Man Minh Ho *Research Fellow*

◉ Salt Lake City, UT ✉ manminhho.cs@gmail.com 🔗 Portfolio ⦿ GitHub in Linkedin

ABOUT

I am currently a Postdoctoral Research Associate at SCI/University of Utah, working alongside Dr. Knudsen ⧉ and Dr. Tasdizen ⧉ in the field of cancer diagnosis, prognosis, and treatment, with a specific emphasis on prostate and kidney cancer. My research interests lie in generative AI, computer vision, deep learning, histopathology imaging, and photography.

PROFESSIONAL EXPERIENCE

Research Associate, *VA Salt Lake City Health Care* ⧉ | 09/2024 – present
Applying AI/ML for cancer diagnosis, prognosis, and treatment. | Salt Lake City, US

Postdoctoral Research Scholar, *University of Utah* ⧉ | 03/2023 – present
I develop algorithms to detect and grade cancer, and to determine prognosis and treatment options for cancer patients. Specifically, I have adopted generative models (e.g., GANs, diffusion models) for histopathology image restoration and data augmentation, which have improved classification performance on histopathology images. Additionally, I support PhD students in their projects related to histopathology image segmentation, contrastive learning, and more. | Salt Lake City, US

Research Assistant, *Waseda University* ⧉ | 11/2021 – 03/2022
Proposed a method to learn and reproduce video compression degradation, efficiently generating more compressed videos for training and thereby improving generalization across a wide range of Quantization Parameters. | Tokyo, Japan

Research Assistant, *Hosei University* ⧉ | 09/2018 – 03/2022
Designed deep learning techniques for video compression. Managed GPU servers. Supported juniors. Prepared teaching materials. | Tokyo, Japan

Machine Learning Engineer, *EyeQ Tech* ⧉ | 09/2017 – 09/2018
Dealt with real-world problems related to face recognition, multi-face tracking, and object detection using deep learning. Took a key role in deploying deep models for computer vision services. Experienced in Tensorflow, Nginx, RabbitMQ, MongoDB, etc. Participated in interviewing candidates. Was recognized as a "Key Contributor" and promoted/trained to be a team lead. | Ho Chi Minh, Vietnam

EDUCATION

Ph.D. in Science and Engineering, *Hosei University* ⧉ | 09/2020 – 03/2022
Thesis on Learned Image Restoration. Early Completion. | Tokyo, Japan

M.Eng. in Science and Engineering, *Hosei University* ⧉ | 09/2018 – 09/2020
Thesis: Self-Supervised Learning for Video Compression (Thesis Grade: 4.0/4.0) | Tokyo, Japan

B.S. (Honors) in Computer Science, *University of Information Technology* ⧉ | 09/2013 – 09/2017
Thesis: Face Recognition in Video using DICA (Thesis Grade: 3:56/4.0) | Ho Chi Minh, Vietnam

ON-GOING PROJECTS

Restoration of Artifacts in Frozen Section Histopathology Images ⊡
Benchmarked Generative Adversarial Networks (GANs) and Latent Diffusion Models (LDMs). Developed LDMs with Parameter-Efficient Fine-Tuning (PEFT) and Histopathology Pre-Trained Embeddings for restoring frozen slides, improving the performance of a downstream classification task on these slides from **81.99%** to **94.64%** AUCROC. The performance on real/high-quality FFPE images reached **94.63%**.

AI for Computational Pathology
Introduced LDMs with Self-Distillation from Separated Conditions (DISC ⊡) for improving downstream tasks. Improved pixel-level and slide-level prostate cancer grading, rising from **96.21%** to **97.35%** AUCROC in rare cases. Contributed to a range of cancer classification endeavors, including an explainable workflow for gland classification and the application of contrastive learning techniques for the classification of histopathological images.

PAST PROJECTS

Smartphone Photo Scanning ⊡
Presented a new dataset DIV2K-SCAN for smartphone-scanned photo restoration. Proposed Domain Simulation to generalize many different shooting devices and environments. Proposed a Semi-Supervised Learning framework to solve limited training data. Obtained better performance compared with Google Photo Scan and Genius Scan. [Demo ⊡]

Blending and Retouching Photos with Color Style Transfer ⊡
Defined a new color style based on low-level transformation. Proposed a supervised color style transfer. Built Lightroom Plugin for JSON Preset. As a result, Lightroom Preset can be a well-retouched photo. Future work is an application for Image Manipulation (a photo manipulated by me ⊡). [Demo ⊡]

