

# SAMRIDDHI JAIN

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## EDUCATION

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### Indian Institute of Technology Mandi

B.Tech. (Honors) in Computer Science and Engineering

*August 2013-present*

Current CGPA: 9.34

*(Branch Topper, CGPA after 7/8 semesters)*

### D. N. Model Sr. Sec. School, Moga

XII Standard, Central Board of Secondary Education

*2013*

Percentage: 93.4

### D. N. Model Sr. Sec. School, Moga

X Standard, Central Board of Secondary Education

*2011*

CGPA: 10

## EXPERIENCE

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### Microsoft India Development Center, Hyderabad

June 2016-July 2016

Software Developer Internship with Business Continuity and Disaster Recovery (BCDR) team under Cloud and Enterprises.

- Worked on Power BI and other internal Microsoft tools, was able to complete the intern project in half of the projected time.

## RESEARCH WORK

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### Semantic Multinomial Representation for Scene Images Using Dynamic Kernel based SVMs. (Accepted at SUNw at CVPR, 2016)

*Guide: Dr. A D Dileep (IIT Mandi), Dr. Veena Thenkanidiyoor (NIT Goa)*

Extracting and combining semantic pseudo concepts in an image with lower level image information for semantic multinomial representation and image classification.

### Object and activity based video summarization for vehicle mounted/egocentric cameras. (Major Technical Project)

ongoing final year project

*Guide: Dr. Renu M. Rameshan (IIT Mandi), Dr. Aditya Nigam (IIT Mandi)*

Given a picture of fine object/scenario extracting and summarizing all the frames in which it is present, in real time. Currently exploring the state of art techniques like densecap for coarse classification and deepmatching for fine grained matching. Extending the POC to provide big data solutions using hadoop, MPI and other tools.

### Visual and Textual automatic story board creation for a video. ongoing final year project

*Guide: Dr. Renu M. Rameshan (IIT Mandi), Dr. Aditya Nigam (IIT Mandi)*

Automatically selecting important events, creating a story-board representation and a short summary of the video in rich natural language. Currently exploring graph based matching techniques for content determination and LSTMs for text generation.

## PROJECTS

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### Natural Language Processing for News-Tweets integration

January 2016

- Integrating Social Channels with Traditional News Media for holistic news browsing.
- Given a news headline extract the key entities, discover tweets which talk about these entities and perform a temporal analysis to integrate news and tweets. Attach real time tweets with different sections of news by matching the context.
- Analysing social behaviour using forced directed graphs, zipfian distribution and sentiment analysis.

**Implementation of Resolution Refutation strategies in first order logic** ongoing

- Involves extension of FOL to clause form and using the unification algorithm to implement and experiment various resolution refutation strategies in terms of their soundness and time complexity.
- Will be combined with different domain representations and other modules to create a domain specific bot.

**Analytical and Qualitative assessment of SciDb data store** April-May 2016

- Understanding the use of SciDb in multidimensional data storage and analytics in the scientific community
- Study the key difference between SciDB and RDBMS, and also evaluate the performance of clustering algorithms on MapReduce and SciDB.

**Collaborative Real-Time Text Editor** October-November 2015

- Text editing tool collaborative over multiple systems built on server client model using Express Node.js.
- Involves techniques and libraries like Operational Transformation, diff-match-patch library for data synchronisation.

**Digits Recognising GUI using supervised learning** Summer 2015

- Detects digits written on a canvas, uses CART and Random Forests classifiers for recognition.
- Implemented using opencv 2.0, tkinter and sklearn library in Python.

**Case Study: Apache Spark Cluster Computing Framework** May-June 2016

- Understanding the key characteristics of Apache Spark framework and Resilient Distributed Datasets, their applications in industry and features like fault tolerance, scalability that make them superior to their traditional counterparts. Implemented movie recommendation system using Spark MLlib Library.

**3D reconstruction and depth estimation from multiple images** March 2016

- Studied stereo calibration and image rectification with the help of Bouguet's Toolbox.
- Used these techniques to estimate relative depth of objects, created a depth map and generated a 3D point cloud.

**ColorIt Android Application** March 2015

*Aptitude'15 organised by Google Developers Group, Jalandhar*

- Colorblind Assist Application which allows users to capture an image and process it in such a way that the features are then easily differentiable by a colorblind person.

**Analysis of Standard Pattern Analysis techniques** October 2015

- Implemented standard pattern analysis techniques like, Bayesian model, GMM, Hidden Markov Model, LDA, PCA and Support Vector Machines.
- Did performance evaluation and comparison over various image and sound datasets.

Other minor projects like **bot for games "Battle of Kings", Othello**, IIT Mandi Room Reservation System, Mean-shift tracking in videos, High Altitude Ballooning Probe, Sudo-ku Solver.

## TECHNICAL STRENGTHS

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C, C++, Java, Python, PHP, JavaScript, Scheme(Lisp), MySQL, JQuery, CSS, Android, Linux environment, Java EE-Eclipse, Android Studio, MATLAB, Data Parallelism using MPI, UI Designing and Adobe Photoshop

## COURSE WORK

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**Completed:** Mathematical Foundation for Computer Science, Advanced Data Structures and Algorithms, Probability and Random Processes, Paradigms of Programming, System Practicum, Pattern Recognition, Formal Language and Automata Theory, Data Mining for Decision Making, Communicating and Distributed Systems, Large Applications Practicum, Information and Database Systems, Computer Vision, Design of Concurrent Systems, Special Topics in Machine learning in Computer Vision, Special Topics in Data Visualisations, Artificial Intelligence, Knowledge Representation and Reasoning, Operations Research

## **AWARDS AND ACHIEVEMENTS**

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Runner-Up at **Inter IIT Tech Meet'16** in event **Social Media Analysis**  
Academic Excellence Award 2013-14, IIT Mandi  
Academic Excellence Award 2014-15, IIT Mandi  
2nd prize in Aptitude'15, mobile app development contest organised by GDG, Jalandhar  
Student Scholarship'15 for Grace Hopper Conference for Women, India

## **POSITION OF RESPONSIBILITY**

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Active member of **Women in Science and Engineering (WISE) group**, IIT Mandi  
Co-ordinator **Mobile Application Development Group**, IIT Mandi  
Co-ordinator **Hackers Hangout**, IIT Mandi  
Member, Anti-ragging Committee, IIT Mandi  
Design Co-ordinator Rann-neeti'14 (Sports Fest IIT Mandi)

## **EXTRA CO-CURRICULAR ACTIVITIES**

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Hiking and Trekking  
Active Member of Choreo and Dramatics Society  
Represented IIT Mandi at Inter IIT Sports Meet in Volleyball in the year 2013 and 2014  
Active Member of Program Management Group and organised many events successfully in college.