

GOVIND GOPAKUMAR

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EDUCATION

Indian Institute of Technology, Kanpur

Masters in Technology, Computer Science and Engineering.

July 2016 - June 2018

CGPA 10.0

Indian Institute of Technology, Kanpur

Bachelors in Technology, Aerospace Engineering.

July 2011 - June 2015

PUBLICATIONS

Globally-convergent IRLS for Robust Regression Problems

Bhaskar Mukhoty, Govind Gopakumar, Purushottam Kar, Prateek Jain, at the 22nd International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2019 [JMLR link](#)

WORK EXPERIENCE

Goldman Sachs, Bangalore

Strategist

June '18 - Present

- Lead developer of analytics platform that oversees all of alternative investments within Goldman Sachs Asset Management
- Developed key infrastructure that drives data and insights toolkit, serving multiple investment teams around the world in different private equity, hedge fund, and fund of fund mandates.
- Implemented efficient methods for quick, correct and useful analysis, combining cash flows, valuations and other data across multiple databases and third party providers.

Siemens Healthcare, Bangalore

Research Software Developer

June '15 - May '16

- Proposed a method for vertebral segmentation in CT Volumes using graph - laplacian deformation methods
- Beat state of the art results on vertebral segmentation on proprietary datasets using a combination of mesh optimization and machine learning methods
- Implemented Hough Forest based organ localization techniques for CT and MRI volumes
- Utilized tools in C++ - Eigen, ITK, MeVIS lab and integrated into existing product lines of Siemens

RESEARCH EXPERIENCE

Robust Regression via IRLS

Supervisors : Dr. Purushottam Kar (IIT Kanpur), Dr Prateek Jain (Microsoft Research, Bangalore)

Master's Thesis

- Studied the robust regression problem and possible approaches to solve it via Iteratively Reweighed Least Squares
- Enumerated a class of counter examples on which IRLS fails to converge to the optimal solution, even in a weakened formulation of the original problem
- Proved a local convergence result for the IRLS algorithm, which required development of novel results and tools surrounding measures of strong convexity (weighted strong convexity / smoothness)
- Provided an empirical comparison of IRLS to other standard algorithms that aim to solve the robust regression problem
- Work later extended to provide global convergence guarantees, published at **AISTATS** 2019.
- Thesis manuscript : [Link](#)

Deep topic modelling for extreme multilabel learning

Independent Project

Supervisors : Dr. Piyush Rai

- Formulated the problem of multi-label learning as one of deep topic modelling.
- Studied state of the art models for deep topic modelling, including methods based on VAE's.
- Implemented common topic modelling techniques and analyzed performance using Python / Jupyter.

BDTLib - A library for bandit learning

Course Project

Supervisors : Dr. Purushottam Kar

Optimization Techniques

- Studied the bandit problem, specifically techniques including UCB, Thompson Sampling
- Implemented basic methods (ϵ -greedy, Thompson Sampling, UCB) for contextual bandits
- Created a library that allows plug and play of different algorithms, and a testing suite on basic datasets.
- Project repository : [Github Link](#)

TEACHING EXPERIENCE

Tutor, Introduction to Programming, IIT Kanpur

Course Tutor

- Part of 15 member team that was responsible for paper setting, correction, course organization as well as tutorial sessions.
- Held weekly tutorial sessions that were aimed at problem solving and revision for a class of 40 students.
- Mentored a student for advanced track programming credit, which involved project design and supervision over a semester.

Instructor, ACA Summer School, IIT Kanpur

Course Instructor

- Sole instructor of summer school module on Machine Learning, aimed at motivated undergraduates from across the country.
- Designed a course covering basic mathematical background and machine learning techniques, augmented with programming exercises in Python / Jupyter.
- Held project sessions and quizzes over a two week period to test knowledge of nearly 100 participating students.
- Course Webpage : [Github Link](#).

ACADEMICS, HONORS AND TESTING

Graduate courses taken

Online Learning and Optimization, Probability Theory, Statistical Learning Theory, Bayesian Machine Learning, Randomized Algorithms, Computer Vision and Machine Learning

Honors

- Awarded Academic Excellence Award, IIT Kanpur '16, '17
- Ranked 1st across department in post graduate program '16 -'18
- Best poster award, Research day 2018, Department of CSE, IIT Kanpur '18
- Awarded INSPIRE Scholarship by Govt. Of India for excellence in senior secondary education '11

Standardized Tests

- **GRE** : 337 / 340 - 167 Verbal / 170 Quant / 4.0 Analytical Writing
- **TOEFL** : 116/120 - 30 Reading / 30 Listening / 29 Speaking / 27 Writing