Anveshrithaa Sundareswaran

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EDUCATION

July '17 – Present	**Vellore Institute of Technology** **Vellore, India**

Bachelor of Technology in Computer Science
CGPA: 9.21/10

Selected Coursework: Data Structures and Algorithms, Object-Oriented Programming, Database Management Systems, Computer Architecture, Software Engineering, Web Programming, Distributed Systems, Artificial Intelligence, Machine Learning, Natural Language Processing.

RESEARCH INTEREST

Machine Learning | Deep learning | Computer Vision | Application of Machine Learning for real-world problems | Data Science | Big Data Analytics | Computer Vision | Stream processing.

TECHNICAL SKILLS

- *Programming languages* – *(Proficient)* Python, C, C++, *(Intermediate)* Java, *(Basics)* R, MATLAB
- *Machine learning/ Data science/ Big data tools and frameworks* – Apache Spark (PySpark), Apache Kafka, TensorFlow, Keras, PyTorch, Scikit-learn, Matplotlib, Pandas, Numpy, NLTK
- *Web development* - HTML, CSS, JavaScript, Node.js, PHP, jQuery, ASP.NET
- *Databases* – MySQL, MongoDB
- *Cloud* – AWS (S3, EC2), Confluent Cloud
- *Version control* – GIT
- *Other tools* – MS Excel, Latex, MS Word, MS PowerPoint

PUBLICATIONS

Journal Articles

Real-Time Vehicle Traffic Prediction in Apache Spark Using Ensemble Learning for Deep Neural Networks
- Under the guidance of Dr. Lavanya K
- International Journal of Intelligent Information Technologies (IJIIT) -Special issue on Intelligent Data Analytics for Interdisciplinary domains, Vol 16, Issue 4. (2020)

Promoter Prediction in DNA Sequences of Escherichia coli using Machine Learning Algorithms
- Under the guidance of Dr. Jaisankar N
- Best Student Paper award at IEEE Student Paper Contest (IEEE MAS-SPC), 2019
- International Journal of Scientific & Technology Research (IJSTR), Vol.8, Issue 11 (2019)

End-to-End Weather Analytics Framework over Apache Spark with Kafka using Long Short-Term Memory Networks
- Under the guidance of Dr. Lavanya K
- Submitted to International Journal of Cognitive Computing in Engineering – KeAi Publishing *(Under review)*

Books/Monographs

Unsupervised Learning Approaches to Dimensionality Reduction and Data Visualization *(in progress)*
- Under the guidance of Dr. B. K. Tripathy
- Book proposal accepted by **CRC Press - Taylor & Francis Group** (2021)

Conference papers

Real-Time Vehicle Traffic Analysis using Long Short-Term Memory Networks in Apache Spark
- Under the guidance of Dr. Lavanya K
- Presented at IEEE International Conference on Emerging Trends in Information Technology and Engineering, 2020
- Published in IEEE Xplore digital library (April 2020)

Online Technical Blogs

Apache Spark series
- Part 1 - Getting started with Apache Spark | Part 2 - Introduction to PySpark | Part 3 - Understanding Spark RDDs | Part 4 - Machine Learning in PySpark | Part 5 - End-to-end machine learning pipeline on databricks.
- Featured in Analytics Vidhya Medium Publication

EXPERIENCE

Nov '20 – Present	**Deep learning research intern**
	Integrated MechanoBio Systems Lab at National Cheng Kung University, Taiwan

- Working under Dr. Ting-Yuan TU
- Working on applying deep learning for classification, segmentation and tracking of cell images from 3D cancer spheroids at matrix interface to aid in cancer drug discovery

June '20 – July '20	**Summer Student at Tsinghua Deep Learning School**
	Tsinghua University, China

- Implemented mini-projects, attended lectures and re-implemented seminal papers under the research groups of Prof. Jun Zhu, Prof. Xiaolin Hu and Prof. Minlie Huang on topics including deep generative models, reinforcement learning, Bayesian optimization, few-shot learning etc.
- Received the Outstanding Student Award (Rank 1 out of 63)
- Represented India – only student selected from India

May '20 – Oct '20	**Data Science intern**
	50 Hands Organization, Ontario, Canada

- Worked on tasks involving planning, collecting, cleaning, wrangling, and modeling data for analysis to provide crowdsourced solutions at scale using data-driven models.
- As a team, built an exclusive analytics website *NuviSights* that provides insightful visualizations of trends and patterns from analysis of crowdsourced data.

May '19 – June '19	**Web development intern**
	Vellore Online Systems (P) Ltd, Vellore, India

- Developed a scalable and robust hospital information system for managing information within a hospital network using web technologies.

AWARDS AND ACHIEVEMENTS

- **Outstanding Student Award at Deep Learning Summer School**
  By Dept. of Computer Science and Technology at Tsinghua University
- **Best Student Paper Award**
  At IEEE Student Paper Contest 2019 by IEEE Madras Section
- **Raman Research Award and Scholarship**
  By Vellore Institute of Technology for research contribution during undergraduate studies
- **Achiever Award**
  By Vellore Institute of Technology for achievement in national level technical events
- **Fast track Research Initiative Grant**
  A monetary grant from Vellore Institute of Technology for a research project
- **Selected for 2020 CCU Summer Research fellowship**
  By National Chung Cheng University, Taiwan, for a 12-week summer research program

PROJECTS

Funded projects

Real-time analytics of soil and weather conditions using Machine Learning, IoT and Big data for Agriculture
- Implemented an end-to-end pipeline where data streams from sensors are streamed through Apache Kafka and analyzed using machine learning algorithm in Apache Spark for real-time implementation in the farmland of VIT School of Agriculture.

