Hyperworks, Siemens STAR-CCM+

CAD/3DP Tools: NX, SolidWorks, Autodesk Fusion360, TexGen, Autodesk Inventor, ANSYS Spaceclaim, Cura Ultimaker

General Applications/Other: Microsoft Office (Word, Excel, Powerpoint), Jira, LaTeX, Minitab, hand tools, micro-soldering, Machine Equipment, Private Pilot's License