

# JIVJOT SINGH

Ludhiana, Punjab

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## PERSONAL PROFILE

An IISER Mohali Physics graduate student with a minor specialization in Data Science, transitioning to a career as **Machine Learning Researcher**. Deeply passionate to combine my expertise in Astrophysics with Machine Learning to leverage my knowledge & skills for positive societal change.

## WORK EXPERIENCE

### Indian School of Business

Research Intern @ Institute of Data Sciences

Mohali, India

Jun 2023 - Present

- Working on Multi-lingual Code-mixed seeded translation using AI4Bharat base libraries
- Operating within a dynamic Big Data environment, leading **Data Mining** of news articles from the last century
- Harnessing the power of GPU computations to perform **Topic Modelling** through Latent Dirichlet Allocation & Transformers
- Creating Graph Networks of keyphrases extracted by running **Community Detection Algorithms** to uncover historical narratives
- Technical Skills:** Pandas, Plotly, Selenium, **Data Mining**, **Natural Language Processing**
- Soft Skills:** Research, Documentation, Communication, Presentation skills

### Tatras Data

Project Intern

Mohali, India

May 2023 - Jun 2023

- Scraped social media handles of Political leaders to perform **Sentiment Analysis**
- Facilitated the identification of small to medium-scale food influencers within specific geographic regions, scraped Instagram using Selenium
- Fine-Tuned Keras models like ResNet50, achieving accuracy of 97.36% on classifying Food-vs-NonFood images to enhance filtering
- Technical Skills:** Pandas, **Keras**, Selenium, Web Scraping
- Soft Skills:** Teamwork, Time Management, Communication, Multi-tasking

### Sabudh Foundation

Data Science Intern

Mohali, India

Jan 2023 - Jun 2023

- Acquired in-depth understanding of Data Science and Machine Learning concepts through advanced courseworks and coding challenges
- Seasoned with Data Structures & Algorithms, Statistics, Linear Algebra, Probability, **Deep Learning** and **Natural Language Processing**
- Excelled in Kaggle competitions : Frame Level Speech Recognition and BBC Document Classification
- Built a Medical Chatbot powered by RASA and Python as part of the Passion Project with the presentation delivered through Quarto
- Technical Skills:** NumPy, Matplotlib, Pandas, Scikit-learn, BeautifulSoup, Git, Quarto
- Soft Skills:** Teamwork, Time Management, Communication, Presentation skills

## UNIVERSITY PROJECTS

### Speech Recognition

Indian Institute of Science Education and Research, Mohali

Mohali, India

Mar 2023 - Apr 2023

- Thoughtfully devised Sequence Models using non Recursive Nets making use of residual connections to classify at a frame level
- Engineered feature-expansion approaches by parameterizing temporal context through customizing TensorFlow generators
- Constructed Dense and Convolution Deep Residual Networks by combining Functional, Sequential and Sub-classing methods
- Built Bidirectional-Recurrent models using LSTM and Conv2D architectures to classify at an utterance level
- Technical Skills:** Keras, Linear Algebra, NumPy, **TensorFlow**, Plotly
- Soft Skills:** Notes-making, Documentation, Creativity

### Multi-Layer Perceptron using NumPy

Indian Institute of Science Education and Research, Mohali

Mohali, India

Feb 2023 - Mar 2023

- Successfully created an object-oriented codebase that implements the complete architecture of MLP from scratch
- Created different methods of weight initializations and activation maps alongwith Stochastic Mini-batch Gradient Descent with momentum
- Tested on the MNIST data which resulted in 98.00% validation accuracy using a deep architecture
- Technical Skills:** Calculus, Linear Algebra, **Object-Oriented Programming**, Fine-tuning, Plotly
- Soft Skills:** Notes-making, Documentation, Creativity

### IPL batting partnership Network Analysis

Indian Institute of Science Education and Research, Mohali

Mohali, India

Sep 2022 - Oct 2022

- Aggregated the partnership statistics by Web Scraping the ESPN website
- Built dynamic Network Graphs to rank key players based on various Centrality measures
- Discovered that the IPL batting Network is very weak Dis-assortative type using the Average Nearest Neighbor Degree results
- Technical Skills:** Python, **Data Mining**, RegEx, BeautifulSoup, Pandas, NetworkX, Pyvis,  $\text{\LaTeX}$
- Soft Skills:** Report writing, Presentation skills, Logical & Critical Thinking

## MASTERS THESIS

### Dissertation: Multi-wavelength analysis of the NGC 3227 group using AstroSat

Mohali, India

Indian Institute of Science Education and Research, Mohali

May 2022 - Apr 2023

- Studied the dynamics of Star-forming galaxies within an interacting system, employing a comprehensive multi-wavelength approach
- Conducted statistical analysis on astronomical sources extracted from AstroSat-UVIT's image of galaxy NGC 3227
- Designed code** implementing an innovative approach for distinguishing faint objects between Point sources and Extended objects
- Modelled Spectral Energy Distribution model by integrating data from various astronomical missions
- Discovered an exciting Tidal Dwarf Candidate**, exclusively observable in the AstroSat data of the Far Ultraviolet band
- Effectively communicated the findings of my data analysis to the Astrophysics Thesis committee through meticulously compiled results showcased in Poster, PowerPoint, and LaTeX presentations as part of the Masters Research Project under the guidance of Prof. Kulinder Pal Singh
- Technical Skills:** Python, SciPy, Matplotlib, SOURCE EXTRACTOR, MAGPHYS,  $\text{\LaTeX}$ , PowerPoint
- Soft Skills:** Time Management, **Research**, Presentation skills, Report & **Thesis writing**

## EDUCATION

### Indian Institute of Science Education and Research, Mohali

Mohali, India

BS-MS with Major in Physics & Minor in Data Science

Aug 2018 - May 2023

- Demonstrated Physics Experiments to Punjab School kids as a **volunteer** at IISER-Mohali Foundation Day (2018 & 2019)
- Relevant Courses:** **Python programming**, Analysis in one variable, Introduction to Cryptography, **Probability & Statistics**, Math methods for physicists, Statistical Mechanics, Non-linear dynamics & complex systems, **Data Science**, **Machine Learning**, **Design & analysis of algorithms**

### Sacred Heart Senior Secondary School

Ludhiana, India

High School

Mar 2016 - Apr 2018

- Bagged 1st place** for Radiometer Construction at Science Exhibition
- Subjects:** Physics, Chemistry, Maths and Fine Arts

## SKILLS

<b>Data Science</b>	Python, Probability, Statistics, Linear Algebra, Data Structures & Algorithms, Data Mining
<b>Machine Learning</b>	Supervised & Unsupervised Learning, Feature Engineering, Deep Learning, TensorFlow, Keras
<b>Natural Language Processing</b>	Speech Recognition, Topic Modelling, Conversational AI
<b>Miscellaneous</b>	$\text{\LaTeX}$ , Git, Linux, Microsoft Office
<b>Soft Skills</b>	Adaptability, Time Management, Multitasking, Problem-solving skills, Documentation, Creativity

## INTERESTS

<b>Art</b>	I dedicate my free time to painting and sketching as a form of artistic expression.
<b>Technical Writing</b>	I began posting on LinkedIn where I combine GitHub-hosted IPython Notebooks with digital notes on ML

## LANGUAGES

<b>English</b>	Professional proficiency
<b>Punjabi, Hindi</b>	Native proficiency