Solving Video Compression Degradation ⊡
Provided a better understanding of Video Compression Degradation. Adopted Super-Resolution, Colorization, and Frame Interpolation for Learned Image/Video Compression. Designed Restoration-Reconstruction Deep Neural Networks (RR-DnCNNs) to improve the compression ratio of a down-sampling-based video coding. [Demo ⊡]

Applications for Visually Impaired People ⊡
Proposed a way of leveraging depth estimation to avoid noise in the background and narrow the depth of interest in such case that the person desires to detect coins/banknotes only on a certain surface (e.g., their hands). [Workflow ⊡]

AWARDS

Hosei University Science and Engineering Departments 07/2020
Education/Research Promotion Fund Academic Achievement Award 2020,
Hosei University ⊡
- Presented to a Master's student who achieves Top-1 for Research
  Performance and GPA in Science and Engineering Departments.

Best Paper Runner-up Award, 01/2020
The 26th International Conference on Multimedia Modeling (MMM) ⊡
- Top-2 Rate: 1.17%

Key Contributor, *EyeQ Tech Vietnam* ⧉   08/2018
- Awarded to an engineer who has the greatest contribution to the company as well as delivered projects.

The Five-Virtue Student,   12/2016
Vietnam National University - University of Information Technology ⧉

PUBLICATIONS

[1] **Man M. Ho**, Shikha Dubey, Yosep Chong, Beatrice S. Knudsen, and Tolga Tasdizen "F2FLDM: Latent Diffusion Models with Histopathology Pre-Trained Embeddings for Unpaired Frozen Section to FFPE Translation", IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2025. [Webpage ⧉]

[2] **Man M. Ho**, Elham Ghelichkhan, Yosep Chong, Beatrice S. Knudsen, and Tolga Tasdizen "DISC: Latent Diffusion Models with Self-Distillation from Separated Conditions for Prostate Cancer Grading", IEEE International Symposium on Biomedical Imaging (**ISBI**), 2024. [Webpage ⧉]
Extended version will be presented at **Synthetic Data for Computer Vision Workshop - CVPR, 2024.

[3] Alessandro Ferrero, Elham Ghelichkhan, Hamid Manoochehri, **Man M. Ho**, Daniel J. Albertson, Benjamin J. Brintz, Tolga Tasdizen, Ross T. Whitaker, and Beatrice S. Knudsen. "HistoEM: A Pathologist-Guided and Explainable Workflow Using Histogram Embedding for Gland Classification.", **Modern Pathology**, 2024.

[4] Bodong Zhang, Hamid Manoochehri, **Man M. Ho**, Fahimeh Fooladgar, Yosep Chong, Beatrice S. Knudsen, Deepika Sirohi, and Tolga Tasdizen. "CLASS-M: Adaptive stain separation-based contrastive learning with pseudo-labeling for histopathological image classification." arXiv preprint, 2023.

[5] Ryugo Morita, Zhiqiang Zhang, **Man M. Ho**, and Jinjia Zhou, "Interactive Image Manipulation with Complex Text Instructions", IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2023.
"*A text-to-image translation application to specify affected regions, change attributes, activate operations such as enlarge, dwindle, and remove objects, and replace the background.*"

[6] **Man M. Ho**, Heming Sun, Zhiqiang Zhang, and Jinjia Zhou, "On Pre-chewing Compression Degradation for Learned Video Compression", IEEE International Conference on Visual Communications and Image Processing (**VCIP**), 2022. [Webpage ⧉]
"*Pre-chewing training data to enhance learning capability and learning data representation to deal with lack of data.*"

[7] Zhiqiang Zhang, Chen Fu, **Man M. Ho**, Jinjia Zhou, Ning Jiang, and Wenxin Yu, "Text-guided Image Manipulation based on Sentence-aware and Word-aware Network", IEEE International Conference on Multimedia & Expo (**ICME**) and AI for Content Creation Workshop (**AI4CC**) - **CVPR**, 2022.
"*Proposed a method to manipulate images by changing adjectives (object's characteristics).*"

[8] **Man M. Ho**, and Jinjia Zhou. "Deep Photo Scan: Semi-Supervised Learning for dealing with the real-world degradation in Smartphone Photo Scanning." IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), pp. 1880-1889. 2022. [Webpage ⧉] [Poster ⧉] [Demo ⧉]
"*A promising baseline for learned smartphone-scanned photo restoration.*"

[9] **Man M. Ho**, Lu Zhang, Alexander Raake, and Jinjia Zhou, "Semantic-driven Colorization", ACM SIGGRAPH European Conference on Visual Media Production (**CVMP**), pp. 1-10. 2021. [GitHub ⧉]
"*Proposed to apply human-like action in coloring a black-and-white image for learned image colorization.*"

[10] **Man M. Ho**, Jinjia Zhou, and Gang He. "RR-DnCNN v2. 0: Enhanced Restoration-Reconstruction Deep Neural Network for Down-Sampling-Based Video Coding." IEEE Transactions on Image Processing (**TIP**) 30 (2021): 1702-1715. [GitHub ⧉]
"An extended version of the [RR-DnCNN]. Re-designed network architecture for better learning capability."

