# Ganping Li 李 贛萍

E-mail: li-rio@outlook.com | Mobile: +81-70-4475-6051
LinkedIn: https://www.linkedin.com/in/ganping-li | GitHub: https://github.com/RIO98

## EDUCATION

**Nara Institute of Science and Technology**  Nara, Japan
*PhD, Graduate School of Science and Technology*  Oct. 2022 – Jun. 2025
*Computer Vision, Image & Point Cloud Analysis, and Active Learning*

**Nara Institute of Science and Technology**  Nara, Japan
*Master of Engineering, Graduate School of Science and Technology*  Oct. 2020 – Sept. 2022

**Southern Medical University**  Guangzhou, China
*Bachelor of Engineering, School of Biomedical Engineering*  Sep. 2016 – Jun. 2020

## Doctoral Dissertation

**Efficient Annotation and Deformation Prediction for Musculoskeletal Analysis**  Oct. 2020 – Jun. 2025
- **Active Learning & Efficient Annotation**: Developed a hybrid sampling strategy within a Bayesian Active Learning (BAL) framework, integrating uncertainty, density, and diversity sampling. Introduced the RAC (Reduced Annotation Cost) metric, achieving full-model performance with only **10%-24%** of labeled data, drastically cutting cold-start costs.
- **3D Geometric Representation & Shape Prediction**: Engineered a pipeline using Positional and Index Encoding to map 8,192-point mesh vertices to high-dimensional features. Combined with contralateral modeling, achieved SOTA accuracy for Hip OA deformation prediction with a **1.545mm** (P2F) mean error.
- **Multimodal Prognosis & Risk Assessment**: Built the first general survival analysis framework for ONFH risk. Developed a Spatial Label Encoder (SLE) to tokenize discrete anatomical labels into continuous representations, reaching a **0.847** CI and improving 5-year risk prediction AUC by **2.4%**.

## EXPERIENCE

**OPPO Japan Research Center**  Yokohama, Japan
*Senior Image Algorithm Engineer, Computer Vision*  Aug. 2025 – Present
- Role: Collaborative R&D of mobile camera image algorithms with the OPPO Shenzhen headquarters.
- Achievements: Developed a lightweight AI prefusion algorithm for High Dynamic Range (HDR) imaging on mobile devices based on existing optical flow models, reducing problematic artifacts by **~80%** compared to previous CV methods. Optimized flow model alignment through joint training, providing robust interfaces for downstream ISP services.

**OPPO Japan Research Center**  Yokohama, Japan
*Image Algorithm Engineer (Internship), Computer Vision*  Nov. 2024 – Jan. 2025
- Achievements: Developed a lightweight background brightness auto-adjustment model for portrait photography scenarios on mobile devices.

**Boehringer Ingelheim (The Kobe Pharma Research Institute)**  Kobe, Japan
*Research Staff (Internship), Machine learning*  Sept. 2024 – Nov. 2024
- Role: Collaborated with Biberach (Germany) Research HQ on tablet formulation optimization using Deep Learning and Machine Learning.
- Achievements: Engineered a tablet formulation generation model and a physical property predictor from scratch using a dataset of **500+** pharmaceutical excipients. Performance metrics for both generative and regression models met strict experimental standards.

**ExaWizards Inc.**  Tokyo, Japan
*Machine Learning Engineer (Internship), Computer Vision*  Aug. 2023 – Sept. 2023
- Role: Participated in a Shiga Prefecture educational project to develop behavioral anomaly detection models (e.g., for ADHD).
- Achievements: Implemented and optimized the algorithm pipeline for **Object Detection**, **Multi-Object Tracking (MOT)**, and **Action Recognition**, enabling high-precision behavioral feature extraction in complex scenarios. Built deep temporal models for structured analysis and accurate identification of target behavioral patterns.

## Selected Publications

**Ganping Li**, Yoshito Otake, Yuito Kameda, et al.

Predicting Femoral Head Collapse Risk in Osteonecrosis Using Label Tokenization: A Multi-Modality Survival Analysis Approach.
International Conference on Medical Image Computing and Computer-Assisted Intervention, 2025. [Paper] [Code]
- Contribution: Proposed the first general multimodal survival framework for ONFH collapse risk, enabling personalized surgical planning.
- Technical Implementation: Designed a Tri-stream encoder to fuse MRI, labels, and clinical data; introduced SLE for label-to-token representation, enhancing multimodal alignment.
- Results: Achieved CI 0.847 and AUC **0.884** (5-fold CV). Improved 5-year long-term discrimination by **2.4%** AUC over SOTA baselines.

