Taiga Hayami

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Webpage | Google Scholar | Linkedin | Github

Education

Waseda University Tokyo, Japan

MS in Communication and Computer Engineering Apr 2024 – Present

BE in Communication and Computer Engineering Apr 2020 – Mar 2024

Experience

Waseda University Tokyo, Japan

Graduate Researcher at Advanced Multimedia Systems Lab. Apr 2024 – Present

- Proposed video representation method focusing on frequency components and decoding strategy.
- Improved quality of reconstructed video and compression performance.
- Published five first-authored papers at IEEE MMSP 2025, IEEE GCCE 2025, IEEE ICCE 2025, IEEE GCCE 2024, PCSJ/IMPS 2024.

Teaching Assistant Sep 2024 – Mar 2025

- Advised on experiments in image recognition with MATLAB.
- Mentored undergraduate students for basic programming courses.

Undergraduate Researcher at Advanced Multimedia Systems Lab. Apr 2023 – Mar 2024

- Proposed frame interpolation method based on free viewpoint generation techniques.
- Improved quality of interpolated frames in situations with large frame differences.
- Published two first-authored papers at IEICE 2024, PCSJ/IMPS 2023.

NTT R&D Kanagawa, Japan

Internship Jan 2025 – Feb 2025

- Researched object detection in high-resolution videos.

Sharp Corporation Tokyo, Japan

Joint Research Assistant Apr 2023 – Mar 2024

- Proposed frame interpolation method based on free viewpoint generation techniques.
- Proposed image coding method with Stable Diffusion.
- Published 5 papers as a joint research team of five members from Sharp Corporation and three members from Waseda University.

Publication

Conference Papers

- Structure-Preserving Patch Decoding for Efficient Neural Video Representation
  Taiga Hayami, Kakeru Koizumi, Hiroshi Watanabe
  IEEE MMSP 2025
- SR-NeRV: Improving Embedding Efficiency of Neural Video Representation via Super-Resolution
  Taiga Hayami, Kakeru Koizumi, Hiroshi Watanabe
  IEEE GCCE 2025
- Semantic Reconstruction for Unified Detection of Local and Logical Anomalies
  Kakeru Koizumi, **Taiga Hayami**, Hiroshi Watanabe
  IEEE GCCE 2025
- Clinically Prioritized Attention-Based Fusion of Multi-Plane Knee MRI for Robust Injury Detection

Taira Kunitomi, **Taiga Hayami**, Hiroshi Watanabe
IEEE GCCE 2025

- Enhancing Continuous Emotion Recognition via Visually Diverse Frame Selection
  Soki Saigo, **Taiga Hayami**, Hiroshi Watanabe
  IEEE GCCE 2025
- Neural Video Representation for Redundancy Reduction and Consistency Preservation
  Taiga Hayami, Takahiro Shindo, Shunsuke Akamatsu, Hiroshi Watanabe
  IEEE ICCE 2025
- A Study of Spatially and Temporally Consistent Video Representation
  Taiga Hayami, Takahiro Shindo, Hiroshi Watanabe
  PCSJ/IMPS 2024 (in Japanese)
- Implicit Neural Representation for Videos Based on Residual Connection
  Taiga Hayami, Hiroshi Watanabe
  IEEE GCCE 2024
- Video Representation Based on Dynamic Shifts in Pixel Values
  Takahiro Shindo, **Taiga Hayami**, Shoko Tanaka, Hiroshi Watanabe
  ITE annual conv. 2024 (in Japanese)
- Quality Improvement of NeRF-based Frame Interpolation Method
  Taiga Hayami, Louxu Jin, Hiroshi Watanabe
  IEICE 2024 (in Japanese)
- Prompt-based Image Coding with Edge and Color Information
  Hiroshi Watanabe, Louxu Jin, **Taiga Hayami**, Takeshi Chujoh, Yukinobu, Yukinobu Yasugi, Sujun Hong, Zheming Fan, Tomohiro Ikai
  IEICE 2024 (in Japanese)
- The Effect of Edge Information in Stable Diffusion Applied to Image Coding
  Hiroshi Watanabe, Louxu Jin, **Taiga Hayami**, Takeshi Chujoh, Yukinobu, Yukinobu Yasugi, Sujun Hong, Zheming Fan, Tomohiro Ikai
  IIEEJ IEVC 2024
- Characterization of frame interpolation methods based on NeRF and feature maps
  Taiga Hayami, Louxu Jin, Hiroshi Watanabe, Takeshi Chujoh, Tomoko Aono, Yukinobu Yasugi, Sujun Hong, Zheming Fan, Tomohiro Ikai
  PCSJ/IMPS 2023 (in Japanese)
- Post-processing Based Image Coding via Stable Diffusion
  Louxu Jin, **Taiga Hayami**, Hiroshi Watanabe, Takeshi Chujoh, Tomoko Aono, Yukinobu Yasugi, Sujun Hong, Zheming Fan, Tomohiro Ikai
  PCSJ/IMPS 2023 (in Japanese)
- Prompt-based Image Coding with Edge Information
  Hiroshi Watanabe, Louxu Jin, **Taiga Hayami**, Takeshi Chujoh, Tomoko Aono, Yukinobu Yasugi, Sujun Hong, Zheming Fan, Tomohiro Ikai
  PCSJ/IMPS 2023 (in Japanese)

Skills

Languages: Python, C, Java, R, HTML, CSS, JavaScript.

Frameworks and Application Tools: PyTorch, TensorFlow, OpenCV; Blender, Microsoft Office.