MARAWAN ELBATEL

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RESEARCH INTERESTS

Domain adaptation and representation transfer with applications to medical imaging.

EDUCATION

Ph.D. Student in Computer Engineering CGPA 4.3/4.3

· The Hong Kong University of Science and Technology.   *September 2023- present*

Erasmus Mundus Master's degree in Medical Imaging (*cum laude)*

· University of Girona, University of Cassino, University of Burgundy   *September 2021- July 2023*

B.Sc. in Computer Engineering *CGPA 3.8/4 (Distinction with Honours)*

· Cairo University, Faculty of Engineering   *September 2016- June 2021*

AWARDS / HONOURS

· MICCAI'23 DeCaF Workshop **Best Paper Award** (1st author)	*October 2023*
· MICCAI'23 EndoVis-SynISS **Challenge Winners** (1st author)	*October 2023*
· MICCAI'23 PS-FH-AoP **Challenge Winners** (1st author)	*October 2023*
· MICCAI'23 LMIC Participation Grant (in person)	*October 2023*
· MICCAI'22 DART Workshop **Best Paper Award** NVIDIA-Sponsored (1st author)	*September 2022*
· MICCAI'22 Breast FL Density **Challenge Winners** NVIDIA-Sponsored (1st author)	*September 2022*
· MICCAI'22 Society Participation Grant (in person)	*July 2022*
· Ranked 2nd on Computer Engineering B.Sc. class at Cairo University	*July 2021*
· Dell Technologies Award for B.Sc. Thesis in the Middle East, North Africa, and Turkey	*July 2021*
· **MOT20Det Benchmark** Runner-Up (w/o access to remote servers)	*February 2021*

FELLOWSHIPS / SCHOLARSHIPS

· Hong Kong Government Ph.D. Fellowship (**HKPFS**)	*2023-2026*
· Hong Kong Government **Belt and Road** Ph.D. Scholarship	*2023-2026*
· The Hong Kong University of Science and Technology Ph.D. Redbird Award	*2023*
· International Visiting Fellowship at HKUST (M.Sc. Thesis)	*2023*
· **Erasmus Mundus Joint Master's Fellowship** (25/800) in Medical Imaging (MaIA)	*2021-2023*
· Research Fellowship, University of Bradford (one awardee in the department)	*2020*
· Research Fellowship, Egypt-Japan Education Partnership (EJEP) (2 awardees in the department)	*2019*
· Undergraduate Tuition Fee Scholarship at Cairo University	*2016-2021*

ACADEMIC & INDUSTRY POSITIONS

Medical AI and Computer Vision Group, HKUST   Hong Kong
Postgraduate Student   *September 2023 - present*
· Supervised by Xiaomeng Li.

VICOROB Lab, University of Girona   Remote
Postgraduate Student   *January 2022 – September 2023*
· Supervised by Robert Martí.

Dell Technologies   Remote
Industrial Thesis Mentorship   *March 2021 - July 2021*
· BSc Thesis: Scalable Video Surveillance System for Contact Tracing.

AIRe Research Group, University of Bradford   Bradford, United Kingdom
Research Intern   *September 2020 - February 2021*
· Supervised by Daniel Neagu and Amr Abdullatif.
· Worked on a HEIF research project on COVID-19 data.

AIIT   Tokyo, Japan
Research Trainee   *July 2019 - August 2019*
· Worked on an Emergency Based Application.

TECHNICAL SKILLS

Programming Languages	Python, C++, C, Java, C#, MATLAB, R, and VHDL
Frameworks	PyTorch, and Tensorflow

LANGUAGES

English: Fluent (IELTS: 7.5/9)

Arabic: Native

ACTIVITIES

Organizing Chair at MICCAI 2024 (AFRICAI)   *2024*
Chair at The African Network for Artificial Intelligence in Biomedical Imaging
https://africai.org/
https://miccai.org/index.php/special-interest-groups/sig-africai/

Red Bull CAN YOU MAKE IT?   *2024*
Chosen from Egypt to participate in a travelling competition with 300 teams worldwide
https://www.redbull.com/int-en/events/red-bull-can-you-make-it

PUBLICATIONS

Learning Unlabeled Clients Divergence for Federated Semi-Supervised Learning via Anchor Model Aggregation.
Elbatel, M., Wang, H., Chen, J., Wang, H., Li, X. (2024). *Transactions of Machine Learning Research (TMLR)*.

