

# Aparnaa Senthilnathan

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## Education

**Bachelor/Master of Science in Computer Science**, Rochester Institute of Technology

GPA: 3.36

RIT Presidential and Recognition Scholar 2021

Expected: May 2026

Rochester, New York

## Professional Experience

**Intern, Computer Vision Team**, Kitware Incorporation

05/2024 – 08/2024

Carrboro, North Carolina

- Developed three cutting-edge object detection systems for customers in the DoD and IC
- Improved two methods for small object detection by fine-tuning a PyTorch model and its parameters
- Conducted three datasets and validation pipelines using RT-DETR to test small object model performance
- Trained a SOTA real-time, transformer-based architecture on COCO (RT-DETR)

**Artificial Intelligence Research Co-Op/Intern**, Griffiss Institute

07/2023 – 12/2023

Rome, New York

- Revamped a PyTorch zero-shot classifier model that tests CLIP's performance in identifying homonyms
- Researched the impact of a couple adversarial attacks on a foundational model
- Identified four vulnerabilities of the CLIP pre-training technique within two foundational models

**MIT Beaver\*Works Summer Institute Cog\*Works**, Massachusetts Institute of Technology

07/2020 – 08/2020

Remote

- Trained a model on using 15-second audio snippets and finding wavelength peaks to identify a song using NumPy, SciPy, and Numba
- Designed a computer vision algorithm to match more than one faces shown on screen with a webcam with those saved in the program's database
- Created one natural language learning ResNet model to find images using a given caption

## Skills

**Programming Languages:** Python, SQL, Java, JavaScript, C#, HTML, CSS

**Technologies:** TensorFlow, PyTorch, Scikit-Learn, NumPy, Pandas, OpenCV, MediaPipe, Jupyter Notebook, Google Colab, Anaconda, LangChain, Hugging Face Spaces, OpenAI APIs, Git, GitHub, Virtual Studio, Linux Shell Scripting, Ubuntu, Windows, iOS, Angular, WebGPU, Unreal Engine, RADICAL Motion, Microsoft Office, Canva

**Concepts:** Artificial Intelligence, Machine Learning, Deep Learning, Neural Networks, Generative AI, Natural Language Processing, Computer Vision, Computer Graphics, Virtual Reality, Augmented Reality, Algorithms, Data Structures, Predictive Modeling, Model Development & Evaluation, Statistics, Applied Mathematics, Software Engineering, Software Development, User Interface Design, Technical Writing, Results Reporting, Real-World Data, Problem Solving

## Projects

**XRLive: The Return of Virtual Karaoke**, Vertically Integrated Project, 2025

- Engineered functionality for the virtual avatar's thirty morph targets and motion capture using Unreal Engine and RADICAL Motion
- Identified two bugs with facial animations in motion capture when retargeting avatars
- Modeled the user interface to switch between six avatars by pressing the spacebar

**MyErgBuddy**, Team, WicHacks '25, 2025

- Architected a pose estimation model using MediaPipe to detect and measure six landmarks for accurate posture assessment
- Implemented four functions that measure and compare each of the six body landmarks' positions using math
- Pioneered three parts of the OpenCV fancam model, such as getting the program to print statements for correct postures

**BrickStein**, Team, BrickHack 11 Hackathon, 2025

- Refined two screenshot and video generation features using OpenCV and Manim to aid the chatbot in guiding students
- Built framework for image summarization using an OpenAI model for the chatbot to scan
- Processed and cropped screenshots that have a drawn circle or box using OpenCV

## Organizations

**Computing Organization for Multicultural Students**, Public Relations Chair, Active Member

- Innovated a new COMS Connection Newsletter template on CampusGroups to improve audience engagement
- Formulated and published fifteen weekly posts, reels, and flyers using Canva to promote organizational events
- Captured and edited event photos and videos to produce recap posts on Instagram and LinkedIn

**Women in Computing**, Graduate Coordinator, Active Member, PR Committee Member

- Administered graduate social events to drive membership growth and community engagement
- Mentored students in 6th-12th grade in JavaScript programming and object functionality
- Designed visually compelling posts and flyers using Canva to boost event engagement

**Artificial Intelligence Club**, Events Coordinator

- Planned and coordinated company visits to expand student exposure to Artificial Intelligence