Venkata Devesh Reddy Seethi

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RESEARCH INTERESTS

AI in Healthcare, Explainable AI, Optimizing Machine Learning Algorithms, Computer Vision, Deep Learning, Ubiquitous Computing.

EDUCATION

Northern Illinois University Dekalb, Illinois
PhD in Computer Science January 2021 – Present
Advisor: Pratool Bharti

Northern Illinois University Dekalb, Illinois
Masters with Thesis in Computer Science Januray 2018 – December 2020

GITAM University Visakhapatnam, Andhra Pradesh
Bachelors in Electronics and Communication Engineering 2013-2017

PUBLICATIONS

CovidAlert - A Wristwatch-based System to Alert Users from Face Touching
Mrinmoy Roy, **Venkata Devesh Reddy Seethi**, Rami Lake, Pratool Bharti
15th EAI International Conference on Pervasive Computing Technologies for Healthcare, 2021.

FaceShield - A Commercial Smartwatch Application to Prevent Users from Face-touching (in progress)
Rami Lake, **Venkata Devesh Reddy Seethi**, Mrinmoy Roy, Pratool Bharti

An Explainable-AI approach for Diagnosis of COVID-19 using MALDI-ToF Mass Spectrometry (in progress)
Venkata Devesh Reddy Seethi, Zane LaCasse, Prajkta Chivte, Elizabeth R Gaillard, Pratool Bharti
Journal of Biomedical and Health Informatics, 2021.

MALDI-ToF Protein Profiling as a Potential Rapid Diagnostic Platform for COVID-19

Prajkta Chivte, Zane LaCasse, **Venkata Devesh Reddy Seethi**, Pratool Bharti, Joshua Bland, Shrihari S Kadkol, Elizabeth R Gaillard
Journal of Mass Spectrometry and Advances in the Clinical lab, 2021.

Master Thesis in Human Activity Intensity Detection Using Wrist-Worn Wearable Sensors
Venkata Devesh Reddy Seethi, Pratool Bharti (Advisor), Reva Freedman (member), Hamed Alhoori (member)
Northern Illinois University, 2020.

CNN-based Speed Detection Algorithm for Walking and Running using Wrist-worn Wearable Sensors
Venkata Devesh Reddy Seethi, Pratool Bharti
IEEE International Workshop on Deep Learning on Edge for Smart Health and Well-being Applications, 2020.

Analyzing Twitter Bot Activity on Academic Articles (in progress)
Ashiqur Rahman, **Venkata Devesh Reddy Seethi**, Simon Shulgan, Rui Zhang Ehsan Mohammadi, and Hamed Alhoori
11th Internation Conference on Social Media and Society, 2020.

RESEARCH EXPERIENCE

Graduate Research Assistant
Professor: Dr. Pratool Bharti — October 2019 – Present

- Teaching assistant for graduate courses: 1) Neural networks and computer vision 2) Applied machine learning
- Researched on the topics listed below:
- Optimization and model compression of machine learning algorithms.
- Integrating AI in healthcare and disease diagnostic applications.
- Human activity recognition using pervasive technologies for healthcare applications.
- Program an Android smartwatch application to capture sensory data from smartwatches and upload data to firebase cloud.
- Leverage computer vision to detect the movement patterns of patients.

WORK EXPERIENCE

Technology Support Analyst
Founders Memorial Library — August 2018 – December 2019

- Trained student workers to provide technical support to academic faculties and students.

• Documented Technical procedures for troubleshooting technical issues related to network and software applications.
• Resolved over 500 technical issues on graphic cards, OS imaging, systems hardware, and universities affiliated applications.

Embedded Systems Internship
Defense Research and Developmental Organization May 2016 – July 2016
• Generated daily reports by running simulations on embedded systems.
• Designed four voltage and current regulation systems on an embedded chip, built a software model on Proteus with a 5% increase in efficiency, from the baseline model.
• Explored Embedded Systems integration with network and reinforcement of OWASP securities in the Internet of Things.
• Analyzed functions of Embedded Systems in automatic component testing and hydraulics.

