Bharath Venkatesh – Curriculum Vitae

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Date of Birth	8^{th} May 1988		
Nationality	Indian		

Research Interests

Machine Learning, Data Mining, Network Science, Bioinformatics.

Education

2015-16 Advanced Masters in Artificial Intelligence - Katholieke Universiteit Leuven

Aggregate Percentage 69.52 (First Semester)
Courses: Data Mining, Machine Learning, Uncertainty in AI,
Programming for Big Data, Computer Vision, Bioinformatics

2010-13 MSc(Engg) in Computer Systems - Indian Institute of Science, Bangalore

Aggregate GPA 6.2/8
Thesis: Fast Identification of Structured P2P Botnets using Community Detection Algorithms
Research Supervisor: Prof. N. Balakrishnan
Courses: Linear Algebra, Probability and Statistics, High Performance Computing
TCP/IP Networking

2006-10 B.Tech in Mechanical Engineering - National Institute of Technology, Tiruchirappalli

Aggregate GPA - 7.87/10
Final Year Project: *Design and Analysis of a MEMS Microgripper* - S Grade (10/10)

2004-06 High School- AISSCE - Padma Seshadri Bala Bhavan, KK Nagar
Percentage - 91.2

Employment History

2013-2015 Research Associate - Bioinformatics, Data Mining - SAP Labs

Projects

Topological Pathway Analysis: (at SAP) The work was aimed at augmenting gene expression data with gene-gene interaction graph data in order to identify and rank the most affected pathways in a differential expression experiment. This work has been submitted for publication.
Benchmarking NGS Pipelines: (at SAP) Developed an extensible simulator in Java to generate DNA reads with variants in order to benchmark Next-Generation Sequencing Alignment and Variant Calling Algorithms.
Location based Recommendation Systems: (at SAP) Worked on the implementation of a location based recommendation systems for a health and fitness smartphone application. Worked on an unsupervised technique to detect important places from the location history of a given user based on DBSCAN on spatial data.
Large Scale Botnet Detection: (at IISc) Developed an efficient algorithm for the infrastructure level detection of Structured Peer-to-Peer Botnets based on graph clustering. The work resulted in a publication in a

good computer security journal.
Graph Clustering Algorithms: (at IISc) Surveyed and implemented various graph clustering algorithms, focus was on scalable algorithms such as label propagation and local community detection algorithms. Modified label propogation to study community dynamics in temporal graph data
Graffy: (at IISc) Developed a high performance, extensible graph library in C++ to handle large graphs in shared memory architectures. The library has a wide set of routines pertaining to graph clustering and centrality measures and can easily interface with other popular graph libraries.The library is available at GitHub.
Twitter Data Collection and Analysis: (at IISc) Platform built using PERL. Backend in MySQL, Schema designed to and currently handling billions of records, MySQL Server Tuning for optimum usage of main memory. Used this to analyze around a billion tweets to identify geographic response patterns of users to events, and user tweeting characteristics
Digital Image Processing based Stress Analysis: INAE Mentoring Program Internship at the Department of Applied Mechanics, IIT Madras. Employed Digital Photoelasticity and Digital Image Correlation to study stresses in the interface of a bi-material. Contributed to software for the same in C++ and used ABAQUS to carry out finite element analysis.
Vortex Tracking using Image Processing: Summer Internship at Department of Aerospace IIT Madras. This involved experimental work in fluid mechanics in the study of a vortex induced in a circular tube and development of an application in MATLAB which used Digital Image Correlation for pattern recognition and tracking.

Publications

Working Paper/Preprint
Patil, Shailesh S., Bharath Venkatesh, and Randeep Singh. "From Differentiated Genes to Affected Pathways." bioRxiv (2016): 038901.
Journal
Venkatesh, B., Choudhury, S. H., Nagaraja, S., & Balakrishnan, N. "BotSpot: fast graph based identification of structured P2P bots", Journal of Computer Virology and Hacking Techniques, 11(4), 247-261. DOI 10.1007/s11416-015-0250-2
Conference
Ravi, S., Balakrishnan, N. & Venkatesh, B. "Behavior-based Malware Analysis using Profile Hidden Markov Models", Security and Cryptography (SECRYPT), International Conference on, Reykjavik, Iceland, 2013, pp. 1-12. DOI 10.5220/0004528201950206

Programming and Software Skills

Programming Languages: C/C++, Java, PERL,MATLAB, R, Python, PROLOG, PHP
Frameworks and Packages: OpenCV, scikit-learn,SciPy,Numpy, Pandas
Mobile Development: Android
High Performance Computing: OpenMP, MPI, CUDA
CAD and FEM: AutoCAD, CATIA, ABAQUS, ANSYS
Miscellaneous Linux System and Network Administration

Awards and Other Achievements

GATE Computer Science: Obtained All India Rank 706 (99.3 percentile) in the Computer Science Stream of the Graduate Aptitude Test in Engineering 2010, that covers the syllabus of a four year bachelors course in Computer Science even though my undergraduate specialization was Mechanical Engineering.

Hobbies and Interests

- **Graphic Design - Posters, Banners, T-Shirts and Web Design**
- **Trivia,Quizzing and Word Games**