

Vaishnavi Mukundhan

Kind | Curious | Analytical

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Education

Master of Science in Computer Science, Indiana University Bloomington

08/2016 - 05/2018

Bachelor of Technology in Computer Science Engineering, SRM University

08/2009 - 05/2013

Work experience

Research Assistant

Sep 2017 - May 2018

Linguist List

- Conducted research to build a system in the Free Linguistic Environment that handles Lexical Functional Grammar(LFG) feature set unification using technologies like **C++11** with Boost, Grammar formalism using BNFC, GCC.

Intern

Jun 2017 - Aug 2017

Jasmine. Ai LLC, United States.

- Developed web application for end users using **Python's Django** framework and **JavaScript** which includes features like asynchronous chatting, auto-complete, timer using web workers, Voice Activity Detection(VAD) module along with the CRUD functionalities.
- Designed, built and deployed Machine Learning(ML) modules like rule-based modules.

Systems Engineer

Sep 2013 - Jun 2016

Tata Consultancy Services, India.

- Developed and reverse engineered web applications based on **.NET 2.0/3.5** frameworks, for Visa Facilitation Services (VFS Global) to monitor the end-to-end flow of visa application process.
- Performed database tuning and optimization to reduce time to solution in **Microsoft SQL server**.
- Analyzed new business requirements and remodeled existing modules for project expansion.
- Performed server monitoring using various **SSMS** features such as SQL Profiler, Trace files, Deadlock Graphs. Checked the **security breaches** and implemented solutions to mitigate the risk in the application.

Information Technology Intern

May 2011 - Jul 2011

Fulcrum Worldwide, India.

- Developed the direct cost module using **Java and JDBC** on Eclipse 3.5 for the financial forecasting software that was used to accumulate all the direct costs associated in generation of the revenue.
- Designed and documented a **prediction** module for revenues with a given set of parameters using **rule based algorithm**.

Projects

Predicting scores for L2 Learners' Argumentative Essays

- Built a system to score the arguments of L2 learners essays using a combination of linguistic features like POS tags, tri-gram model, spell correction, word embedding, dependency grammar and NLTK tools.
- Predicted scores for the essays by choosing the top reasons for argument using **Random forest ensemble**.

Image Orientation Detection

- Implemented a python tool that would classify an image according to its orientation, using three machine learning algorithms (**K Nearest neighbor, Adaptive Boosting and Neural Networks**) and compared their performances.
- Obtained an accuracy of ~70%, ~75%, ~80% respectively in the three algorithms

Lexical and Statistical Approaches to Genre Detection (**NLP**)

- Implemented multiple naive features for classification of genres of books using **Python** libraries like **SciPy, NumPy, scikit-learn**.
- The features used were POS-tags, Topic modelling, Sentence Length, Type Token Ratios, and Word length.

Literature Review on Power-Efficient HPC Clusters

- Comparative study on various power management techniques in **parallel computing platform** and **HPC** clusters.
- Techniques discussed uses virtualization, statistical and hardware approach to managing power efficiently.

Skills

Programming Languages

Python, Java, C++

Databases

MySQL, PostgreSQL, Microsoft SQL server

Web Technologies and Frameworks

HTML5, CSS3, JavaScript, JQuery, REST API, AJAX,

ASP .NET, Spring Boot, Django, AngularJS, AJAX,

Bootstrap

Tools

Git, Jira, Mallet, TiMBL

Python Libraries

scikit-learn, NumPy, Scipy, Pandas, matplotlib,

NLTK, Stanford CoreNLP

Coursework

- Algorithm Design and Analysis
- Advanced Operating Systems
- Advanced Database Concepts
- Software Engineering
- Machine Learning in Computational Linguistics

Activities

- Presented at the annual meeting of the Second Language Research Forum (SLRF) on Automated Scoring of Argumentation in L2 Learners' Writing Using **Linguistics** and **Machine Learning Techniques**, the Ohio State University, Ohio.

Awards

- Awarded Spaan Research Grant, Cambridge Michigan Language Assessments for Automated Scoring of Argumentation in L2 Argumentative Writing Using Machine Learning Techniques.
- Awarded outstanding research award by Center Of Excellence For Women In Technology.
- Received funding from the Second Language Department at Indiana University to conduct research on Automatic Scoring for L2 learners' Argumentative Essays.
- Awarded funding to attend Grace Hopper Celebration by Anita Borg as a Hopper.