

Venkata Devesh Reddy Seethi

🏠 deveshseethi.world 🎓 scholar.com/deveshreddy 🐙 github.com/rdverse
🌐 linkedin.com/in/devesh-reddy
✉️ dseethi@niu.edu 📞 815-419-3449

AREA OF EXPERTISE

I specialize in advanced AI techniques, such as anomaly detection, self-supervised learning, and domain generalization, across a wide range of data modalities, including sensor data, images, videos, and natural language. With hands-on experience in developing energy-efficient deep learning solutions, I have a strong command of frameworks like TensorFlow and PyTorch, and extensive knowledge of Python and C++. My work spans from industrial applications in aerospace and material sciences to healthcare innovations like disease diagnosis, where I focus on building scalable and interpretable AI models. I am passionate about designing solutions that address real-world challenges and are carbon-efficient.

EDUCATION

Northern Illinois University <i>Ph.D. Computer Science; GPA: 3.8</i>	Dekalb, IL <i>January 2021 - Present</i>
Northern Illinois University <i>M.S. Computer Science; GPA: 3.7</i>	Dekalb, IL <i>January 2018 - December 2020</i>
GITAM University <i>B.Tech. Electronics and Communication Engineering; GPA: 3.5</i>	Location, India <i>August 2013 - August 2017</i>

EXPERIENCE

Argonne National Laboratory <i>Research Aide - Technical PhD</i>	Lemont, IL <i>May 2024 - Present</i>
<ul style="list-style-type: none">• Collaborated with researchers from X-Ray science teams to develop end-to-end computer vision pipelines for advanced segmentation tasks.• Evaluated and surveyed unsupervised and self-supervised methods for automatic segmentation.• Assessed data requirements, including quality and quantity of labeled datasets, for training robust segmentation models.• Researched building generalizable models low-contrast tomography scans of diverse materials.	
Northern Illinois University <i>Research Assistant (Data Lab)</i>	Dekalb, IL <i>May 2023 - May 2024</i>
<ul style="list-style-type: none">• Spearheaded research ideas on advanced non-destructive testing (NDT) techniques, collaborating with industry leaders like Spirit AeroSystems.• Brainstormed ideas with researchers from Argonne National Laboratory and built complex AI models on high-performance computing (HPC) resources at Argonne.• Contribute to grant proposals and author papers on AI-driven improvements in NDT methodologies.• Design and execute experiments based on NDT inspector feedback from Spirit AeroSystems to enhance solution effectiveness.• Explored many ideas in anomaly detection, self-supervised learning, computer vision, and explainable AI.• Conducted literature reviews for several ongoing research projects in AI for non-destructive inspection and efficient AI models.	
Northern Illinois University <i>Teaching Assistant (CSCI 463)</i>	Dekalb, IL <i>Jan 2023 - May 2023</i>
<ul style="list-style-type: none">• Hosted engaging review sessions through whole-class discussions for a class of 77 students to ensure exam readiness, reinforcing course concepts and facilitating student success.• Offered weekly office hours and one-on-one tutoring sessions, supporting students in navigating difficult concepts and facilitating their mastery of the course material.	

Intel Corporation

Hillsboro, OR

AI Software Internship

June 2022 – December 2022

- Optimized deep learning models and frameworks through precision reduction, sparsity induction, and graph/library optimization.
- Conducted system characterization to evaluate data science model performance on various CPU configurations.
- Developed power-efficient deep learning models for TensorFlow and PyTorch.
- Debugged and tested software in a fast-paced environment.
- Benchmarked and validated AI model performance against system/kernel/framework feature knobs.

Northern Illinois University

Dekalb, IL

Research Assistantship

October 2019 – May 2022

- Leveraged computer vision for patient movement analysis in long-term care facilities.
- Built optimized and compressed machine learning algorithms for edge devices.
- Integrated AI into COVID-19 healthcare applications for disease diagnostics.
- Researched human activity recognition for healthcare using pervasive technologies.
- Programmed Android smartwatch app for data collection and upload to Firebase cloud.
- Served as teaching assistant for graduate courses in Neural Networks, Computer Vision, and Applied Machine Learning.

Division of Information Technology

Dekalb, IL

Technology Support Analyst

August 2018 – December 2019

- Trained and supervised student workers in delivering technical support to university staff and students.
- Created comprehensive technical documentation for troubleshooting network and software application issues.
- Successfully resolved 500+ technical issues related to graphic cards, OS imaging, hardware systems, and university-affiliated applications.

