

SHIVVRAT ARYA

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Work Authorization: F1 Visa

EDUCATION

Doctor of Philosophy in Computer Science Expected May 2024
THE UNIVERSITY OF TEXAS AT DALLAS, Richardson, Texas GPA: **4.0/4.0**

Master of Science in Computer Science Expected May 2021
THE UNIVERSITY OF TEXAS AT DALLAS, Richardson, Texas GPA: **4.0/4.0**

Bachelor of Technology in Computer Science and Engineering May 2019
INDIAN INSTITUTE OF INFORMATION TECHNOLOGY VADODARA (IIITV), India GPA: **8.39/10**

RESEARCH INTERESTS

Self-supervised learning, Graph Neural Networks, Action Anticipation, Action Recognition, Image Classification, Graphical Models, Tractable Models

COMPUTER SKILLS

Languages : Python, JAVA, Octave, C
Operating Systems : Windows, Linux
Databases : PostgreSQL, SQL
Neural Network Framework : GNN, CNN, RNN, ANN, AE, MC, DCN
Frameworks and Tools : TensorFlow, Pandas, Scikit-Learn, Numpy, Matplotlib, Seaborn
Productivity Suite : MS Office, LaTeX, Libre Office, Movie Maker
Version Control System : Git

HARD SKILLS

Mathematics : Probability and Statistics, Linear Algebra, Multivariate Calculus
Optimization techniques : Gradient descent, Hill climbing, Genetic algorithm, Ant colony optimization, Bacterial Foraging Optimization and, Cat swarm optimization.

PUBLICATIONS

Journal Papers

1. Vikas Chauhan, Aruna Tiwari and **Shivvrat Arya**. “**Multi-label Classification based on Broad Learning System**”. *Neural Computing and Applications Journal*, Dec 2019 [Under Review]
2. Vikas Chauhan, Aruna Tiwari and **Shivvrat Arya**. “**Multi-label Classification based on Random Vector Functional Link Neural Networks**”, *Soft Computing Journal*, Jan 2020 [Under Review]

Conference Papers

1. Vikas Chauhan, Aruna Tiwari and **Shivvrat Arya**. “**Multi-Label classifier based on Kernel Random Vector Functional Link Network**”, *International Joint Conference on Neural Networks*, Jan 2020

TEACHING EXPERIENCE

Teaching Assistant, Department of Computer Science, University of Texas at Dallas, US Aug 2020 - Current
Duties: Graded assignments, conducted office hours and prepared homework solutions for selected courses
Courses: Statistical Methods in AI and Machine Learning, Database Systems, Discrete Mathematics for Computing II

RESEARCH PROJECTS

[Explainable Activity Recognition in Videos](#)

Fall 2020

Implemented a video recognition task using two layer architecture – probabilistic graphical model on top of a convolutional neural network. The PGM layer helps to correct the noisy labels and benefit from temporal information.

Programming Language Set: Python

ACADEMIC AND PERSONAL PROJECTS

[Learning algorithms for Bayesian Networks](#)

PGM

Spring 2020

Implementation of various structure and parameter learning algorithms for Bayesian networks

Programming Language Set: Python

[Sampling-based-Variable-Elimination-and-Conditioning](#)

PGM

Spring 2020

Implementation of the Sampling-based Variable Elimination and Conditioning algorithm for inference on PGM's

Programming Language Set: Python

[Non Iterative Neural Network](#)

Machine Learning

Fall 2019

Implemented two non-iterative neural network methods, RVFL and ELM to do classification and regression tasks on various datasets.

Programming Language Set: Python

[DART Database](#)

Database Design

Fall 2019

Implemented the complete database for the DART system. Designed the EER diagram, converted the EER to relational schema, created the database on SQL and created views and queries for the database.

Programming Language Set: SQL

[Compressed Sensing](#)

Computer Vision

Fall 2018

Title: Implementation of compressed sensing for multi-view tracking and 3-d voxel reconstruction

Implemented and evaluated the algorithm mentioned in the above paper, which create 3d voxel from the given 2d images and it is being used for the purpose of multi-view tracking.

Programming Language Set: MATLAB

[Kakuro solver](#)

Artificial Intelligence

Spring 2018

Designed a bot to solve the Kakuro puzzles by deriving the rules and handling different instances to crack the kakuro puzzles.

