Ryo Hachiuma

COMPUTER VISION RESEARCHER · ENGINEER

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Work

NVIDIA Research   *Jul. 2023 - Present*

TAIPEI, TAIWAN   *Research Scientist*

- Working on audio-visual understanding.

Konica Minolta, Inc.   *Apr. 2021 - Jun. 2023*

OSAKA, JAPAN   *Computer Vision Engineer and researcher*

- Working on human pose estimation, object detection, and human action recognition using neural networks.
- Working on developing deep learning inference tools for edge devices (e.g., NVIDIA Jetson AGX Orin, Nano...).
- Extremely fast action recognition model that runs in 1900FPS on RTX3080Ti and 400FPS on Jetson AGX Orin. Movie Link

Education

Keio University   *Tokyo, Japan*

PH.D.   *Apr. 2018 - Mar. 2021*

- Working on 3D SLAM, surgery video analysis, egocentric human pose estimation.

Keio University   *Tokyo, Japan*

M.S. IN COMPUTER SCIENCE AND ENGINEERING   *Apr. 2016 - Mar. 2018*

Keio University   *Tokyo, Japan*

B.S. IN COMPUTER SCIENCE AND ENGINEERING   *Apr. 2012 - Mar. 2016*

Skills

Programming   Python, C/C++, Java, Matlab, Javascript
Deep Learning   PyTorch, Tensorflow, Caffe, OpenVINO, TensorRT, TFLite
Languages   English, Japanese

Selected Research Papers

Unified Keypoint-based Action Recognition Framework via Structured Keypoint Pooling   *CVPR*

RYO HACHIUMA, FUMIAKI SATO, TAIKI SEKII   *2023*

1900 FPS skeleton-based action recognition while achieving SoTA performance on multiple benchmarks.

Prompt-Guided Zero-Shot Anomaly Action Recognition using Pretrained Deep Skeleton Features   *CVPR*

FUMIAKI SATO, RYO HACHIUMA, TAIKI SEKII   *2023*

Dynamics-Regulated Kinematic Policy for Egocentric Pose Estimation   *Neurips*

ZHENGYI LUO, RYO HACHIUMA, YE YUAN, KRIS KITANI   *2021*

Proposed a method for object-aware 3D egocentric pose estimation that tightly integrates kinematics modeling, dynamics modeling, and scene object information.

Silhouette-based Synthetic Data Generation for 3D Human Pose Estimation with a Single Wrist-mounted 360° Camera   *ICIP*

RYOSUKE HORI, RYO HACHIUMA, HIDEO SAITO, MARIKO ISOGAWA, DAN MIKAMI   *2021*

Proposed a framework for 3D human pose estimation using a single 360° camera mounted on the user's wrist.

Toward Unsupervised 3D Point Cloud Anomaly Detection using Variational Autoencoder

ICIP

Mana Masuda, **Ryo Hachiuma**, Ryo Fujii, Hideo Saito, Yusuke Sekikawa

2021

Presented an end-to-end unsupervised anomaly detection framework for 3D point clouds.

Single-modal Incremental Terrain Clustering from Self-Supervised Audio-Visual Feature Learning

ICPR

Reina Ishikawa, **Ryo Hachiuma**, Akiyoshi Kurobe, Hideo Saito

2020

Presented a novel framework using the multi-modal variational autoencoder and the Gaussian mixture model clustering algorithm on image data and audio data for terrain type clustering.

Deep Selection: A Fully Supervised Camera Selection Network for Surgery Recordings

MICCAI

Ryo Hachiuma, Tomohiro Shimizu, Hideo Saito, Hiroki Kajita, Yoshihumi Takatsume

2019

Address the task of selecting the cameras with the best views from multiple video sequences for the purpose of recording surgery.

DetectFusion: Detecting and Segmenting Both Known and Unknown Dynamic Objects in Real-time SLAM

BMVC

Ryo Hachiuma, Christian Pirchheim, Dieter Schmalstieg and Hideo Saito

2019

Present an RGB-D SLAM system that runs in real time and can robustly handle semantically known and unknown objects that can move dynamically in the scene.

More papers can be found from Google Scholar!

Competitions

Diabetic Foot Ulcer Challenge

MICCAI

1ST PRIZE

2020

- Achived 1st prize at diabetic foot ulcer detection challenge. Our team develop Faster R-CNN based method to detect the foot ulcer.
- Competition link can be found at here.
- The journal paper can be found at this link.

CORSMAL Challenge

ICPR

2ND PRIZE

2020

- Achived 2nd prize at CORSMAL challenge. Our team develop the neural network which predicts the container mass from audio-visual data.
- Competition link can be found at this link.
- The journal paper can be found at this link.

Awards

International

| 2019 | **Honorable Mention Award**, Essay Competition - ICVSS | *Sicily* |
| 2019 | **Best paper award**, Asia Pacific Workshop on Mixed and Augmented Reality | *Japan* |

Domestic

2022	**Interactive Poster award**, MIRU	*Japan*
2020	**Best paper award**, CVIM	*Japan*
2016	**Best paper award**, CVIM	*Japan*