Gilbert Dining Hall

Dekalb, IL

Dining Team Member

January 2018 – May 2018

- Made delicious burgers, pizzas, stir-fry, and washed dishes.

Startups

Vizag, India

Startup Growth Analyst

February 2017 – December 2017

- Analyzed customer data to identify key market segments, boosting targeted marketing efforts.
- Collaborated on game design to improve player engagement and retention.

Defense Research and Developmental Organization

Telangana, India

Embedded Systems Internship

May 2016 – July 2016

- Conducted performance evaluations of embedded systems using simulation software to assess functionality and efficiency.
- Designed four voltage and current regulation systems on embedded chip, achieving 5% efficiency boost from baseline.
- Explored embedded systems integration with networks and reinforced OWASP securities in Internet of Things.
- Analyzed embedded systems in automatic component testing and hydraulics.

PUBLICATIONS

Published

- * **Venkata Devesh Reddy Seethi**, Ashiqur Rahman, Austin Yunker, Rami Lake, Zachary Karl, Rajkumar Kettimuthu, Hamed Alhoori, “Mixture-of-Experts for Multi-Domain Defect Identification in Non-Destructive Inspection”, International Conference on Machine Learning and Applications (2024) [h-index: 55]
- * Ibrahim Al Azher, **Venkata Devesh Reddy Seethi**, Akhil Pandey Akella, Hamed Alhoori, “LLM-based Topic Modeling and Text Summarization for Analyzing Scientific Articles limitations”, Joint Conference on Digital Libraries (2024) [h-index: 45]

- * Zane LaCasse, Prajkta Chivte, Kari Kress, **Venkata Devesh Reddy Seethi**, Joshua Bland, Hamed Alhoori, Shrihari S. Kadkol, Elizabeth R. Gaillard. “Enhancing saliva diagnostics: the impact of Amylase depletion on MALDI-ToF MS profiles as applied to COVID-19.” *Journal of Mass Spectrometry and Advances in the Clinical Lab*, 31 (2024): 59-71. [h-index: 16]
- * **Venkata Devesh Reddy Seethi**, Zane LaCasse, Prajkta Chivte, Joshua Bland, Shrihari S Kadkol, Elizabeth R Gaillard, Pratoool Bharti, Hamed Alhoori. “An explainable-AI approach for diagnosis of COVID-19 using MALDI-ToF mass spectrometry.” *Journal of Expert Systems With Applications*, 236 (2024): 121226. [h-index: 249]
- * Mrinmoy Roy, **Venkata Devesh Reddy Seethi**, Rami Lake, Pratoool Bharti. “CovidAlert - A Wristwatch-based System to Alert Users from Face Touching.” 15th EAI International Conference on Pervasive Computing Technologies for Healthcare, (2021) pp. 489-504. [h-index: 29]
- * Prajkta Chivte, Zane LaCasse, **Venkata Devesh Reddy Seethi**, Pratoool Bharti, Joshua Bland, Shrihari S Kadkol, Elizabeth R Gaillard. “MALDI-ToF Protein Profiling as a Potential Rapid Diagnostic Platform for COVID-19.” *Journal of Mass Spectrometry and Advances in the Clinical lab*, 21 (2021): 31-41. [h-index: 16]
- * **Venkata Devesh Reddy Seethi**, Pratoool Bharti. “CNN-based Speed Detection Algorithm for Walking and Running using Wrist-worn Wearable Sensors.” IEEE International Workshop on Deep Learning on Edge for Smart Health and Well-being Applications, (2020) pp. 278-283.
- * Ashiqur Rahman, **Venkata Devesh Reddy Seethi**, Simon Shulgan, Rui Zhang Ehsan Mohammadi, Hamed Alhoori. “Analyzing Twitter Bot Activity on Academic Articles.” 11th International Conference on Social Media and Society, (2020).

Thesis

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

Under Review

- * **Venkata Devesh Reddy Seethi**, Ashiqur Rahman, Austin Yunker, Zachary Karl, Rajkumar Kettimuthu, Hamed Alhoori, “Advanced Vision-Based Defect Localization in Aircraft Fuselages”, Aerospace Structures, Structural Dynamics, and Materials Conference (2025)
- * Tamjid Azad, Ibrahim Al Azher, **Venkata Devesh Reddy Seethi**, Hamed Alhoori, “Can LLMs Predict the Impact of Scholarly Research?”

