Shunsuke Kikuchi

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Education

University of California, Los Angeles Graduation: June 2025
Bachelor of Science in Computational and Systems Biology
Bachelor of Science in Applied Mathematics
With College Honors

Arkansas State University (Left for transfer, July 2021 - August 2023)
Bachelor of Science in Exercise Science

Publication

Kikuchi, S., Kouno, A., & Matsuzaki, H. "Cholec80-port: a geometrically consistent trocar port segmentation dataset for robust surgical scene understanding." Under review at Computer Assisted Radiology and Surgery, 2026.
Rueckert, T., Rauber, D., Maerkl, R., Klausmann, L., Yildiran, S. R., **Kikuchi, S.**, et al. "Comparative validation of surgical phase recognition, instrument keypoint estimation, and instrument instance segmentation in endoscopy: Results of the PhaKIR 2024 challenge." *Medical Image Analysis, 103945, 2026*
Kikuchi, S., Kouno, A., & Matsuzaki, H. "Memory-Enhanced Temporal Learning: Leveraging SAM2's Memory Modules for Consistent Video Segmentation." *In MICCAI Workshop MSB EMERGE*, 2025.
Schmidt, A., Karaoglu, M. A., Sinha, S., Jang, M., Ha, H., Jung, K., Gu, K., **Kikuchi, S.**, et al. "Point Tracking in Surgery: The 2024 Surgical Tattoos in Infrared (STIR) Challenge." *arXiv preprint arXiv:2503.24306*, 2025.

Research Experience

Jmees Inc., Tokyo, Japan
Research Engineer (full-time), Oct 2025 - Present,
Responsible for R&D to integrate the knowledge gained from our research and the MICCAI challenge into the company's product AI model.
Developing a video segmentation model utilizing image stitching for an expanded field of view to enhance surgical video understanding and consistent segmentation in endoscopic surgery.
Research Internship, June 2024 - Sep 2025,
Developed video segmentation model for ureter segmentation for hysterectomy Endoscopic surgery support system, affiliated with National Cancer Center Japan.
Attended the MICCAI Challenge on surgical video understanding and segmentation themes, accumulating knowledge, and simultaneously promoting the company.

National Cancer Center Japan Hospital East, Gynecology Department, Tokyo, Japan
Project Researcher (part-time), April 2025 - Present
Conducting model development and experiments for surgical navigation, focusing on phase classification-based surgical skill evaluation in Total Hysterectomy and Pelvic Lymphadenectomy.

Institute for Quantitative and Computational Biosciences, University of California, Los Angeles (In-Person)
Undergraduate Researcher under Dr. Xia Yang, October 2024 - June 2025
scGRNdb Project: Constructed spatial transcriptomics GRN analysis pipeline and validation (scanpy, squidpy). Developed interactive web server using PHP, JavaScript, Neo4j, Docker, and Python.
Bruins-In-Genomics (B.I.G.) Summer Program, **URC-sciences Summer Scholar**, 2024 Summer
Developed and optimized a Python/Shell-based pipeline for gene regulatory network (GRN) prediction using scGRNdb and disease modeling, benchmarking performance with perturb-seq data and adapting resolution-based community detection.

Arkansas Biosciences Institute / NYITCOM /Arkansas State University tri-institutional Research Labs
Undergraduate Researcher under Dr. Jennifer Xie, October 2021- August 2023
Mouse Project: Studied RgIA5474 on Sciatic Nerve Injury and RgIA4 on Cephalic pain, to uncover mechanism of pain in Central Nervous Systems. Performed wet experiments including injection, surgery, blood collection, ELISA, and cardiac perfusion. Responsible for planning experiments schedule, managing materials and colony as a project leader in June to August 2023.

Conferences/ Research Presentation

Title: "Memory-Enhanced Temporal Learning: Leveraging SAM2's Memory Modules for Consistent Video Segmentation"
- The 1st Japan-US Science Forum in Southern California, Feb. 2025, UCLA. **Poster Presentation**
- MICCAI 2025 workshop MSB EMERGE, Oct. 2025, Daejeon, Korea. **Poster Presentation.**

Title:" scGRNdb - Cell Type Level Gene Regulatory Network Database for Single-cell Analysis Framework"
- SPUR Summer Research Showcase 2024, Aug. 2024, UCLA. **Oral Presentation.**
- BIG Summer Final Session, Aug. 2024, UCLA. **Poster Presentation**.