[11] **Man M. Ho**, and Jinjia Zhou, "Deep Preset: Blending and Retouching Photos with Color Style Transfer", IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), pp. 2113-2121. 2021. [Webpage ⧉] [Demo ⧉]
"Proposed a novel color style. Lightroom Preset now can be any well-retouched photos."

[12] Huyen T. T. Bui, **Man M. Ho**, Xiao Peng, Jinjia Zhou, "Japanese Coins and Banknotes Recognition for Visually Impaired People", **VizWiz** Workshop, 2020. [Paper ⧉] [Workflow ⧉]
"Proposed to use depth estimation for coins/banknotes detection to avoid noise in the background and narrow the depth of interests in case users desire to detect coins/banknotes on a certain surface."

[13] **Man M. Ho**, Jinjia Zhou, Gang He, Muchen Li, and Lei Li. "SR-CL-DMC: P-frame coding with Super-Resolution, Color Learning, and Deep Motion Compensation." IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**) Workshops, pp. 124-125. 2020. [Paper ⧉]
"Adopted Super-Resolution, Colorization, and Frame Interpolation for P-frame compression."

[14][RR-DnCNN] **Man M. Ho**, Gang He, Zheng Wang, and Jinjia Zhou. "Down-Sampling Based Video Coding with Degradation-Aware Restoration-Reconstruction Deep Neural Network." International Conference on Multimedia Modeling (**MMM**), pp. 99-110. Springer, Cham, 2020. [GitHub ⧉]
"Investigated the effect of compression degradation for training. Proposed a new learned down-sampling-based video coding framework."

[15] **Man M. Ho**, Jinjia Zhou, and Yibo Fan. "Respecting low-level components of content with skip connections and semantic information in image style transfer." European Conference on Visual Media Production (**CVMP**), pp. 1-9. 2019. [Webpage ⧉]
"Conducted research on skip connections and semantic maps for image style transfer."

COMMUNITY SERVICES

Reviewer for British Machine Vision Conference (BMVC) 2020, 2021
Reviewer for Computer Vision and Pattern Recognition (CVPR) Workshops 2020
Reviewer for International Conference on Computer Vision (ICCV) 2021 (assistant)
Reviewer for Winter Conference on Applications of Computer Vision (WACV) from 2021 to 2025
Reviewer for European Conference on Computer Vision (ECCV) 2024
Reviewer for Springer NCAA, IEEE JETCAS
Advisory Board for ALS Vietnam (https://alsvietnam.org ⧉)

GRANTS AND SCHOLARSHIPS

Research Grant for Doctoral Courses, *Hosei University*   09/2020 – 03/2022

The 100th Year Anniversary Scholarship, *Hosei University*   07/2020

Japan Student Services Organization (JASSO) Scholarship, *JASSO*   10/2019

Daddy Longlegs Scholarship, *Hosei University*   09/2019

Monthly Scholarship for Students in Honors Programs,   09/2013 – 09/2017
Vietnam National University - University of Information Technology

CERTIFICATES

Human Research: Biomedical Research Investigators and Key Personnel
CITI Program, University of Utah, 2023.

JST Research Ethics Courses ⬈
Report Numbers: JS0000473934 (2018), AP0000575617 (2020).

Certificate of Completion for successfully completing the 320 hours Global Software Talent training course and examination on the specialty of Global .NET Developer ⬈
issued by FPT Software, 2016.

SKILLS

Languages
Python, HTML (Beginner), Lua (Scripting Lightroom).
(Prior Exp.: Matlab, C/C++, C#, SQL, Java)

Photo/Video and Audio Editing
Adobe Photoshop, Adobe Lightroom, and Audacity.

Frameworks and Libraries
PyTorch, Hugging Face, LoRA, PyTorch-Lightning, PyTorch Mobile for iOS, OpenCV, Kornia, RabbitMQ, MongoDB, Pandas, Flask, QuIP. (Prior Exp.: Caffe, TensorFlow, Sk-learn, and Web APIs)

Server Management
Set up and maintain CPU/GPU linux servers.

REFERENCES

Tuan Hue Thi, *Principal Applied Scientist,* Microsoft
huetuan1984@gmail.com

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