Annavajjala Sai Pavan Aditya Sarma

CONTACT INFORMATION

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RESEARCH INTERESTS

Primary: Data Mining, Machine Learning, Artificial Intelligence
Also Interested in: Complexity Theory, Theoretical Computer Science

EDUCATION

Birla Institute of Technology and Science, Pilani, Rajasthan, INDIA

B.E(Hons.) Computer Science, August 2013 (expected graduation date: May 2017)
CGPA = 8.07/10, Major GPA = 8.1/10

Vijaya Ratna Junior College, Hyderabad, Telangana, India

Score = 974/1000
Grad. May, 2013

St. Mary's High School, Hyderabad, Telangana, India

Grad. May, 2011

RESEARCH EXPERIENCE

Undergrad Researcher - ADAPT Lab, BITS Pilani
Aug, 2016 - present — Dr. Poonam Goyal

- Worked on design and development of parallel density based clustering algorithms for Big Data.
- Working on reducing the number of findNeighbor calls in density based clustering algorithms.
- Successfully implemented micro cluster based sequential density clustering algorithm which performs better than R-Tree based DBSCAN.
- Currently pursuing an undergraduate thesis and working on the implementation of the algorithm designed by us.

Undergrad Researcher - Multimedia and HCI Lab, BITS Pilani
Aug, 2016 - Dec, 2016 — Dr. Lavika Goel

- Worked on Project Food Sense and developed novel segmentation algorithms to classify food items according to rottenness.
- Developed a hybrid optimization algorithm based on Moth Flame Optimization and Gravitational Search Algorithm. Proved the new algorithm to perform better than both on standard benchmark functions.
- Improved K-means segmentation by incorporating our optimization algorithm in it.
- Developed a novel segmentation algorithm based on hybrid algorithm.
- Our paper titled **Hybridization of Moth Flame Optimization and Gravitational Search Algorithm and its Application to detection of Food Quality** has been accepted in Intelligent Systems Conference (2017) to be held in London.

Undergrad Researcher - Machine Vision Lab, CSIR-CEERI, Pilani
Apr, 2015 - Dec, 2015 — Dr. Jagdish L. Raheja

- Worked on Activity Recognition using IP Cameras.
- Developed a system to take input from IP Cameras connected over a network, transmit them to the server where the processing takes place and alert is raised if a Fall is detected.

- Used concepts of Background Subtraction and Motion History Image to identify activity being performed by the person in frame.
- Trained a multi-class SVM and performed the classification.

Publications

A. Sarma, A. Bhutani, and L. Goel, Hybridization of Moth Flame Optimization and Gravitational Search Algorithm and its Application to detection of Food Quality, *Intelligent Systems Conference (IntelliSys)* 2017 (Accepted but not published)

Assistantships

Teaching Assistant - Data Mining Aug, 2016 - Dec, 2016

- Undergraduate Teaching Assistant for Data Mining (CS F415).
- Duties included conducting weekly lab sessions, assignment question preparation etc.

Teaching Assistant - Principles of Programming Languages Aug, 2016 - Dec, 2016

- Undergraduate Teaching Assistant for Principles of Programming Languages (CS F301).
- Duties included conducting weekly tutorials, assignment question preparation and evaluation etc.

Projects

- **Automated Question Answering System** Sep, 2015 - Dec, 2015
  - Developed a system that can answer "W" based questions.
  - Used Google for fetching relevant information about the question.
  - Scores were assigned to potential answers based on similariy matching(using levenshtein distance) and some other heuristics (like number of occurances, capitalization, parts of speech etc).
  - Used NLTK in Python
- **Parallel Backtracking Framework** Mar, 2016 - May, 2016
  - Made a framework for parallellizing backtracking algorithms .
  - The user would have to provide a solver function to solve the specific problem (say sudoku solving) and our framework would parallellize it, distributing the work among all the nodes and handle the communication aspects.
  - Used OpenMP and OpenMPI. C Programming Language was used.
- **Breaking News Problem** Mar, 2016 - Mar, 2016
  - Designed a system to handle the Editor-Reporter problem, Multiple reporters report news to the editor who then publishes only the valid and latest news.
  - Modeled this problem in MPI and coded system to handle this in a distributed scenario.
  - Later extended our solution to multiple editors.
  - Used OpenMPI in C.
- **Basic Compiler** Feb, 2016 - Apr, 2016
  - Coded a Compiler for a hypothetical language from scratch.
  - Consisted of a Lexer, Parser, AST Generator, Intermediate Code Generator and Code Generator.
  - The output was an assembly program that would run on the NASM assembler.
- **Parallel File System Comparison** Jan, 2016 - Feb, 2016
  - Wrote a parallel file comparison tool that has the ability to compare k file sytems in parallel.

- Had the ability to detect a common sub-tree among file systems as well.
- All code was written in C using PThread library.

- **Digital Clock** Feb, 2015 - Apr, 2015
  - Designed a digital clock with alarm functionality using the microprocessor 8086.
  - All simulation was done using Proteus 7.

Professional Experience

Boomerang Commerce, Bangalore, India May, 2016 - Jul, 2016

- Boomerang Commerce is a startup based out of Mountain View, California, providing dynamic price optimization solutions to e-commerce retailers.
- Worked with the DevOps team to create a employee account management tool from scratch for managing employee accounts on AWS, Jira and Unfuddle.
- All code was reviewed, perfected and put into production.

Computer Skills

- Languages: C, C++, C#, JAVA, Python, MATLAB, SQL, Prolog, Scheme, some use of Unix shell scripts
- Libraries: OpenMPI, OpenMP, PThreads, OpenCV, EMGU CV, NLTK, AngularJS
- Frameworks: MySQL, Dropwizard, Hibernate, Bootstrap
- Operating Systems: Unix/Linux, Windows, MAC OSX

Achievements

- **High Distiction**, Australian National Chemistry Quiz conducted by the Royal Australian Chemical Institute
- **Highest scorer** in 11th and 12th: **98.3% and 97.4%** respectively

Extra Curriculars

- **Project Lead**, Gyanbodh, Nirmaan Organisation - An NGO started by BITS Pilani alumni that works on education and employement fronts, providing education and livelihood opportunities to the underprivileged. **Led** a team of 25 volunteers to organize evening classes for kids in primary and secondary school.
- **Member**, Computer Science Association, BITS Pilani
- **Member**, Faculty Student Council, BITS Pilani
- **Cadet**, National Cadet Corps, Level 'A' Certificate holder