Pranali Yawalkar | CS11B046

Indian Institute of Technology Madras

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Education

Program	Instituition	%/CGPA	Year of completion
Dual Degree (B.Tech+M.Tech), Computer Science and Engineering	Indian Institute of Technology, Madras	**8.65**	2016
XIIth Std. (Maharashtra State Board)	C.P and Berar College, Nagpur	**89.33**	2011
Xth Std. (CBSE)	Bhavan's B.P Vidya Mandir, Nagpur	**96.0**	2009

Scholastic Achievements

- All India Rank **2939** in **Indian Institute of Technology-Joint Entrance Examination** 2011.
- All India Rank **352** in **All India Engineering Entrance Examination** 2011.
- **394/450** in **BITS All India Entrance Exam** 2011.
- Vishesh Yogyata Shrenyam : **A+** in **Sanskrit Kovid Exam**

Course and Lab Projects

1. Natural Language Processing **August - November 2014**

Spell Checker *IIT Madras*

`https://github.com/pranaliyawalkar/Projects/tree/master/SpellChecker`

Designed a word, phrase and sentence spell checker using the N-gram model, part of speech tags, and collocations method based on the noisy channel principle. Explored a different technique for candidate generation and found it performing better than BK trees.

2. Natural Language Processing **August - November 2014**

Answering queries using NER, RE and Wikipedia Infoboxes *IIT Madras*

`https://github.com/pranaliyawalkar/Projects/tree/master/NLP-Project`

Came up with a novel technique of answering short queries using a model comprising of Stanford Named Entity Recognizer, Relation Extraction using Stanford Dependency Parser, Wikipedia Infoboxes using MediaWiki API and Adapted Lesk Wordnet Similarity measure. The four step implementation was developed on the lines of google knowledge graph for quick answers.

3. Indexing and Searching in Large Datasets **August - November 2014**

Shape Based Sub Trajectory Similarity Matching *IIT Madras*

`https://github.com/pranaliyawalkar/Projects/tree/master/Indexing`

Proposed a technique for tackling the subtrajectory matching problem on a non metric distance function, particularly shape. There is no prior work on the precise problem statement. The algorithm proposed greatly reduces the run time at the cost of minimal accuracy loss. The evaluation techniques discuss about this trade off in greater detail. The theoretical complexity of the algorithm was observed to be better than the baseline technique's.

4. Social Network Analysis **January - April 2014**

An Analysis of Cascade Diffusion through Complex Contagion in Multiplex Networks *IIT Madras*

`https://github.com/pranaliyawalkar/Projects/tree/master/SNA`

Explored two very specific kinds of triggers for cascading mechanisms in multi-layered Higgs Twitter graph and analysed the impact of introducing hyperactive and semi active centres in the graph to capture cascades as a global phenomenon.

5. Knowledge Representation and Reasoning **January - April 2014**
Conceptual Dependency Theory - General Elections 2014 *IIT Madras*
`https://github.com/pranaliyawalkar/Projects/tree/master/KRR`

Worked in a group of 8 members on CD theory for lexicon construction from English words, parsing English sentences, reasoning from their intermediate CD representation and re-generating English sentences from their CD representation. My part focussed on designing and constructing a lexicon of 800-1000 English words to include different senses of the words and the semantic constraints on the different role fillers.

6. Principles of Software Engineering - open source domain **January - April 2014**
Refactoring vim code base - Neovim (https://github.com/neovim/neovim) *IIT Madras*

Worked on the open source project **Neovim** to contribute in refactoring the existing vim codebase. The refactorings made focussed around removing blob modules and two iteration loops from the code to improve readability and maintainability of the code along with reducing the size of large functions. Code metrics like cohesion and coupling were then tested to improve.

7. Concurrent Programming **January - April 2014**
Parallel counting of triangles in a graph and finding the clustering coefficient *IIT Madras*
`https://github.com/pranaliyawalkar/Projects/tree/master/Concurrent_Programming`

Modified the existing parallel algorithms to find the number of trianlges in a graph. A comparative study of the graph partitioning algorithms was done on 4 different implementations. Came up with a parallel implementation to find the efficient number of partitions in a graph and to find a graph's clustering coefficient.