Relevant Additional/Course projects

Traffic light mapping and recognition using CNN for Autonomous Vehicles
- Implemented a framework using a two-stage deep learning-based approach for detection and classification of traffic lights from images for automated driving using TensorFlow Object Detection API and CNN.

End-to-end machine learning pipeline in PySpark using Amazon S3 for marketing classification
- The data stored in the S3 bucket is pulled to the Spark environment on databricks platform to build a machine learning pipeline in PySpark to perform classification for a bank marketing classification problem using Spark's machine learning library- MLlib.

SHARS: An Online Medical consultation and Medicine Retail System
- A complete web application for online medical consultation, booking appointments and ordering medicines integrated with three **machine learning modules** - X-ray analysis for bone fracture detection, Optical Character Recognition for prescription reading and a Chatbot using NLP.

Diabetes onset prediction using neural networks with grid search optimization
- Implemented a deep neural network using Keras and Scikit-learn to predict the onset of diabetes on the Pima Indians diabetes dataset. Grid Search technique was used for tuning the network's hyperparameters for better model performance. Scikit-learn API was used with Keras model by using wrappers.

Image restoration using Super-Resolution Convolutional Neural Network
- Implemented a Super-Resolution Convolutional Neural Network (SRCNN) - a deep convolutional neural network that learns end-to-end mapping of low resolution to high-resolution images, using Keras.

Information extraction from resumes using natural language processing
- Built a resume parser to extract necessary information from resumes using NLP tools and techniques. The parser was built using Spacy - an advanced natural language processing library.

Lung nodule detection from CT scan images using segmentation techniques
- Developed a framework in MATLAB to detect nodules in lungs from chest CT scan images using segmentation and other image processing techniques.

E-commerce platform using Node.js and MongoDB
- Implemented an e-commerce website developed using web technologies and frameworks like Node.js, Passport.js, Express.js, HTML, CSS and JavaScript with MongoDB as backend.

ONLINE COURSES AND CERTIFICATIONS

Online video lectures

- CS229: Machine Learning by Stanford University
- CS230: Deep Learning by Stanford University
- STAT 442/842: Data Visualization by University of Waterloo
- CS4780: Machine Learning for Intelligent Systems by Prof. Kilian Weinberger from Cornell University

Certifications

- Machine Learning by Stanford University
- Neural Networks and Deep Learning by deeplearning.ai
- Machine Learning with Python by IBM Cognitive class
- Machine Learning A-Z: Hands-On Python & R in Data Science from Udemy
- AWS Machine Learning from Udacity
- Machine learning by building projects from Eduonix
- Taming Big Data with Apache Spark and python: Hands-on by Udemy
- Web Design for everybody Specialization (4 courses + 1 capstone) by University of Michigan
- Human-Centered Design by UC San Diego
- Fundamentals of Digital Image and Video Processing by Northwestern University
- Data Structures by UC San Diego

TEACHING EXPERIENCE

- Teaching Assistantship at Undergraduate level
  - CSE4022 – Natural Language Processing under Prof. Sathyaraj (Winter 2019–20)
  - CSE1007 – Java Programming under Prof. Jaisankar N (Winter 2019–20)
  - CSE1004 – Network and Communication under Prof. Jaisankar N (Winter 2018–19)

- Prepared video lectures for the 'Essentials of Machine Learning' course in the VIT Online Learning (VITOL) platform (2020)

WORKSHOPS AND SEMINARS

February 2020	**Talk on "Machine Learning in Apache Spark"**	**Vellore, India**
	• Delivered a talk for trainees at the VIT-Virtusa Center of Excellence (CoE).	
January 2020	**Seminar on "Java for Android"**	**Vellore, India**
	• Conducted a seminar for a class of 121 undergraduate students.	
March 2019	**Workshop on Artificial Intelligence in Agriculture**.	**Vellore, India**
	• Participated in the workshop organized by Institution of Engineering and Technology (IET) and gave a presentation on "Introduction to Artificial Intelligence".	

| February 2019 | **Devspace 2019 – A Developers Conference**. | **Vellore, India** |

- Participated in the biggest developers' conference organized by Computer Society of India (CSI) in association with more than 17 industry partners including IBM, Amazon, Mozilla, Digital Ocean.
- Guided hackathon teams in implementing ideas through a prototype and provided technical assistance during a hands-on workshop on "Voice UI using Alexa" by Amazon.

| January 2019 | **Seminar on "Prevention of ARP Spoofing in WLAN"** | **Vellore, India** |

- Hosted a seminar for a class of 64 undergraduate students.

MENTORSHIP/ VOLUNTEERING/ OUTREACH

2019 – present Mentoring female undergraduate students and peers interested in Computer Science and AI through self-formed student group - *AthenaAI*.

- Guided 16 female undergraduate students through constant networking for peer learning, sharing ideas and research opportunities.
- Conducted practice sessions and set up weekly targets for competitive coding.
- 5 sophomores and juniors secured research internships; 3 students are researching VIT; 7 have won university/national level hackathons.

2018 - 2019 Served under the National Service Scheme (NSS) for 2 years at Vellore Institute of Technology, Vellore.

January 2019 Organized an NSS Special camp at a rural village in Vellore to teach computer science and coding basics for high school girls and help in skill development along with fellow NSS volunteers at VIT.