GOVIND GOPAKUMAR

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EDUCATION

Indian Institute of Technology, Kanpur *July 2016 - June 2018*
Masters in Technology, Computer Science and Engineering. CGPA 10.0
Indian Institute of Technology, Kanpur *July 2011 - June 2015*
Bachelors in Technology, Aerospace Engineering.

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 June '18 - Present
Strategist

- 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 June '15 - May '16
Research Software Developer

- 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 Master's Thesis
Supervisors : Dr. Purushottam Kar (IIT Kanpur), Dr Prateek Jain (Microsoft Research, Bangalore)

- 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 knowldge 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