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DESHMUKH AADESH SUHAS

Skills: Julia, C/C++, Python, Pytorch, Unix/Linux, SQL, MATLAB, Git, Latex, aws.
Languages: English, Hindi, Marathi, Telugu.

EXPERIENCE

Research Assistant (University of Utah) Aug 2021 - June 2023
(PI: Prof. Hari Sundar)

- Currently I am working in High Performance Computing, specifically on PDE solvers.
- I am also restructuring the code base for Femshop.jl library, which solves Finite Element Mesh problems.

Google Summer of Code 2020 (TimeSeriesClassification.jl) Jun 2020 - Sep 2020
(Mentors: Prof. Sebastian Vollmer and Mr. Markus Löning)

- Developed the machine learning library TimeSeriesClassification.jl, with a unified interface to fit, predict & evaluate.
- The TimeSeriesForest algorithm in the MLJTime is 6 to 8 times faster than the previous best algorithm in sktime.
- Performed statistical analysis of fit-predict benchmarks in terms of speed, accuracy and memory over 104 datasets. Implemented a multidimensional data container and functions for cross-validation.
- Structured the package in a modular way, so adding new features and their parallelization becomes simple.

Covid-Coexit May 2020 - July 2020
(This is a team project in collaboration with Alan Turing Institute uk, funded by Microsoft)

- Implemented SEIR model to find a test-and-trace strategy for localised lockdown rather than the whole country.
- Covide-Coexist leverage false positive rate and sensitivity to estimate rate of Covid-19 disease.
- Our models do not require any personal data and are 36,000 times faster than it's python counterpart due to Einsum methods I have developed.

Julia Season of Contribution(JSoC'19) May 2019 - Aug 2019
(Mentors: Prof. Luis Benet and Dr. Marcelo Forets)

- Implemented Range over-approximation algorithm which improves bounds over range of taylor models by 70-95% using taylor models to zonotope conversion.
- Developed RangeEnclosures.jl a Julia package which bounds polynomials using various methods, which was initiated by my PR to TaylorModels.jl.
- Implemented branch and bound(BNB) algorithm; BNB minimise relative precision and achieve better performance in most of the cases.
- Debugged and ported validation methods in TMJets algorithm and created proof of concept for domain contraction methods using interval constraint programming.

National Institute of Technology, Tiruchirappalli - Intern(Python, NLTK) Nov 2018 - Dec 2018
(This is training on natural language processing by Prof. A. Santhana Vijayan)

- Taught myself Pandas, NumPy, NLTK and scikit-learn APIs.

- Collected the data form Twitter APIs, handheld missing values and outliers.
- Learned about a bag of words, Ngram model, embeddings(Word2Vec).
- Implemented naive bayes classification algorithm with KFold-cross-validation.

Academic and Personal Research Projects Jul 2017 - Nov 2020

1. Implemented surrogate optimization algorithm on differential equations using radial basis functions..
2. Developed Wright-Fisher model to understand the patterns of genetic diversity. **(Prof. G. Devasena)**
3. Implemented an attention mechanism for Text Generation using GRU (Under Cedilla).
4. Developed a proof of concept that the chinese restaurant process (CRP) can be used for bayesian inference in place of predetermined beta values.
5. Developed office management software using PHP, MySQL & HTML. **(Instructor M. Kundian)**

Scholastic Achievement

- Got admitted to University of Utah with full funding for two years.
- 7th rank in regional scholarship, HHS Exam among 30,000 students.
- State topper in high school Physics exam with perfect score.

EDUCATION

University of Utah August 2021 - June 2023

Master's in Computer Science

Indian Institute of Information and Technology, Tiruchirappalli July 2017 - May 2021

Computer Science and Engineering, B.TECH.

CGPA - 7.9

Key courses -

Introduction to Algorithms(C\C++), Design and Analysis of Parallel Algorithms,
Principles of Operational Research, Randomised Algorithms, Probability Theory,
Data warehousing and Data mining, Statistics and Queuing theory, Linear Algebra and Calculus,
Database Management Systems(SQL, XML), Software Engineering, Data structures(C\C++),
Discrete mathematics, Internetworking Protocols(Socket Programming C and Java),
Automata and Formal Languages, Microprocessor and Microcontrolller (TASM), Computer Architecture,
Operating Systems(Unix\Linux), Principles of Compiler Design, Machine Learning
Principles of Cryptography, Data Communications and Networking, Computer Graphics.

Leadership roles - 1) Lead team of five at Cedilla a natural language processing group.
2) Reel Club (Short film) directed short film, led a team of six.
3) Microsoft student partner 2019-2020 for IIIT T.

College clubs - Members of Genesis(Robotics club) developed a robotic arm(2D) in a group of three.
Sports - Swimmer, running.

Narayana Junior College (High school)

Percentage - 94%