Madhavan Pallan

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Interests

Machine Learning, Large Scale Data Mining, Deep Learning, Social Network Analysis, Artificial Intelligence. **Key Strengths also include** Information Extraction from web, Data Analytics for large Data, Data Visualization, JUNG, SimMetrics, JSON .

Education

Indian Institute of Technology (BHU) - Varanasi   July 2008 – May 2013
Five Year Integrated Masters Degree - Mathematics and Computing   (DGPA 8.08/10.0)**(Honors)**

Professional Experience

***IBM India Research Lab**, New Delhi. India.*   July 2013 – Present
Research Engineer

Google Summer of Code - Scilab   May 2012 – September-2012
Research Program

Publications

- S Vasudevan, R Chaudhuri, M Pallan, S S Singh **"An Empirical Study of Starting Salaries and Employment Trends of Engineering Students in India"**,*In Proceedings of the Sixth Volume of Journal of Data Science*, 2017 *(JDS'17)*

- M Pallan, B Srivastava, **"Automatically Augmenting Titles of Research Paper for Better Discovery"**,*In Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence at AAAI Conference*, 2016*(AAAI'16)*

- B Srivastava, M Pallan, M Madhavan, R Kokku, **"Case Studies in Managing Traffic in a Developing Country with Privacy-Preserving Simulation as a Service"**,*In Proceedings of the IEEE International Conference on Services Computing (SCC) (2016) at SCC Conference*, 2016*(SCC'16)*

- A Bhowmik, V Borkar, D Garg, M Pallan, **"Submodularity in Team Formation"**,*In Proceedings of the Fourteenth SIAM International Conference on Data Mining at SDM Conference*, 2014 *(SDM'14)*

Awards and Fellowships

- Recipient of **Eminence and Excellence Award** for leading a research project, which was ranked 1st position globally all over IBM Research.

- **Runner up in CitySDK Smart Participation Challenge**, received EU wide Recognition.

- Awarded **Third** position in **IBM Consumer Analytics Competition 2014**.

- Awarded **Western Railway Union Medal 2013**, for being in top 5 students in educational category given by Western Railway, Indian Government.

- Received **IIT(BHU)-Color 2012**, highest award given for outstanding contribution in the field of Robotics, by Science and Technology Council @IIT(BHU), India.

- Recognized by **Student Leadership Award 2012**, for showing exemplary leadership skills.

- Awarded **Third** position in SANRACHNA a model building competition in Departmental Fest **Anveshan** 2011.

- Recipient of **Western Railway Scholarship 2010-12**, for maintaining **First Class** in GPA.

City Concierge (PPT)   April - June 2014

- Solved the problem of a tourism guide, which helps the travellers by showing the events with less number of issues for the nations having api following open311 standard, By applying a clustering algorithm, which looks on the various issues and list the issues for that region. This was carried under the Umbrella of Group Smarter Planet.
- The problem was solved by developing Real world applications **City-concierge** for EU nations (amsterdam, lisbon, helsinki and Lamia) and **Bharat-Khoj**, under the mentorship of **Dr. Biplav Srivastava**, Master Inventor, ACM Distinguished Scientist, IBM India Research Lab.
- **Runner up** in CitySDK Challenge Europian Union and bagged a sum of 2000 **Euro** for developing the **Best Cross-City Smart Participation Application**.
- **Patents : 1 (Under Process)**

IBM Consumer Analytics Competition 2014   April - May 2014

- **Third** in IBM internal Machine Learning Competition, having teams participated from all Geographical Research Labs of IBM.
- Under the mentor-ship of Dr. Biplav Srivastava, Master Inventor, ACM Fellow, IBM India Research Lab.
- **Methods:** Expected Maximization, Clustering and Correlation.

Submodularity in Team Formation   July 2013 - October 2013

- Team: Avradeep Bhowmik, Dr V S Borkar, Dr Dinesh Garg
- The problem of finding an optimal team which satisfies the constraints of having a team with certain skill requirement and social compatability can be formulated as a submodular maximization problem, and discovered that the submodular function turns out to be non-negative and non-montone.
- Here, we used Submodular maximizartion by simulated annealing for this problem to obtain a 0.41-approximation Social graph created from DBLP Dataset.
- Experimental study of Average team size, Average Number of missing skills and Average Number of Connected Components was calculated for different number of required skills for team formation.

