

# BHISHAM DEV VERMA

IIT Mandi - 175075  $\diamond$  Himachal Pradesh  
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## RESEARCH INTEREST

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My research interest includes sketching algorithms, data mining, machine learning, optimization, and soft computing.

## EDUCATION

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<b>Indian Institute of Technology, Mandi</b> Ph.D. Scholar	<i>Feb-2019 - Present</i> CGPA: 9.38/10
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<b>Indian Institute of Technology, Mandi</b> Master of Science in Applied Mathematics	<i>August 2016 - 2018</i> CGPA: 8.8/10
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<b>Vallabh Government College, Mandi</b> Bachelor of Science	<i>August 2012 - 2015</i> Percentage: 63.75%
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## PUBLICATIONS

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- **Efficient Binary Embedding of Categorical Data using BinSketch.** Bhisham Dev Verma, Rameshwar Pratap and Debajyoti Bera. (*Accepted in the Data Mining and Knowledge Discovery, 2021*).
- **Dimensionality Reduction for Categorical Data.** Debajyoti Bera, Rameshwar Pratap, and Bhisham Dev Verma. *IEEE Transactions on Knowledge and Data Engineering (2021)*.
- **QUINT: Node embedding using network hashing.** Debajyoti Bera, Rameshwar Pratap, Bhisham Dev Verma, Biswadeep Sen, and Tanmoy Chakraborty. *IEEE Transactions on Knowledge and Data Engineering (2021)*.
- **Improving Tug-of-War sketch using Control-Variates method.** Rameshwar Pratap, Bhisham Dev Verma and Raghav Kulkarni. In *SIAM Conference on Applied and Computational Discrete Algorithms (ACDA21)*, pp. 66-76. Society for Industrial and Applied Mathematics, 2021.
- **Parallel multi-agent real-coded genetic algorithm for large-scale black-box single-objective optimisation.** Andranik S Akopov, Levon A Beklaryan, Manoj Thakur, Bhisham Dev Verma. *Knowledge-Based Systems* 174 (2019): 103-122.

## PROJECTS

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<b>Practical Portfolio Optimization using Heuristic Techniques</b> <i>Advisor: Dr. Manoj Thakur, Associate Professor, SBS, IIT Mandi</i>	August 2017 - June 2018 <i>Master's Thesis</i>
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- Modified NSGA-2 algorithm for Practical Portfolio problem and implemented that algorithm to solve Portfolio Optimization problems in C/C++.

<b>Portfolio Optimization using Differential Evolution</b> <i>Advisor: Dr. Manoj Thakur, Associate Professor, SBS, IIT Mandi</i>	Winter Intern-2017
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- Studied and Implemented Differential Evolution algorithm to solve Portfolio Optimization problems in C/C++.

## Implementation of Transportation Problem in C/C++

Summer Intern-2017

*Advisor: Dr. Manoj Thakur, Associate Professor, SBS, IIT Mandi*

- A code package for solving transportation problem is built. Implemented Northwest corner rule, Least Cost method, Vogel's approximation method to get feasible solution followed by MODI method to get optimal solution in C/C++.
- The output is a  $\text{\LaTeX}$  code which on compilation gives a stepwise solution.

## Implementation of Classifiers in Python

Spring - 2017

*Pattern Recognition, Instructor: Dr. Dileep A.D., Assistant Professor, SCEE, IIT Mandi*

- Bayes Classifier using GMM, K-nearest neighbor method for class-conditional density estimation using DTW distance, Discrete HMM in Python 3.
- Fisher linear Discriminant Analysis (FDA), Perceptron Based Classifier, SVM based Classifier using linear kernel, Polynomial kernel and Gaussian Kernel in Python 3.

## Eigenfaces for Face Detection

Spring - 2017

*Matrix Theory, Instructor: Dr. Siddhartha Sarma, Assistant Professor, SCEE, IIT Mandi*

- Computed Eigenfaces using PCA for face detection in Python 3.

## TECHNICAL STRENGTHS

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Computer Languages	C/C++, PYTHON, MATLAB
Software & Tools	$\text{\LaTeX}$ , MS-Office

## WORKSHOP & SUMMER SCHOOLS

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- Attended Google Research India Graduate Symposium, April 7-9, 2021.
- IFCAM Summer School Workshop 2019 on Mathematics For Data Science, IISc Bangalore.
- IEEE CIS Summer School Workshop on Computational Intelligence : Tools and Techniques for Smart Grid Solutions, IIT Delhi-2017.
- Summer Program in Mathematics-2017, HRI-Allahabad.

## RELEVANT COURSES

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Applied Mathematical Programming	Linear Algebra
Optimization Techniques	Heuristic Optimization
Pattern Recognition	Matrix Theory
Probability & Statistics	Numerical Analysis
Programming Practicum	Soft Computing
Probability and Random Process	

## ACHIEVEMENTS

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- Awarded Best Teaching Assistant Award - 2021 by Indian Institute of Technology Mandi in recognition of contribution in the preparation of assignments and clearing doubts of the students in the Data Science 1 course.
- Outstanding Academic Achievement Award for academic excellence among the graduating batch of MSc Applied Mathematics students in the year 2018.
- GATE-2018 - Mathematics.
- IIT-JAM 2016 - Mathematics.

## REFERENCES

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**Dr. Manoj Thakur**

Associate Professor

School Of Basic Sciences

IIT Mandi-175005

E-mail id: manoj@iitmandi.ac.in

**Dr. Rameshwar Pratap**

Assistant Professor

School of Computing and Electrical Engineering

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