

# Vishal Sharma

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## SKILLS & TECHNIQUES

Programming Languages	: Python, Fortran, C++, MATLAB
Engineering Softwares	: Ansys- CFD Workbench, CATIA, Tecplot, Paraview
Data Analytics	: SQL, RDBMS, Tableau, Python libraries- matplotlib, numpy, scipy, tkinter, pandas and seaborn
Office Tools	: Microsoft Suite, Google Suite
Operating Systems	: Windows, UNIX
Development Environments	: Eclipse, Jupyter Notebook, MS Visual Studio, GitHub

## PROFESSIONAL EXPERIENCE

### **Researcher and Consultant**

December 2020 – Present

Self-employed

- Developing an open-source package- NANPack in Python for CFD research applications using object-oriented approach.
- Objective of nanpack software is to save development time for researchers to conduct research in CFD.
- Pre-release version (currently 1.0.0-alpha4) available on Python Packaging Index (PyPI) and GitHub.
- Prepared markdown documents on **Jupyter Notebook** for software tutorials using **Sphinx** and hosted them on **Read the Docs**.
- ~3000 overall downloads according to [PePy - nanpack Download Stats](https://pypi.org/project/nanpack/#downloads).

### **Postdoctoral Research Associate**

June 2020 – September 2020

High Temperature Gas Dynamics Lab

Department of Aerospace Engineering

Texas A&M University, College Station, TX, USA

- Conducted research on numerical methods for plasma CFD simulation within high-speed high-temperature gas flows around re-entry vehicles.
- Contributed to the development and improvement of legacy codes in Fortran 90.
- Developed new modules for the legacy hypersonic flow simulation code.
- Documented code modules and routines.
- Planned and executed numerical experiment and reported results to the lab director.

**Graduate Research Assistant**

August 2016 – May 2020

Department of Aerospace Engineering

Wichita State University, Wichita, KS, USA

- Created test plans for conducting numerical experiments, document test results/reports and present them to the lab director on a weekly basis.
- Investigated the interaction of electromagnetic waves with dispersive and non-dispersive media.
- Mentor and assist graduate and UG students.
- Developed and validated an electromagnetics solver in Fortran 90.
- Investigated grid convergence, stability criteria, and Courant number analysis.
- Used GIT locally for version control and performed debugging, troubleshooting and optimization to resolve technical issues in the code development.
- Developed scripts in Python for generating visualizations/animations of simulation outputs.

**Research Intern**

December 2013 – May 2014

Automotive Air-Conditioning R&amp;D Division

Sanden Vikas India Limited

Faridabad, India

- Participated in cross-functional team meetings and gather data required for the research.
- Developed a solver in MATLAB for performing transient analysis of car cabin heat loads for different cabin geometries, driving scenarios and ambient conditions which affect the thermal environment of the cabin.
- Achieved an increase in calculation accuracy by 50% as compared to the company's MS Excel-based Thermal Calculation Software.
- Suggested HVAC design improvements to the R&D team

**Founder/President**

Shock-Tech, a registered student organization at Wichita State University

Wichita, KS, USA

- Founded a registered student organization on-campus comprising of 15 active working members with the objective to enhance performance in sports by application of scientific and technical skills.
- Secured seed funding of \$2100 from WSU Ventures.
- Led weekly team meetings, organized recruiting events, and represented group in meetings with industry professionals.

**Graduate Assistant**

June 2015 – August 2017

Wichita State University Libraries

Wichita, KS, USA

- Got awarded 2017 Lee and Carolyn Riley Distinguished Graduate Assistantship by Dean of University Libraries;
- Led a team of 3 student assistants during evening hours and was responsible for training of newly hired student assistants;
- Assisted reporting supervisor in conducting interviews for hiring student assistants.

**Data Analyst**

August 2011 – March 2012

Yes Bank Limited

Gurgaon, India

- Performed data collection and data cleaning of mid-level data to analyze errors and create change requests for CRM system upgrades.
- Prepared MIS spreadsheets for compliance reporting to regulatory authorities.
- Performed risk forecasting and suggested measures to increase revenues and cut-down losses.

**Data Analyst**

August 2008 – July 2011

ICICI Bank Limited

Mumbai, India

- Responsible for gathering and cleaning data, analyze transactional data and identify scope in process improvement to reduce operational errors.
- Processed and managed trade finance supply chain data for several geographical locations.
- Prepared dashboard and visualizations reports using MS Excel.
- Wrote and optimized SQL queries.

**EDUCATION****Wichita State University, Wichita, KS, USA**

Doctor of Philosophy, Aerospace Engineering, 2020

**Amity University, Noida, India**

Master of Technology, Automobile Engineering, 2014

**Rajiv Gandhi Technological University**

Bachelor of Engineering, Mechanical Engineering, 2008

**PUBLICATIONS/PRESENTATIONS:**

- **Sharma, V.**, and Hoffmann, K.A., "[Solution of Maxwell's Equations Using Fourth-Order Modified Runge-Kutta Scheme on Transformed Coordinates](#)," *2020 AIAA SciTech Forum*, Orlando FL, AIAA 2020-2155, January 2020.
- **Sharma, V.**, "[Numerical Solution of Maxwell's equations on transformed coordinates for non-rectangular electromagnetic applications](#)," Ph.D. Dissertation, Wichita State University, May 2020.
- **Sharma, V.**, and Hoffmann, K.A., "[Solution of Maxwell's Equations for Non-Rectangular Electromagnetic Applications](#)," *AIAA Journal of Thermophysics and Heat Transfer*, Published Online 18 September 2020.

**AWARDS & GRANTS**

Special Research Fellowships – Student Travel

September 2019

Awarded by - Graduate School, Wichita, State University, Wichita, KS

**Conference Travel Grant**

November 2019

Awarded by - Student Government Association, Wichita, State University, Wichita, KS

**2017 Lee and Carolyn Riley Distinguished Graduate Assistantship**

May 2017

Awarded by - Wichita State University Libraries, Wichita, KS

**Shocker Innovation Corps**

January 2017

Awarded by - WSU Ventures and National Science Foundation (NSF) I-Corps

**Best Student Internship Project**

August 2013

Amity University, for Internship at Tata Motors, India

**Passed with Distinction in MS degree**

June 2014

Amity University, India

**PROFESSIONAL AFFILIATIONS**

Member, American Institute of Aeronautics and Astronautics (AIAA)