

# Bhupender Bindal

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## Skills

<b>Programming</b>	Python: Pandas, PyTorch, OpenCV, Scikit-learn, Gradio, Matplotlib, profiling (cProfile, tracemalloc); Matlab, SQL, PostgreSQL
<b>Platforms and Tools</b>	Linux, Shell (Bash), Docker, Microsoft Office, Git and GitHub, Make, Yaml and LaTeX (Overleaf), Unigraphics NX, AutoCAD
<b>Soft Skills</b>	Teamwork, Problem-solving, Documentation, Engaging Presentation
<b>Language</b>	English: Professional proficiency (IELTS 7.5), Deutsch: Limited proficiency (DSH 1 or B2)

## Personal Profile

I hold a Master's degree in Computational Sciences in Engineering from TU Braunschweig, specialising in data science and programming. I have worked on diverse projects, including microscopic image data in composite-material and biology domains, for my master's thesis and student project. Additionally, I gained experience in processing and analysing large-scale Geospatial data during a student job. I am eager to contribute and continually expand my knowledge by working on projects that bring about positive change.

## University Projects

### Master thesis: Microscopic image super-resolution for Carbon Fiber Reinforced Polymer samples | [GitHub](#)

Braunschweig & Stade, Germany

Technische Universität Braunschweig | German Aerospace Center (DLR)

February 2024 - August 2024

- Implemented automated data preprocessing that generates aligned high and low-resolution images
- Trained selected image super-resolution models remotely on the university's GPU cluster
- Achieved high-quality images from low-resolution Carbon Fiber Reinforced Polymer images
- Reduced time for obtaining high-resolution images by 45 percent in comparison to that of a microscope

### Studienarbeit: Multi-view classification of chloroplast cells | [GitHub](#)

Braunschweig, Germany

Technische Universität Braunschweig

May 2023 - August 2023

- Implemented Multi-view Convolutional Neural Networks to classify microscopic images of chloroplast cells using PyTorch and Lightning libraries
- Conducted training for both multi-view and single-view methods on simulated data and logging of the experimentation with tensorboard
- Assessed performance of trained models on simulated data and real-world scenario data
- Analysed the potential constraints like sampling bias and data leakage and possible limitations in real-world situations
- Containerised the application using Docker for inference and hosted it as a web application on Huggingface

### Personal Projects

Braunschweig, Germany

- Solved Advent of Code 2024 puzzles, obtaining 36 stars out of 50 | [GitHub](#)
- Geographical Map Representation of the 2019 Indian General Election Winners | [GitHub](#) | [Map](#)

## Experience

### Institute for Sustainable Urbanism (ISU), Technische Universität Braunschweig

Braunschweig, Germany

HiWi student | Project: Geospatial grouping of CityGML dataset

March 2024 - September 2024

- Implemented an automated data pipeline extracting millions of 3D building data of the German states from GML to SQLite using Python
- Parsed features such as geo-coordinates and added new features, including land type (urban or non-urban), utilising GeoPandas
- Reduced the processing time from days to a few hours by eliminating a large number of small files with a local SQLite database
- Quantified and logged data processing information, including processed and rejected data

### Tata Consultancy Services Ltd.

Bangalore and New Delhi, India

Design Engineer

October 2017 - August 2021

- Executed the layout and packaging of parking sensors in cars for a major Japanese automaker, adhering to functional and safety standards
- Developed 3D models from styling surfaces and created 2D drawings for bumpers and related mounting components
- Improved efficiency, reduced errors and reworks by resolving gaps and ensuring clarity in communication with the onsite team
- Designed pneumatic and hydraulic systems in a shipbuilding project, collaborating closely with the Ship Systems and other design departments

## Education

### Technische Universität Braunschweig

Braunschweig, Germany

Masters in Computational Sciences and Engineering

October 2021 - September 2024

Grade: 1.8 out of 4

### Jamia Millia Islamia University

New Delhi, India

Bachelor of Technology in Mechanical Engineering

July 2013 - June 2017

Grade: 8.64 out of 10 (10 is best)