

ACHYUDH RAM

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RESEARCH OBJECTIVE	Building intelligent software development automation systems by bringing together diverse fields like software analytics, machine learning, information retrieval and social networks.
EDUCATION	<p>Birla Institute of Technology & Science, Pilani</p> <p>B.E. (Hons.), Computer Science, <i>Expected:</i> August 2018</p> <ul style="list-style-type: none">• <i>GPA: 9.66/10.0 and Major GPA: 9.73/10.0</i>• Top 1% of the university's students by GPA <p>M.Sc. (Hons.), Economics, <i>Expected:</i> August 2018</p> <ul style="list-style-type: none">• <i>Major GPA: 10.0/10.0</i>
SENIOR THESIS	<p>PHASE 1: <i>Assessing the reviewability of code changes and automating the evaluation of GitHub Pull Requests</i> <i>Aug '17 – Dec '17</i></p> <ul style="list-style-type: none">• Adviser: Prof. Alberto Bacchelli, Delft University of Technology• Identification of factors associated with the reviewability of code changes using a comprehensive literature review, statistical modelling, developer surveys and task-guided interviews• Building an automated pull request evaluation framework based on these factors, and validate its usefulness in an industrial setting. <p>PHASE 2: <i>Empirical modeling of sentiments in code review discussions on collaborative coding platforms like GitHub</i> <i>Jan '18 – May '18</i></p> <ul style="list-style-type: none">• Adviser: Prof. Mei Nagappan, University of Waterloo
TEACHING EXPERIENCE	<p>Teaching Assistant - Neural Networks & Fuzzy Logic <i>Jan '17 – May '17</i> BITS F312 with Tirtharaj Dash, Department of Computer Science, Birla Institute of Technology & Science, Pilani</p> <p>Teaching Assistant - Data Structures & Algorithms <i>Jan '17 – May '17</i> CS F211 with Dr. A. Baskar, Department of Computer Science, Birla Institute of Technology & Science, Pilani</p>
RESEARCH EXPERIENCE	<p>Visiting Scholar, University of Waterloo <i>Jan '18 – May '18</i> <ul style="list-style-type: none">• Working with Dr. Mei Nagappan on the Theoretical and Empirical Modeling of Identity and Sentiments in Collaborative Groups (THEMIS.COG) project</p> <p>Visiting Student, Delft University of Technology (TU Delft) <i>Aug '17 – Dec '17</i> <ul style="list-style-type: none">• Worked with the Software Engineering Research Group (SERG) on my senior thesis• Participated in courses on mining software repositories and software engineering methods</p> <p>Economic Research Intern, Indian Bank HQ <i>May '15 – Jul '15</i> <ul style="list-style-type: none">• Developed environment sensitive time-series forecasting models for setting business targets</p>
WORK EXPERIENCE	<p>Software Developer Intern, Intuit Inc. <i>May '17 – Jul '17</i> <ul style="list-style-type: none">• Developed a data engine for layout-based retrieval from the database• Built a reports engine that uses this data engine to provide performance insights for businesses• Approx. 400% faster compared to existing solutions due to parallel query evaluation</p>
RESEARCH PROJECTS	<p>Detecting inconsistencies between Python code and comments <i>Sep '17 – Nov '17</i> Advisers: Dr. A. Bacchelli, L. Pascarella GitHub: achyudhk/PyFunc-Signature-Parser An analysis of type inconsistencies between source code and method docstrings in Python across popular Python libraries and building an automated tool to identify these inconsistencies.</p> <p>Analysis framework for decoding online developer communities <i>Dec '15 – May '17</i> Adviser: Prasad Talasila GitHub: achyudhk/Mailing-List-Network-Analyzer An analysis of author interaction through community detection in mailing lists and IRC channels using a text mining based approach to identify topic experts and label communities, in order to examine the activity and decode the structure of the developer communities.</p>

Fitness-aware brokering of hosted containerized environments *Jan '17 – May '17*

Adviser: Dr. Santonu Sarkar GitHub: [achyudhk/Fitness-Aware-Container-Brokering](#)

An integration agent that benchmarks and containerizes a SaaS catalog offering and a smart fulfillment engine that deploys it into the best-fit container out of a set of containers hosted on various underlying clouds. *In association with IBM Research Labs.*

Novel feature selection using Fuzzy C-Means clustering *Feb '17 – Apr '17*

Adviser: Dr. Rajendra Roul GitHub: [achyudhk/FCM-Feature-Selection](#)

Feature selection using cosine similarity scores on the semantic centroids calculated from the normalized term-term correlation factors based on Fuzzy C-Means clustering. Selected features resulted in comparable F-scores for classification compared to MI and χ^2

Semantic segmentation using a deconvolution network *Mar '17 – Apr '17*

Neural Networks Course Project Reference: [arXiv:1505.04366](#)

A deconvolution network that can identify Red Blood Cells in an input image by predicting a binary segmentation mask.