Integration of Leptonica library in Siptoolbox (M-Tech Thesis) January 2012 – May-2013

- It Comprises of the challenges like designing and developing intermediate functions encountered in making leptonica library available to Scilab through siptoolbox (Scilab Image Processing ToolBox). And is an extension of work done in Google Summer of Code'12, under my Thesis Advisor Dr Tanmoy Som and Dr Ricardo Fabbri.
- Description of the functions like deskew and dewarp, having state of the art algorithm found in leptonica were now made available through siptoolbox
- Extensive testing of the made available functions were done on different types of images like, jpeg, png and tmp. Complete change called (sip-gsoc)is now part of **SIP ver 0.10.0.**

***Google Summer of Code (Internship)*(Proposal) (Abstract)**   May 2012 – September-2012

- The Research Program aimed at making Google-books *leptonica* library available to *Scilab* a free and open source software for numerical computation providing a powerful computing environment for engineering and scientific applications through *SIP ToolBox* (Scilab Image Processing ToolBox). Under the mentorship of **Dr. Riccardo Fabbri** from Rio-de-Janeiro State University. I was also closely working with **#labmacambira** at irc.freenode.net from October 2011 to September 2012
- Challenges involved creating Porting Functions which made leptonica functions available in siptoolbox. As, part of the verification two functions dewarp and deskew which are exclusively available in leptonica, were made available in Scilab.
- IIT-BHU was Ranked **6th** for number of accepted students in 2012 , and **10th** in #students accepted from 2005 - 2012.
- (Detailed Timeline) (Final Review) (Deskew and Dewarp for all images) (Deskew

Demo) (Dewarp Demo)

Line Follower Robot
<div align="right">May 2011 – June -2011</div>

- Developed a algorithm for the problem of traversing on white lines on completely black painted surface and performed a task of collecting blocks from the intersection point of the 4x4 grids to the end point of the grid. with the help of 4 wheeled bot and Atmega 32.
- Participated at Techniche, Technical Fest of IIT-Guwahati.

Smart Furnace Alerter
<div align="right">May 2011 – June -2011</div>

- Developed a program, solving real world problem that regulates the temperature of the Metal Furnace, taking the reading from the furnace with the help of thermostat and providing readings to the micro-controller. The reading was then used to alert the workers working in factory with the help of a buzzer and displaying alert on 16x2 LCD.
- Stood **Third position in SANRACHNA**, a model building event in the Metallurgical Departmental fest **Anveshan**.

TECHNICAL SKILLS **Programming and Scripting Languages**: C, CPP, Java, **Familiarity** R, Python, SQL, HTML, XML
Operating Systems: Windows, Linux
Tools: IBM Cognos Business Intelligence Server, IBM WebSphere Studio, Weka, Vim, Latex, Subversion, Git, Matlab, D3, Tomcat, Gephi, Microsoft Visual Studio
Database: Oracle, MySql, DB2, MS-Access **Hardware used:** IR Sensor kit, 4 wheeled robot, Atmega Circuit, RS 232, LCD, Thermostat.

ROLES,
RESPONSIBILITES &
ACCOMPLISHMENTS

- Reviewer for SADHANA'14 *Academy Proceedings in Engineering Sciences*, an official journal of Indian Academy of Sciences.
- Donated Blood twice as a student blood donor in blood donation camps in the year 2010, affiliated to Sir Sundarlal Hospital, c/o IIT(BHU), India.
- Conducted and Organised workshops for students of every year in Robotics under the Science and Technology Council, IIT(BHU), India.
- Mentored over 30 teams in development of Robotics and Programming Projects.
- Joint Secretary in Robotics Club, IIT Gymkhana @IIT(BHU), India in the year 2011.
- Organiser, Mentor and Lead for the Event Modex 2011, part of International Technical Festival TECHNEX 2011 @IIT(BHU), India.
- Technical Head for the International Technical Festival TECHNEX 2012 @ IIT(BHU), India.
- Special Cadet completing **C and B** certification in training by National Cadet Corps, led by the Indian Army Stationed @IIT(BHU), India.**(*C being the highest cadet certificate)**