

Amit Adate

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Research Interests

Medical Imaging, Deep Learning, Computer Vision, Optimization

Education

- 2020 – 2026 **Northwestern University, USA.**
(Expected) **Ph.D. in Computer Engineering**
Co Advisors: Dr. Aggelos K Katsaggelos and Dr Alan V Sahakian
- 2018 – 2020 **Northwestern University, USA.**
Masters of Science in Computer Science
Co Advisors: Dr Kristian J Hammond and Dr. Aggelos K Katsaggelos
- 2014 – 2018 **Vellore Institute of Technology, India.**
Bachelor of Technology in Computer Science
Advisor: Dr. B. K. Tripathy

Professional Experience

- Sep 2020 – **Graduate Research Assistant, Image and Video Processing Lab.**
Present Northwestern University
Guide: Dr Aggelos K Katsaggelos
- Sept 2021 – **Teaching Assistant EE 375-475, Machine Learning: Foundations, Applications, and Algorithms.**
Dec 2021 Northwestern University
Instructor: Dr Aggelos K Katsaggelos
- August 2017 **Undergraduate Research Assistant, Soft Computing Lab.**
– July 2018 VIT University
Guide: Dr B K Tripathy
- May 2017 **Research Intern, CISCO Systems, Inc.**
– July 2017 Advanced Services Team
Worked on Large Scale Parallel Parsing (XML)

Projects

- Nov 2024 – **AI-assisted Early Skin Cancer Detection in Complex Wounds.**
Present Research Project: Developing deep learning models for early detection of cutaneous squamous cell carcinoma in patients with complex wounds. Collaboration with Northwestern Medicine and Feinberg School of Medicine. Presented at Annual General Internal Medicine Research Day, November 2025.
- July 2024 – **Multi-Modal Ensemble Learning for Rare Disease Diagnosis.**
Present Research Project: Building ensemble learning frameworks to detect cutaneous squamous cell carcinoma in Recessive Dystrophic Epidermolysis Bullosa patients using multi-modal medical imaging data. Presented at NUCATS I.AIM Informatics & Data Science Forum, July 2025.
- April 2022 – **Using Deep Learning for Early Detection of Squamous Cell Carcinoma (SCC) in EB.**
Dec 2024 Research Project: Built end-to-end machine learning models for classification and segmentation of skin cancer lesions within curated images of patients with Epidermolysis Bullosa (EB).
- 2023 – 2024 **Intracranial Hemorrhage Detection on Head CT Scans.**
Research Project: Developed weakly supervised deep learning models for automatic detection and localization of image-level intracranial hemorrhage using study-level labels. Published in Radiology: Artificial Intelligence, 2024.

- January 2021 **Detecting Screen Presence within Egocentric Videos.**
- March 2022 Research Project: Detected screen-watching behavior in longitudinal studies using activity-oriented cameras. Achieved 30% improvement over state-of-the-art. Presented at IEEE PerCom 2022.
- Jan 2020 – **Latent Space Optimization Framework for Conditional Generative Models.**
- Sep 2020 Research Project: Optimization aspects of conditional generative networks towards controlled image synthesis. Submitted to Transactions on Neural Networks and Learning Systems.
- June 2017 – **S-LSTM-GAN: Shared Recurrent Neural Networks with Adversarial Training.**
- April 2018 Combined Long-Short-Term-Memory models with generative modeling for image generation. Published at ICDECT 2017

Selected Publications

- Nov 2025 *AI-assisted Early Skin Cancer Detection in Complex Wounds.* **A Adate***, AN Kho, AK Katsaggelos, AS Paller, A Reimer-Taschenbrecker, A Furmanchuk - Annual General Internal Medicine Research Day, Chicago, IL
- July 2025 *Multi-Modal Ensemble Learning for Rare Disease Diagnosis: Detecting Cutaneous Squamous Cell Carcinoma in Recessive Dystrophic Epidermolysis Bullosa.* A Furmanchuk, **A Adate***, B Nardone, A Reimer-Taschenbrecker, A Paller, A Kho, A Katsaggelos - NUCATS I.AIM Informatics & Data Science Forum, Chicago, IL
- Radiology AI - 2024 *Precise image-level localization of intracranial hemorrhage on head CT scans with deep learning models trained on study-level labels.* Y Wu, M Iorga, S Badhe, J Zhang, DR Cantrell, EJ Tanhehco, N Szrama, AM Naidech, M Drakopoulos, ST Hasan, KM Patel, TA Hijaz, EJ Russell, S Lalvani, **A Adate**, TB Parrish, AK Katsaggelos, VB Hill - Radiology: Artificial Intelligence, Volume 6, Issue 6, 2024 [\[Link\]](#)
- PERCOM - 2022 *Detecting Screen Presence with Activity-Oriented RGB Camera in Egocentric Videos.* **A Adate**, S Shahi, R Alharbi, S Sen, Y Gao, AK Katsaggelos, N Alshurafa - IEEE International Conference on Pervasive Computing and Communications, 2022 [\[Link\]](#)

Technical Skills

Programming

Python, Matlab, C, C++, LaTeX

Frameworks / Libraries

PyTorch, TensorFlow, scikit-learn, OpenCV, Keras

CUDA : Low-level kernel programming (SIMT), parallel algorithms, GPU optimization

Gurobi, Jupyter, Git

Notable Graduate Coursework

Deep Learning: Foundations, Applications, and Algorithms (Prof. Aggelos Katsaggelos)

Advanced Computer Vision (Prof. Ying Wu)

Advanced Computer Architecture (Prof. Nikos Hardavellas)

Massively Parallel Programming with CUDA (Prof. Nikos Hardavellas)

Statistical Machine Learning (Prof. Han Liu)

Computational Photography (Prof. Oliver Cossairt)

Integer Programming (Prof. Simge Kucukyavuz)

References

Available upon request