

# Huy Huynh

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## EDUCATION

### University of Washington, Seattle

*B.S. in Computer Science*

Expected Graduation: June 2027

GPA: 3.78

#### Coursework:

Data Structures & Algorithms

Machine Learning

Deep Learning

Computer Vision

Data Management

Linear Algebra

## EXPERIENCE

### UW Systems Laboratory | Undergraduate Researcher

January 2026 - Present

- Researching "wags" (Web-Agent Gateway System), a framework designed to enable personal AI assistants to reliably execute complex, multi-turn tasks across web APIs (e.g., email, calendar)
- Investigating progressive context engineering as a solution to "specification alignment" errors, testing the hypothesis that dynamic context updates can outperform static prompting in autonomous agent workflows.
- Training and evaluating a classifier to automatically label autonomous agent failure modes using a custom error-log taxonomy, enabling systematic analysis of multi-turn web agent errors.
- Advised by Prof. Arvind Krishnamurthy and mentored by Tapan Chugh

### GRAIL: UW Graphics and Imaging Laboratory | Undergraduate Researcher

June 2025 - Present

- First-author paper in submission for SIGGRAPH 2026, proposing methods for per-instance super-resolution tasks
- Fine-tuned Diffusion Transformer models to generate giga-pixel microscope images from a low-resolution input image
- Reduced compute requirements, training time, and leveraged low-resolution image structure by implementing LoRA and ControlNet adapters
- Enforced texture separation between similar materials, using segmentation maps as additional conditioning inputs
- Engineered multi-magnification focus stacking and cascaded model training, improving training image clarity and generation consistency up to 300x magnification
- Demonstrated state-of-the-art reconstruction quality, enabling scalable super-resolution at unprecedented resolutions for microscopy analysis
- Advised by Profs. Steven Seitz, Brian Curless, and Ira Kemelmacher and mentored by Jingwei Ma

## PROJECTS

### LoRA-TTS: Efficient Dialect Adaptation | UW Advanced ML Course Project

December 2025

- Implemented Low-Rank Adaptation (LoRA) to fine-tune a Text-to-Speech transformer model for Taiwanese Mandarin, reducing trainable parameters by 98%
- Conducted a comparative analysis of audio fidelity and training efficiency, demonstrating that LoRA achieved comparable synthesis quality with significantly lower GPU memory usage on as little as 30 minutes of audio data
- Overcame data scarcity challenges by utilizing transfer learning from a base Mandarin checkpoint, ensuring prosody retention despite the limited target speaker dataset

### VisTumor: Cancer Explainability | UW Deep Learning Course Project

June 2025

- Developed a deep learning pipeline for cancer detection on histopathology image patches using ResNet, DenseNet, and EfficientNet architectures trained on the CAMELYON16 dataset
- Enhanced model interpretability and visualized model attention by integrating Grad-CAM++ and saliency mapping
- Fine-tuned architectures using transfer learning, freezing base layers, and learning on classification layers to improve generalization on limited medical data, achieving 86% accuracy after 5 epochs
- Conducted qualitative analysis on the viability of model explainability techniques in high-risk applications and outlined directions for future clinical applications

## SKILLS

**Languages:** Java, Python, C, JavaScript, HTML/CSS

**Frameworks:** Git, GitHub, Linux, Google Colab, Jupyter Notebook

**Libraries/APIs:** PyTorch, NumPy, Matplotlib, OpenCV, scikit-learn, PIL, SQLite3,