**Ganping Li**, Yoshito Otake, Mazen Soufi, et al.
Prediction of Disease-Related Femur Shape Changes Using Geometric Encoding and Clinical Context-aware on a Hip Disease CT Database.
International Conference on Medical Image Computing and Computer-Assisted Intervention, 2024. [Paper] [Code]
- Contribution: Developed an automated pipeline for few-shot prediction of femur shape changes.
- Technical Implementation: Mapped point cloud coordinates to high-dimensional features via Positional/Index Encoding; fused demographic and OA-grade data for multimodal prediction.
- Results: Achieved a mean P2F error of **1.545mm** in the femoral head region, reaching SOTA accuracy even in severe deformation cases.

**Ganping Li**, Yoshito Otake, Mazen Soufi, et al.
Hybrid Representation-Enhanced Sampling for Bayesian Active Learning in Musculoskeletal Segmentation of Lower Extremities.
International Journal of Computer Assisted Radiology and Surgery, 2024. [Paper] [Code]
- Contribution: Proposed a hybrid sampling strategy for BAL to reduce annotation costs in medical image segmentation.
- Technical Implementation: Designed a greedy-based algorithm fusing density and diversity criteria; introduced the RAC metric to quantify pixel/voxel-level efficiency gains.
- Results: Reached peak performance with only **10%-24%** of training data, significantly outperforming SOTA sampling methods.

Co-author, Journal of Arthroplasty: *Development of a Deep Learning Model for the Volumetric Assessment of ONFH on 3D MRI*. Built a 3D-MRI quantification and Steinberg staging system. Achieved 0.89 DC for lesion segmentation and 93.7% staging accuracy.

Co-author, Journal of Applied Physiology: *Skeletal muscle shape influences joint torque exertion through the mechanical advantages.* Quantified 3D morphology using Statistical Shape Models (SSM); first to prove muscle shape as an independent predictor of torque $\left(R^2 = 0.60\right)$.

First Author, IFMIA 2023: *Evaluation of Bayesian active learning strategies with different acquisition methods and model capacities in musculoskeletal segmentation from MRI*. Systematically evaluated acquisition rules and model capacities, proving hybrid sampling superiority for large-scale annotation systems.

First Author, IEICE-MI: *Disease progression modeling of hip osteoarthrosis based on musculoskeletal CT segmentation*. Modeled 22 lower-limb structures; quantified atrophy via 3D deformation maps to provide digital metrics for rehabilitation.

First Author, JAMIT 2021: *Cross-modality segmentation by CycleGAN and Bayesian U-net for muscle volumetry in MRI using CT training data set*. Implemented a CycleGAN-based cross-modality framework; achieved **0.768** Dice on MRI using **462** CT images with no MRI labels.

## Honors & Professional Service

- Awards:
    - Google Scholar Travel Grant (2024) Silver Medal
    - 16th "Challenge Cup" National Undergraduate Academic Science and Technology Competition Silver Medal
    - 5th National Undergraduate Biomedical Engineering Design Competition Grand Prize (Top Tier)
    - 15th "Challenge Cup" Guangdong Undergraduate Academic Science and Technology Competition Software
- Copyright: Machine Learning-based Intelligent Diagnosis and Treatment System for Gastrointestinal Tumors V1.0 (Reg. No.: 2019SR0287536, PRC).
- Journal Reviewer: International Journal of Computer Assisted Radiology and Surgery (IJCARS, 2024).
- Conference Reviewer: MICCAI 2025, ShapeMI 2024.

## SKILLS

**Language:** Chinese (Native), English (Work Proficiency, TOEIC930, TOFLE94), Japanese (Work Proficiency, JLPT N1)
**Programming Languages:** Python, MATLAB, R, C++
**Tools:** PyTorch, Keras, OpenCV, VTK, ITK, Git, Docker, AWS (Sagemaker, S3, ECR)