



# Andrew Seohwan Yu

Machine learning researcher specializing in generative vision models and medical image analysis

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## Education

### Case Western Reserve University

- PhD Candidate in Computer Science
- Qualifying Exam: Evaluation of Image Generative Models
- Current Estimated GPA 3.32/4.00

Cleveland, OH  
2021 - Dec 2025 (expected)  
Dec 2023

### Cleveland State University

- Master of Computer and Information Sciences
- Thesis: NBA Basketball Analytics with ML
- *Magna Cum Laude*, GPA 3.61/4.00

Cleveland, OH  
2014 - 2017

### Kent State University

- Bachelor of Science, Integrated Life Sciences
- *Magna Cum Laude*, GPA 3.74/4.00

Kent, OH  
2009 - 2011

## Research

### Cleveland Clinic, Lerner Research Institute

- Advisor: Xiaojuan Li
- Unsupervised segmentation of musculoskeletal lesions in MRIs using anomaly detection
- Medical image analysis and radiomics to find biomarkers for osteoarthritis

Cleveland, OH  
2021 - Present

### Case Western Reserve University

- Advisor: Vipin Chaudhary
- Comparison and evaluation of generative models (diffusion models, GANs, VAEs)
- Fine-tuning foundational generative models for small-domain tasks

Cleveland, OH  
2021 - Present

## Technical Skills

**Core ML and Data Science:** python, pytorch, scikit-learn, torchvision, lightning, pandas, huggingface, accelerate,

**MLOps, Deployment and Visualization:** wandb, gradio, docker, matplotlib, seaborn, plotly

**Medical Imaging:** monai, ants, nibabel, simpleitk, pydicom, pyradiomics, scikit-image, opencv

**Programming Languages:** Python, Unreal Engine, Kotlin (Android), Dart (Flutter), C, C++, bash, Java

## Publications

**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

**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

**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

# Publications (Continued)

**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

- Full-time instructor
- Artificial Intelligence (Python)
- Technical Game Development (Unreal Engine 4)
- Game Development Project (Unreal Engine 4)
- Applications Programming (Android, Kotlin)
- Operating Systems and Programming (C, UNIX)
- Introduction to Programming Techniques (C++)

**Erie, PA**  
2017 - 2021  
Spring 2021  
Spring 2021  
Fall 2020  
Spring 2020  
Fall 2017 - Spring 2019  
Fall 2017 - Summer 2021

## Cleveland State University

- Graduate Teaching Assistant
- Introduction to Engineering Design (C, Arduino)
- Introduction to Programming (Java)

**Cleveland, OH**  
2016 - 2017  
Spring 2017  
Fall 2016