Campus Ambassador

Intel Graduate Ambassador
February 2022 – current
• Build end-to-end AI pipelines and deploy on cloud using Intel OneAPI and OpenVino.

Mozilla Student Ambassador
August 2016 – August 2017
• Contribute to open source code and work on team projects at GITAM University.
• Gave seminars on web development and web technologies as a part of the Mozilla Web Literacy program.

ACADEMIC PROJECTS

SeeForest: A novel visualization approach to interpret rules in random forest algorithm. Fall 2021
• Conducted a short survey in the field of interpreting rule-based machine learning algorithms.
• Built a framework using D3JS to visualize the system.
• Took a new approach in interpreting the complex rules generated by random forest both locally and globally.

Computer Graphics Pipeline Based on Pixar's Renderman Spring 2021
• Programmed algorithimic modules of graphics pipeline such as generating simple and complex shapes, coloring, lighting, scene creation.

Understanding Public's Perspective on Health with Instagram Posts Fall 2019

• Collected data from instagram posts with hashtags relating to health and fitness.

• Built a model using transfer learning and clustering on Instagram images to gauge public's opinion on health across different countries.

Exploring Bot Strategies and Context of the information Disseminated on Twitter Fall 2019

• Developed a twitter bot and deployed on AWS to automate search tasks.

• Extracted data from twitter accounts that tweeted scholarly articles and identified bot accounts.

• Gathered bot scores using rapid API for twitter accounts.

• Used topic modelling to analyze scholarly content shared by bots on twitter.

When Illinois Students Leave The State For College, Who Reaps The Rewards? Fall 2019

• Analyzed and discovered insights on Illinois student's and generated visualizations.

• Published on National Public Radio website.

Washington DC BikeShare Visualization Spring 2019

• Created a Visualization story based on bike usage patterns and climate changes in DC.

Scientific and Social Recommendation System for Scholarly Articles Spring 2019

• Developed two models, content-based and collaborative filtering for research articles.

• Recommendations for twitter profiles based on user's research interests.

Predicting Popularity of Scholarly Articles Fall 2018

• Implemented Natural Language Processing for predicting popularity from textual data.

• Built machine learning models to predict a popularity score using Altmetrics data.

Skills

- Machine Learning Domains Supervised learning, Unsupervised Learning, Semi-supervised learning.
- Languages : Python, C++, Embedded C, Java, Javascript, R.
- Frameworks : Tensorflow, TensorHub, Pytorch, OpenCV, Sci-kit learn, Imblearn, SHAP, ML360, H2O, PyAudio, Selenium, Transformers.
- Databases : PostgreSQL, Heroku, MongoDB, Intel DevCloud, oneAPI, AWS, GCP, Firebase.
- Computer Vision : object detection, panoptic segmentation, Point of interest detection and tracking.
- Big Data : data scraping, information retrieval, data mining, pattern recognition.
- Data Visualization : statistical visualizations, visual analytics, information visualization, scientific visualization, computer graphics.
- Natural Language Processing : topic modelling, named entity recognition, word embeddings, text summarization, recommender systems.
- Deep learning : CNNs, DNNs, RNNs, GNNs, reinforcement learning.
- Other Topics : adversarial learning, geometric deep learning, AI interpretation and trustworthiness, multimodal data fusion.
- Web Tools : NodeJS, Flutter, PassportJS, Express, React, HTML, CSS, PHP.
- Electronics : Computer Architecture and Organization, Microelectronics, VLSI, Embedded Systems.
- Others : Android programming, computer graphics, docker, git, Nvidia Jetson, Raspberry Pi, Arduino.
- Operating System : Ubuntu, Arch Linux, MacOS, Windows.
- IDE : Tmux+Emacs, VSCode, Jupyter, Spyder, CLion, PyCharm, Android Studio.

References Available upon request.

HOBBIES

Reading books, marathon running, and swimming.