8. Language Translators **August - December 2013**
Mini Java Compiler *IIT Madras*
`https://github.com/pranaliyawalkar/Projects/tree/master/Compiler`

Wrote an efficient Minijava (subset of Java) compiler using JTB and JavaCC for converting it to MIPS assembly language.

9. Paradigms of Programming **August - December 2013**
Symbolic Integration - Prolog *IIT Madras*
`https://github.com/pranaliyawalkar/Projects/tree/master/Prolog`

Wrote an efficient program in Functional Language ML to find a formula for the antiderivative, or indefinite integral, of any given function f(x).

Key Projects

1. Intern - Microsoft IDC **May-July 2014**
Guide : Surendar Kumar *Hyderabad*

The project was based on authentication and authorization of users of Azure cloud services. The current system of ACS (Access Control Service) is getting deprecated and we built a prototype to enable authorization using Windows Azure Active Directory enabling Role Based Access (RBA) for users of an organisation's Windows Azure Active Directory tenant.

2. Microsoft.Code.fun.do **January 2014**
A team of 4 members *IIT Madras*

Built a windows 8 phone application that syncs a recorded audio and the notes taken. It was built on visual studio platform and was successfully demonstrated and deployed on phones during the Hackathon.

3. Intern - Delta Clean Tech, Tamil Nadu **May-July 2013**
Guide : Karthik N *Worked from home*

- Worked for the generation of Energy Analytics Platform.
- Executed the Dashboard Visualization of Energy Data from streaming data sources using various tools to represent live data visually, draw insightful results from it, and managing the database as per the input content.
- Worked with Platforms – DOJO, HighCharts and Apache Server using JS, php, MySQL, HTML and Java.

4. Yahoo HackU! **March 2013**

A team of 2 members *IIT Madras*

Built an android application which searches for the best person to share a cab with, computed based on an algorithm, geographical location and relevant constraints by the users.

Course Work

1. Key Courses **August 2011-April 2014**

Core and electives *IIT Madras*

- Natural Language Processing
- Social Network Analysis
- Knowledge Reasoning and Representation
- Operating Systems
- Language Translators
- Switching Theory and Digital Circuits
- Probability, Statistics and Stochastic Processes
- Marketing Management
- Indexing and Searching in Large Datasets
- Machine Learning
- Concurrent Programming
- Paradigms of Programming
- Basic Graph Theory
- Data Structures and Algorithms
- Principles of Management
- Accounting and Finance in Management

2. Labs **August 2011-April 2014**

Core *IIT Madras*

- Digital Circuits Lab (Verilog)
- Data Structures and Algorithms Lab (C++)
- Language Translators Lab
- Computer Networks Lab
- Computer Programming Lab (C)
- Assembly Language Programming Lab (x86)
- Operating Systems Lab
- Principles of Software Engineering Lab

Skills and Tools

- Languages - C++ (Proficient), JAVA (Proficient), C (Proficient), Python (Basics), Prolog (Basics)
- Operating Systems - Windows, Linux
- Applications and Tools - Matlab, Eclipse(IDE), Microsoft Visual Studio (IDE) (Basics)
- Git (version control) user- `https://github.com/pranaliyawalkar`

Positions of Responsibility

- Branch Councilor of Computer Science and Engineering Department, 2014-2015
- Member of the SAC[1] which is the highest and the most powerful student administrative body and is instrumental in introducing key reforms across the institute , 2014-2015
- Placement Coordinator of IIT Madras, 2013-2014
- Publicity Coordinator, Saarang[3] 2013
- Project-x Coordinator, Shaastra[2] 2013
- Online Publicity Coodrinator, Exebit[4] 2013

Extra - Curricular Activities

- Active member on geeksforgeeks[5]
- Member of Hostel Design team (2012)
- Keen interest in playing Chess.
- Spare time activities- Painting and Photography.
- Classical Kathak Dance - Cleared 3 exams for Visharad (7 exams in all) with distinction.

- [1] Students' Affairs Council-IIT Madras
- [2] Annual Technical Festival of IIT Madras
- [3] Annual Cultural Festival of IIT Madras
- [4] Department Festival of CS - IIT Madras
- [5] Geeksforgeeks - `http://www.geeksforgeeks.org/`