Programming Language Set: Python

[Autoencoder for anomaly detection](#)

Deep Learning

Spring 2018

Devised and implemented a method to utilize autoencoders for anomaly detection and tested it on credit card fraud dataset of Kaggle.

Programming Language Set: Python

[LEARN](#)

Compiler Design

Spring 2018

Generated a new programming language which is based on English verbs and only requires a newcomer to emphasize on programming constructs. LEARN was designed using yacc and lex.

Programming Language Set: LEX, YACC, and C

[Fatal Disease Detector](#)

IIITV Hackathon

Fall 2018

Implemented the k-means algorithm for the detection of calamitous disease spread by using twitter data.

Programming Language Set: Python

[SoT \(Security of Things\)](#)

Cryptography

Fall 2017

Built the android app for the project which helped the user to know the real-time temperature changes in the environment in which the machine was present and implemented the Advanced Encryption Standard (AES) for encryption purposes.

Programming Language Set: Python and C

Hardware: Arduino, Raspberry Pie, and various Sensors

Hatsphere

Software Development

Fall 2017

Developed the seller android app for Hatsphere, which was then connected to the main server to provide e-commerce experience to traditional craftsmen.

Programming Language Set: JAVA, Android and Django

Cocktail Party Effect

Speech Science and Technology

Fall 2017

Implemented the cocktail party effect algorithm to separate the voice and noise from the given audio signal.

Programming Language Set: Python and Octave

Movie Recommender

Database Management

Spring 2016

Utilized the libpq-C code which was used to provide a User Interface for the Database and implemented the Database Management System and generated data to be used for the database.

Programming Language Set: PostgreSQL and C

WORK EXPERIENCE

Research Intern, Indian Institute of Technology Indore January 2019 to May 2019 / May 2018 to July 2018

Description: Investigated the problem of multi-label classification and summarized the performance of various deep learning architectures for multi-label classification.

Programming Language and Framework Set: Python and Octave.

Skill Set: Machine Learning and Deep Learning

Android Development Intern, TechnoUniverse, Indore, India

May 2017 to July 2017

Organization: TechnoUniverse

Description: Developed an android application named **InvestoCafe**.

Exposure to: Android App Development

SCHOLARSHIPS

Jonsson School \$1000 Graduate Study Scholarship.

Central Sector Scheme of Scholarships for College and University Students, The Department of Higher Education India

ORGANIZATIONAL RESPONSIBILITIES UNDERTAKEN

Class Representative: Vidya Sagar School (Classes - X, XI, XII)

IIITV Hostel Executive Committee: 2015-2016 session

IIITV Sports Committee (Core Member): 2016-2017 session, 2017-2018 session and 2018 – 2019 session

IIITV Literary Society – Pensive (Core Member): 2016 to 2019

IIITV Core Organizing Team: For Events – Krieva 2016, Krieva 2017, Cerebro 2018, Ventura 2016, Ventura 2018

CERTIFICATIONS:

Coursera Course Certificates

Certification Dates

- **Deep Learning Specialization** - Present License [J9V32CC6VTB5](#) Nov 2018
- **Convolutional Neural Networks** - Present License [G888N3WXPXLN](#) Sep 2018
- **Sequence Models** - Present License [5E9VFH59THG4](#) Nov 2018
- **Neural Networks and Deep Learning** - Present License [JSAR6KKVC5Y7](#) Apr 2018
- **Machine Learning** - Present License [FPWNJ39A5LWQ](#) Mar 2018

- **Introduction to Programming with MATLAB** - Present License [VGPWCM8WH73K](#) Feb 2019
- **Mathematics for Machine Learning: Linear Algebra** - Present License [E5PBMECK8B4M](#) Apr 2019
- **Python Programming Essentials** - Present License [TZXYXTF796L](#) Jun 2018
- **What is Data Science?** - Present License [5WS64BF2G2SY](#) Feb 2019
- **Structuring Machine Learning Projects** - Present License [JJNYAQTVFUPR](#) May 2018
- **Improving Deep Neural Networks** - Present License [MRVNDFNWUHPQ](#) Apr 2018
- **Python Data Structures** - Present License [D55N3NM69PQ6](#) Mar 2018
- **Programming for Everybody** - Present License [XS6H2XUBJ66U](#) Jan 2018

Udemy Course Certificates

- [The Top 5 Machine Learning Libraries in Python](#)
- [MATLAB for scientists: a beginner's course](#)

Certification Dates

- January 2019
- January 2019