In Progress

- * **Venkata Devesh Reddy Seethi**, Cheng Han, Hamed Alhoori, “Zero-Shot Diffusion for Synthetic Anomaly Generation”, Computer Vision and Pattern Recognition Conference (2025)
- * **Venkata Devesh Reddy Seethi**, Zachary Karl, Rajkumar Kettimuthu, Hamed Alhoori “Effective Non-Destructive Inspection Framework With a Unified XAI Framework”
- * **Venkata Devesh Reddy Seethi**, Pratoool Bharti, Hongdao Meng. “Quantifying Engagement Levels in Assistive Care Facilities towards Music Using Computer Vision Techniques”
- * Ashiqur Rahman, **Venkata Devesh Reddy Seethi**, Austin Yunker, Rajkumar Kettimuthu, Zachary Karl, Hamed Alhoori, “A Multidisciplinary Survey of AI-Assisted Applications For Non-Destructive Inspection”

PROJECTS

- **A Continual Learning Framework for Inspector-In-The-Loop System for Explainable Inspection** (2023)
- **Visualization Tool for Interpreting Random Forest Rules Using D3JS and Javascript** (2021)
- **Developing a Graphics Pipeline Modeled After Pixar’s Renderman for Scene Creation** (2021)
- **Using Instagram Data to Understand Public Health Perspectives with Computer Vision** (2019)
- **Exploring Bot Strategies and Scholarly Article Dissemination on Twitter** (2019)
- **Story-Based Visualization of Washington DC BikeShare Data for Climate Patterns** (2019)
- **A Scholarly Article and Academic Profile Recommendation System** (2018)
- **Developing a Smart Home Automation Prototype for Energy Efficiency with Raspberry Pi** (2017)
- **Long-Range Car Parking Sensor System with Ultrasonic Obstacle Detection** (2016)

INVITED TALKS AND PRESENTATIONS

- **Mixture-of-Experts for Multi-Domain Defect Identification in Non-Destructive Inspection**, International Conference on Machine Learning and Applications (2024)
- **Automatic Segmentation of Sand Grains in Low Contrast High Energy Tomography**, Learning On The Lawn Poster Presentation, Argonne National Laboratory (2024)
- **Data Parallelization, Model Sharding, and Distributed AI Systems**, Northern Illinois University, CSCI 637 (2024)
- **Leveraging HPC resources for Scientific AI workloads**, University of Illinois, Chicago (2023)
- **A Guide to Explaining Black Box Systems With Explainable AI**, Northern Illinois University, CSCI 636 (2023)
- **CovidAlert - A Wristwatch-based System to Alert Users from Face Touching**, 15th EAI International Conference on Pervasive Computing Technologies for Healthcare (2021)
- **CNN-based Speed Detection Algorithm for Walking and Running using Wrist-worn Wearable Sensors**, IEEE International Workshop on Deep Learning on Edge for Smart Health and Well-being Applications (2020)

HONORS & AWARDS

- 4th position in International Intel student ambassador AI solution hackathon (2023)
- Google Cloud Research Credit Grant (2023)
- Ranked top 3 on Intel LLM leaderboard for 3 months consecutive months (2024)

SERVICES

Program Committee Member

- * CIKM 2023, CIKM 2024

Reviewer

- * Journal of Expert Systems with Applications

SKILLS

Languages: Python, C++, Embedded C, Java, JavaScript, R

Machine Learning: Multimodal fusion, anomaly detection, explainable-AI, Computer Vision, Generative Models, Distributed Learning, Visual Analytics

ML Frameworks: TensorFlow, TensorHub, PyTorch, OpenCV, scikit-learn, Spark, SHAP, ML360, PyAudio, Transformers

Web Tools: Node.js, Flutter, Passport.js, Express, React, HTML, CSS, PHP

Databases: PostgreSQL, Heroku, MongoDB, Intel DevCloud, AWS, GCP, Firebase

Others: Android, computer graphics, Docker, Git, CUDA, oneAPI, NVIDIA Jetson, Raspberry Pi, Arduino

Operating Systems: Linux, macOS, Windows

IDEs: Tmux+Emacs/Vim, VS Code, Jupyter, Spyder, CLion, PyCharm, Android Studio

Electronics: Computer Architecture and Organization, Microelectronics, Embedded Systems

ACTIVITIES

- **Intel Graduate Ambassador**, February 2022 – Present
- **Division of Information Technology Representative**, August 2019 – August 2019
- **United Nations Educational, Scientific and Cultural Organization Volunteer**, TECH2017 conference, December 2017 – April 2018
- **Mozilla Student Ambassador**, GITAM University, August 2016 – August 2017
- **Entecres Labs Campus Ambassador**, August 2016 – August 2017