

Bargav Jayaraman

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Education

PhD in Computer Science (May '21)
University of Virginia, Charlottesville, USA
GPA: 3.91/4.0

MS in Computer Science (May '15)
IIIT, Hyderabad, India
GPA: 8.68/10.0

B Tech in Computer Science (May '12)
SASTRA University, Thanjavur, India
GPA: 8.58/10.0

Technical Skills

Languages:
Python, C, C++, Java

Web Development:
HTML, CSS

Libraries & Frameworks:
Scikit-Learn, Obliv-C, Theano, PyTorch, Lasagne, Keras,
Amazon Web Services, Git

Work Experience

Research and Development Senior Analyst

Jan '15 to July '16

Accenture Technology Labs, Bangalore, India

- Application of machine learning techniques for solving software engineering problems like multi-lingual vagueness detection on software requirements and automated web testing.
- Filed *three* patents and co-authored a peer-reviewed paper accepted in 25th conference on RE '17.
- Developed end-to-end deep learning pipeline for detecting vagueness in English and transferring the vagueness detection knowledge to Portuguese and Spanish.
- Used deep learning techniques to identify web objects and texts for automated testing of web pages.

Teaching Assistant for following courses:

- Data Warehousing and Data Mining (at IIIT Hyderabad, India)
- Principles of Information Security (at IIIT Hyderabad, India)

Fall '14
Spring '14

Selected Projects and Publications

Private Multi-Party Machine Learning

Aug '16 to Present

While machine learning is gaining wide-scale adoption in practical applications, privacy concerns arise when learning is performed over sensitive data such as health records. My current research is on combining secure multi-party computation protocols and differential privacy to facilitate privacy preserving machine learning over sensitive data. I implemented this project using Python, Scikit-Learn and Obliv-C framework.

Related Publications: *In NIPS '18* [In NIPS '16](#)

Comparison of Learning Algorithms for Deep Learning

Oct '17 to Dec '17

While SGD is the default work-horse of deep learning, we compared it with various other learning algorithms like Adam, Adamax and RMSProp, and found that Adam consistently performs better across different settings. We implemented the algorithms using PyTorch. This was a course project for Optimization Machine Learning.

Distributed Certificate Authorities

Apr '17 to July '17

In the current internet scenario, certificates of HTTPS websites are signed by a single certificate authority (CA). This leads to a single point of failure if the CA's signing key is compromised. We proposed decentralized CA where two CAs jointly generate certificates using secure multi-party computation protocol, such that the signing key is secret-shared to the two CAs. We implemented the certificate signing using Obliv-C and GMP libraries, and experimented with different bandwidth and latency settings of AWS and Azure cloud servers.

Related Publications: [In Archive '17](#)

Multi-Lingual Vagueness Detection

Jan '15 to Jan '16

Software requirements are usually documented in natural language and often involve the usage of vague terms like 'some', 'many', etc. which makes their interpretation ambiguous to software developers. I implemented deep learning techniques, using Theano and Python framework, to identify vague terms across English, Spanish and Portuguese software requirements.

Related Publications: [In RE '17](#)

Secure String Matching on Outsourced Data

Jan '14 to Dec '14

We considered the problem of searching string patterns like sub-strings and prefixes within keywords on documents outsourced to cloud server. The proposed indexing scheme returns the ranked results of documents containing the target string pattern in an efficient and privacy preserving way. This project was implemented in C++.

Related Publications: [In ICDCS '15](#)