Deepak Kumar Gouda

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Education

Master of Science **Georgia Institute of Technology**
Computer Science-Machine Learning, GPA 4.0/4.0 *Aug 2022 - May 2024*

Bachelor of Technology **Indian Institute of Technology, Guwahati**
Mathematics and Computing, GPA 8.80/10.0 *July 2016-July 2020*

Selected Projects

- **Video Context Analysis and Summarization using LLMs** **Georgia Tech**
  Prof. Chao Zhang, College of Computing *Fall 2023*
    - Fine-tuning LLM on video data for context generation, video summarization and perform Q&A sessions
    - Current choices : BLIP for language-image pretraining, LLaMA model for text generation

- **Parameter-free AdaGrad for Strongly Convex Functions [arXiv]** **Georgia Tech**
  Prof. Jacob Abernethy, College of Computing *Spring 2023*
    - Developed a parameter-free adaptive gradient optimizer for strongly convex losses.
    - Devised a hierarchical approach to eliminate manual tuning of the learning rate and the prior knowledge of the degree of strong convexity; the algorithm achieves a sub-linear regret bound of $O(\log T)$
    - Method can be extended to develop parameter-free versions of RMSProp and Adam.

- **Text Rating Prediction [Report]** **Georgia Tech**
  Prof. Mahdi Roozbahani, College of Computing *Fall 2022*
    - Developed machine learning classifier and regressor models to rate books based on text, summary, author, and publisher information. Books API to enhance the prediction model's performance and accuracy.
    - Achieved best results using GradientBoost (F1 score : 0.72) and Random Forest Regressor (MAE : 0.29).

Selected Coursework

Deep Learning for Text Data, Big Data Systems and Analytics, Convex Optimization, Online Learning, Statistical Machine Learning, Internet Data Science, Graduate Algorithms, Parallel Computing

Technical Skills

LANGUAGES	Python, C/C++, Bash
FRAMEWORKS	PyTorch, Pandas, Numpy, Scikit, Docker, Airflow, Git
DATA	PySpark, Hadoop, MySQL, Postgres, Google BigQuery

Experience

- **Internet Initiative of Japan** **Tokyo, JP**
  Research Intern, Advisor - Romain Fontugne *June 2023 - July 2023*
    - Identified routing behavior of organizations by size, Regional Internet Registry (RIR) and business sector; also identified adoption trends in Resource Public Key Infrastructure (RPKI) infrastructure.

- **Kivi Capital** **Delhi, IN**
  Systems Developer *June 2020 - May 2022*
    - Led the design and development of data snap and trade execution systems which capture upto 50 GB data packets in 6 hours; the execution algorithm guarantees execution with disaster recovery
    - *Key Technologies - Socket Programming, Multi-Threaded Systems, C++, Pandas*

Achievements and Services

- **Student Travel Grant:** *ACM HotNets, 2022, ACM IMC, 2023* - for current research on Internet routing
- **ACM CoNEXT 2023:** Artifact Evaluation Committee
- **CS 8803 SII:** Teaching Assistant for the course on Securing Internet Infrastructure
- **InfosecIITG :** Founding member of the Information Security group, ranked **298***(in 2020)* globally
- **American Express, 2018 :** Top **1%** among 2700+ teams in Analyze This - flagship hackathon
- **Microsoft Code.Fun.Do++ 2018 :** Runners-up in coding hackathon
- **JEE Advanced 2016**: **99.2%ile** from 200,000 applicants
- **JEE Mains 2016**: **99.99%ile** from 1.2 Million applicants

Publications

- **D. K. Gouda**, S. Jolly and K. Kapoor, "*Design and Validation of BlockEval, A Blockchain Simulator*" International Conference on COMmunication Systems & NETworkS (**COMSNETS**), 2021
- De, S., Dey, A.K. & **Gouda, D.K.** "*Construction of Confidence Interval for Stock Prices Predicted by LSTMs*". **Annals of Data Science.** 9, 271–284 (2022)