

# Bhupender Bindal

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## Skills

<b>Programming</b>	Python (Pandas, PyTorch, OpenCV, NumPy, Scikit-learn, Gradio), Java, SQL
<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), Hindi: Native proficiency

## Personal Profile

Master's degree in Computational Sciences in Engineering from TU Braunschweig, specializing in data science and programming. I have worked on diverse projects, including microscopic image data classification and super-resolution in composite-material and biology domains, for my master's thesis and student project. Additionally, I have worked on large-scale Geospatial data processing and analytics in a student job. I am eager to contribute and continually expand my knowledge professionally, 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

- Performed a comprehensive literature review and selected single image-based and example-based super-resolution methods
- Implemented automated data preprocessing that generates aligned high and low-resolution images
- Applied image super-resolution methods and 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 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 Project: Geographical Map Representation of 2019 Indian General Election

Braunschweig, Germany

Winners | [GitHub](#) | [Map](#)

Technische Universität Braunschweig

August 2023

- Developed an interactive map showcasing information about the winners of the 2019 Indian general elections
- Scraped the required data from two websites and performed necessary data preprocessing for effective plotting
- Leveraged the Pydeck library to transform data into an interactive map visualization

## 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 like including land type (urban or non-urban), utilizing GeoPandas
- Reduced the processing time from days to a few hours by eliminating a large number of small files with a local SQLite database
- Created a clustering display of 3D building embeddings using hierarchical and t-SNE techniques

### 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)