Andrew Seohwan Yu

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Multimodal generative AI fine-tuning and inference optimization
3D medical image / video generation and understanding

Education

Case Western Reserve University — **Cleveland, OH**
- PhD Candidate in Computer Science — 2021 - 2026 (expected)
- Qualifying Exam: Evaluation of Image Generative Models — Dec 2023
- GPA 3.35/4.00

Cleveland State University — **Cleveland, OH**
- Master of Computer and Information Sciences — 2014 - 2017
- Thesis: NBA Basketball Analytics with ML
- *Magna Cum Laude*, GPA 3.61/4.00

Kent State University — **Kent, OH**
- Bachelor of Science, Integrated Life Sciences — 2009 - 2011
- *Magna Cum Laude*, GPA 3.74/4.00

Research

Cleveland Clinic Research — **Cleveland, OH**
- Advisor: Xiaojuan Li, PhD — 2021 - Present
- Multimodal generative AI: text, image, and 3D medical image generation
- Clinical applications: clinical report generation, radiology measurements

Case Western Reserve University — **Cleveland, OH**
- Advisor: Vipin Chaudhary, PhD — 2021 - Present
- Prompt engineering and optimization, and fine-tuning for narrow applications
- Anomaly detection: grounded distribution representation via embedding typicality

Awards

Cleveland Clinic Research, Catalyst Grant — **Cleveland, OH**
- Co-Authors: Mingrui Yang, PhD, Pegah Ahadian, MS — Jan 2026
- Radiology reporting system for clinical, diagnostic, and personalized care
- Multimodal generative AI, using real-time audio, 3D medical images, and reinforcement learning

Select Publications

[ICLR 2025]: **Forte: Finding Outliers with Representation Typicality Estimation**. Debargha Ganguly, Warren Morningstar, Andrew Seohwan Yu, Vipin Chaudhary. International Conference on Learning Representations, Tampines, Singapore, April 2025

[SPIE 2025]: **Novel adaptation of video segmentation to 3D MRI: efficient zero-shot knee segmentation with SAM2**. Andrew Seohwan Yu, Mohsen Hariri, Xuecen Zhang, Mingrui Yang, Vipin Chaudhary, Xiaojuan Li. Society of Photo-Optical Instrumentation Engineers (SPIE) Imaging Informatics for Healthcare, Research, and Applications, San Diego, February, 2025

[MDPI 2025]: **Unsupervised Segmentation of Knee Bone Marrow Edema-like Lesions Using Conditional Generative Models.** Andrew Seohwan Yu, Mingrui Yang, William Holden, Ahmet Hakan Ok, Sameed Khan, Jeehun Kim, Carl Winalski, Naveen Subhas, Vipin Chaudhary, and Xiaojuan Li. Bioengineering 2024, 11, 526. May 22, 2024

Publications (Continued)

Inpainting MRI for unsupervised knee bone marrow edema-like lesion segmentation using conditional diffusion models, Andrew Seohwan Yu, Richard Lartey, William Holden, Ahmet Hakan Ok, Jeehun Kim, Carl Winalski, Naveen Subhas, Vipin Chaudhary, and Xiaojuan Li, presented at the Society of Photo-Optical Instrumentation Engineers (SPIE) Imaging Informatics for Healthcare, Research, and Applications, San Diego, February 20, 2024

Novel Unsupervised Segmentation of Bone Marrow Edema-Like Lesions using Bayesian Conditional Generative Adversarial Networks, Andrew Seohwan Yu, Sibaji Gaj, William Holden, Richard Lartey, Jeehun Kim, Carl Winalski, Naveen Subhas, and Xiaojuan Li, Proceedings of the International Society for Magnetic Resonance in Medicine, (ISMRM) Scientific Meeting and Exhibition, ISSN 1545-4428 (Online), May 19, 2023

Empirical Study: Temporal and Spatial Feature Processing Methods for Prediction of NBA Basketball Plays for Sports Analytics, Sun Sunnie Chung and Andrew Yu. Accepted to International Journal of Networked and Distributed Computing (IJNDC), Vol 7: Issue 3, ISSN Print: 2211-7938, ISSN Online: 2211-7946, July 2019

Automatic Identification and Analysis of Basketball Plays: NBA On-Ball Screens, Andrew Yu and Sun Sunnie Chung, in the Proceedings of the 4th IEEE International Conference on Big Data, Cloud Computing and Data Science Engineering, Honolulu, May 2019

Teaching

Pennsylvania State University — **Erie, PA**

- Full-time instuctor — 2017 - 2021
  - Artificial Intelligence (Python) — Spring 2021
  - Technical Game Development (Unreal Engine 4) — Spring 2021
  - Game Development Project (Unreal Engine 4) — Fall 2020
  - Applications Programming (Android, Kotlin) — Spring 2020
  - Operating Systems and Programming (C, UNIX) — Fall 2017 - Spring 2019
  - Introduction to Programming Techniques (C++) — Fall 2017 - Summer 2021

Cleveland State University — **Cleveland, OH**

- Graduate Teaching Assistant — 2016 - 2017
  - Introduction to Engineering Design (C, Arduino) — Spring 2017
  - Introduction to Programming (Java) — Fall 2016