Video translation of American Sign Language gestures *Nov '16 – Dec '16*

Machine Learning Course Project GitHub: [achyudhk/Sign-Language-Recognition](#)

An ensemble classifier that applies hard negative mining and non-maximal suppression for localization, using histogram of gradients and local binary patterns as features. Achieved an accuracy of $\sim 99\%$ on localization and 96.8% on top-5 classification (IoU metric).

Identifying the trends in Indian Legislative issues using NLP *Aug '16 – Dec '16*

Adviser: Dr. Anoop Kumar GitHub: [achyudhk/Parliamentary-Debate-NLP](#)

Identification of latent structures within parliamentary debates using natural language processing to discover seasonal trends in the debates of the upper and lower houses.

Miscellaneous Projects

- Feed-forward Neural Network library using computational graph approach supporting multiple optimizers, common activation and loss functions
- Implementation of state of the art Deep Learning papers on Google SVHN and MNIST datasets
- Implementation of machine learning algorithms like Support Vector Machines, Principal Component Analysis, K-means Clustering, Fuzzy C-means Clustering in Python
- Design and implementation of MIPS single-cycle, multi-cycle and pipelined architectures
- Network Topology Simulation and Analysis using Wireshark, NS2, NAM, xGraph and AWK
- Multi-user chat service using socket programming with multicast and broadcast messages
- FTP client and server using socket programming
- BibTeX Parser and Code Beautifier for C using LEX and YACC
- Weather monitoring station design and simulation using μ -processor programming and interfacing

TALKS AND
PRESENTATIONS

Google Developer Group, Goa

- Leveraging the power of Virtualization, Docker and the Cloud *Apr '17*

Department of Economics, BITS Pilani

- Monte-Carlo methods to assess the feasibility of biofuel production using simulation of economic models (Adviser: Dr. Rajorshi Sen Gupta) *Nov '15*
- Cross country analysis of statistical models for assessing the effect of economic factors on insurance penetration (Adviser: Dr. Aswini Kumar Mishra) *May '16*
- Rationality, uncertainty and cognition in financial markets – An experimental approach using double auction asset market simulation (Adviser: Dr. Anoop Kumar) *May '17*

SELECTED
COURSEWORK

Computer Science

Machine Learning, Neural Networks & Fuzzy Logic, Information Retrieval, Mining Software Repositories, Software Engineering Methods, Parallel Computing, Compiler Design, Computer Networks, Design & Analysis of Algorithms, Data Structures & Algorithms, Discrete Structures in Computer Science, Operating Systems, Computer Architecture, Principles of Programming Languages, Theory of Computation, Database Systems, Object Oriented Programming, Logic in Computer Science, Microprocessor Programming & Interfacing, Computer Programming, Digital Design

Mathematics

Multivariable Calculus, Linear Algebra, Differential Equations, Probability & Statistics, Advanced Econometrics, Mathematical & Statistical Methods

SKILL SET

Languages

C, C++, Python, Java, C#, JavaScript, R, BASH, SQL, MongoDB, Verilog HDL, HTML, CSS, MIPS32 & x86 Assembly

Frameworks

Amazon Web Services, Google Cloud Platform, Firebase, Android Dev, Docker, L^AT_EX, NumPy, SciPy, Scikit-Learn, Matplotlib, NLTK, Gensim, Keras, NetworkX, Chart.js, iGraph, Graph-Tool, Flask, Pandas, Scikit-Image, LEX, YACC

AWARDS AND SCHOLARSHIPS

IUCAE Grant — Inter-University Centre for Alternative Economics

Apr '17

Awarded towards experimental work on *Rationality, Uncertainty and Cognition in Financial Markets* with Dr. Anoop Kumar

Institute Merit Scholarship — BITS Pilani

Aug '14 – Dec '17

Awarded six times for being ranked within the top 1% of the university's students by GPA

Research Travel Grant — IPCD, BITS Pilani

Aug '17

Awarded in recognition of my senior thesis at TU Delft

Won HackAttack 2017 — Intuit Inc.

Jun '17

Built *Foresight*, an Android app that uses object detection, realtime databases, and Google Places API to help the differently-abled navigate better

Student Faculty Council Membership — Economic Course Review

Aug '15 – Dec '15

Duke of Edinburgh International Award — Bronze Category

Jul '13