

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	Birla Institute of Technology & Science, Pilani B.E. (Hons.), Computer Science, Expected: August 2018 <ul style="list-style-type: none">GPA: 9.68/10.0 and Major GPA: 9.73/10.0Top 1% of the university's students by GPA M.Sc. (Hons.), Economics, Expected: August 2018 <ul style="list-style-type: none">Major GPA: 10.0/10.0	
UNDERGRADUATE THESIS	PHASE 1: <i>Assessing the reviewability of code changes and automating the evaluation of GitHub Pull Requests</i> Aug '17 – Dec '17 <ul style="list-style-type: none">Adviser: Prof. Alberto Bacchelli, University of Zurich PHASE 2: <i>Empirical modeling of sentiments in code review discussions on collaborative coding platforms like GitHub</i> Jan '18 – May '18 <ul style="list-style-type: none">Adviser: Prof. Mei Nagappan, University of Waterloo	
TEACHING	Teaching Assistant - Neural Networks & Fuzzy Logic BITS F312 with Tirtharaj Dash , Department of Computer Science, Birla Institute of Technology & Science, Pilani Jan '17 – May '17 Teaching Assistant - Data Structures & Algorithms CS F211 with Dr. A. Baskar , Department of Computer Science, Birla Institute of Technology & Science, Pilani Jan '17 – May '17	
EXPERIENCE	Research Intern, University of Waterloo Jan '18 – May '18 <ul style="list-style-type: none">Worked with the Software Architecture Group and the Computational Health Informatics Lab on the THEMIS.COG project Research Intern, Delft University of Technology (TU Delft) Aug '17 – Dec '17 <ul style="list-style-type: none">Worked with the Software Engineering Research Group (SERG) on developing a pull request reviewability evaluation frameworkParticipated in courses on mining software repositories and software engineering methods Software Developer Intern, Intuit Inc. May '17 – Jul '17 <ul style="list-style-type: none">Developed a data engine for layout-based retrieval from the databaseBuilt a reports engine that uses this data engine to provide performance insights for businessesApprox. 400% faster compared to existing solutions due to parallel query evaluation Research Intern, Indian Bank HQ May '15 – Jul '15 <ul style="list-style-type: none">Developed environment sensitive time-series forecasting models for setting business targets	
PUBLICATIONS	Investigating Type Declaration Mismatches in Python <i>In Proceedings of MaLTesQuE 2018 (Workshop on Machine Learning Techniques for Software Quality Evaluation) collocated with SANER 2018</i>	
RESEARCH PROJECTS	Detecting inconsistencies between Python code and comments 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. Sep '17 – Nov '17 Analysis framework for decoding online developer communities Adviser: Prasad Talasila GitHub: achyudhk/Mailing-List-Network-Analyzer An analysis of author interaction through community detection in mailing lists, IRC channels and Slack teams 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. Dec '15 – May '17	

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 gate 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, JavaScript, BASH, SQL, HTML, CSS

Frameworks

Amazon Web Services, Google Cloud Platform, Firebase, Docker, Scikit-Learn, Numpy, Matplotlib, NLTK, Gensim, Keras, NetworkX, Flask, Scikit-Image, Chart.js

AWARDS AND SCHOLARSHIPS

Institute Merit Scholarship — BITS Pilani

Aug '14 – May '18

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

Bhushan Bhatia Graduate Application Scholarship — BITSAA

Feb '18

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

HackAttack 2017 Runners-up — 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

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

Duke of Edinburgh International Award — Bronze Category

Jul '13