Title: "Potential effects of a9a10 nicotinic receptor antagonists on chronic pain and motor deficits in mice with sciatic nerve injury. **"**
- Create @ State 2024 Symposium, Arkansas State University, Apr 2024, **Poster Presentation**

Title: "Inhibition of cephalic pain by RgIA4, a novel, selective α9α10 nicotinic acetylcholine receptor (nAChR) antagonist"
- Create @ State 2023 Symposium, Arkansas State University, Apr 2023, **Poster Presentation**
- ABI Undergraduate Research Scholar Program Final Session, May 2022, **Oral Presentation**

Top-Solution Presentation (**Oral Presentation)**
- MICCAI 2025 Satellite Event "SAGES Critical View of Safety Challenge", Sep., 2025, Daejeon, Korea
- MICCAI 2025 Satellite Event "TopBrain Segmentation Challenge for Whole Brain Vessel Anatomy", Sep., 2025, Daejeon, Korea
- MICCAI 2025 Satellite Event "Endoscopic Vision Challenge Cluster 2025", Sep., 2025, Daejeon, Korea (4 tasks from OSS and RARE)
- **MICCAI 2024** Satellite Event "Endoscopic Vision Challenge Cluster 2024", Oct., 2024, Marrakech, Morocco (8 tasks from SegCol, OSS, STIR and PhaKIR)

Activity & Achievement

Kaggle Competition: Expert, Highest Rank: **2,552/205,373**

Leash Bio - Predict New Medicines with BELKA (**Silver medal, 27/1,950**, 2024 Apr. – Jul.)
This competition aims to accelerate drug discovery by enabling more precise predictions of drug outcomes based on biological data. Our team achieved robustness on both the Public (8th) and Private (27th).

HMS - Harmful Brain Activity Classification (**Bronze medal**, **245/2,767**, 2024 Jan. – Apr.)
This competition focuses on developing models to detect dangerous brain wave patterns using EEG data. Our team ensembled 1D-ResNet and 2 spectrogram-based vision models with proper post-processing.

Conference Challenges:

MICCAI 2025, SAGES CVS Challenge (TaskA (GPU): **2nd**, TaskB (CPU): **3rd**, Sep. 2025)
Competed in per-frame Critical View of Safety (CVS) assessment under strict computational constraints. This challenge was selected as a **Lighthouse (highlighted) Challenge** at MICCAI 2025.

MICCAI 2025, Endoscopic Vision Challenge Cluster (Sep. 2025)

Open Suturing Skills Challenge (OSS25) (Task1 (GRS): **2nd**, Task2 (OSATS): **1st**, Task3 (Keypoint): **1st**,)
Competed in the accuracy of students' suturing skills evaluation and estimation of hand/tool keypoint.

Recognition of Abnormalities in low-pREvalenge cancer (RARE25) (**2nd**)
Competed in the performance on detecting early-stage neoplasia in Barrett's Esophagus patients.

MICCAI 2025, TopBrain Challenge (**3rd**, Sep. 2025)
Competed in segment over 40 landmark brain vessel anatomies, across CTA and MRA imaging modalities.

MICCAI 2024, Endoscopic Vision Challenge Cluster (Oct. 2024)

Semantic Segmentation for Tools and Fold Edges in Colonoscopy data (SegCol) (Segmentation: **1st,** Active Learning: **2nd**)
Competed in the performance of semantic segmentation model and efficiency of active learning algorithm.

PhaKIR - Phase, Keypoint and Instrument Recognition (Phase: **2nd**, Instrument: **1st**)
Competed in the performance of video recognition in Endoscopic video.

Open Suturing Skills Challenge (OSS) (Task1 (GRS): **3rd**, Task2 (OSATS): **3rd**)
Competed in the accuracy of students' suturing skills evaluation.

Surgical Tissue Tracking Using the STIR (Surgical Tattoos in Infrared) Dataset (2D: **3rd**, 3D: **2nd**)
Competed in the accuracy of multi-point tracking in 2D and 3D coordinates using stereovision movie.

6th National Medical AI Contest in Japan (**4th**, Mar. 2024)
Competed in the accuracy of 3D semantic segmentation in CT using the TotalSegmentator benchmark

Academic Honors & Special Awards

Research Excellence Awards, B.I.G. Summer Research Program, UCLA, 2024 Summer
ABI Undergraduate Research Scholarship (Arkansas State University, 2021 Fall - 2022 Spring)
Chancellor's List, (Arkansas State University, 2021 Fall, 2022 Spring, 2022 Fall, 2023 Spring)