An Organism Starts with a Single Pix-Cell: A Neural Cellular Diffusion for High-Resolution Image Synthesis.
Elbatel, M., Kamnitsas, K., Li, X. (2024). *International Conference on Medical Image Computing and Computer-Assisted Intervention–MICCAI 2024*.

FD-SOS: Vision-Language Open-Set Detectors for Bone Fenestration and Dehiscence Detection from Intraoral Images. **Elbatel, M.**, Liu, K., Yang, Y., Li, X. (2024). *International Conference on Medical Image Computing and Computer-Assisted Intervention–MICCAI 2024*. [Oral Presentation]

FoPro-KD: Fourier Prompted Effective Knowledge Distillation for Long-Tailed Medical Image Recognition.
Elbatel, M., Martí, R., Li, X. (2024). *IEEE Transactions on Medical Imaging*, 2024.

Evaluating the Fairness of Neural Collapse in Medical Image Classification. Mouheb, K., **Elbatel, M.**, Klein, S., Bron, E.E. (2024). International Conference on Medical Image Computing and Computer-Assisted Intervention–*MICCAI 2024*.

PSFHS Challenge Report: Pubic Symphysis and Fetal Head Segmentation from Intrapartum Ultrasound Images. Bai, J., Zhou, Z., Ou, Z., Koehler, G., Stock, R., Maier-Hein, K., **Elbatel, M.**, Martí, R., Li, X., Qiu, Y., Gou, P., Chen, G., Zhao, L., Zhang, J., Dai, Y., Wang, F., Silvestre, G., Curran, K., Sun, H., Xu, J., Cai, P., Jiang, L., Lan, L., Ni, D., Zhong, M., Chen, G., Campello, V.M., Lu, Y., Lekadir, K. (2025). *Medical Image Analysis*.
[Challenge Winners]

Fair Evaluation of Federated Learning Algorithms for Automated Breast Density Classification: The Results of the 2022 ACR-NCI-NVIDIA Federated Learning Challenge. Schmidt, K., Bearce, B., Chang, K., Coombs, L., Farahani, K., **Elbatel, M.**, Mouheb, K., Martí, R., Zhang, R., Zhang, Y., Wang, Y., Hu, Y., Ying, H., Xu, Y., Testagrose, C., Demirer, M., Gupta, V., Akünal, Ü., Bujotzek, M., Maier-Hein, K.H., Qin, Y., Li, X., Kalpathy-Cramer, J., Roth, H.R. (2024). *Medical Image Analysis*. [Challenge Winners]

CoMoTo: Unpaired Cross-Modal Lesion Distillation Improves Breast Lesion Detection in Tomosynthesis. Alberb, M., **Elbatel, M.**, Elgebaly, A., Montoya-del-Angel, R., Li, X., Martí, R. (2024). *ADSMI: Advancing Data Solutions in Medical Imaging Workshop–MICCAI 2024*.

ELK: Enhanced Learning through Cross-Modal Knowledge Transfer for Lesion Detection in Limited-Sample Contrast-Enhanced Mammography Datasets. Montoya-del-Angel, R., **Elbatel, M.**, Castillo-Lopez, J.P., Villaseñor-Navarro, Y., Brandan, M.-E., Martí, R. (2024). *Deep-Breath: Deep Breast Workshop on AI and Imaging for Diagnostic and Treatment Challenges in Breast Care–MICCAI 2024*.

SAM-PR: Enhancing 3D Automated Breast Ultrasound Imaging Segmentation with Probabilistic Refinement of SAM. Montoya-del-Angel, R., **Elbatel, M.**, Vidal, J., Martí, R. (2024). *International Workshop on Breast Imaging–IWBI 2024*.

Federated Model Aggregation via Self-Supervised Priors for Highly Imbalanced Medical Image Classification. **Elbatel, M.,** Wang, H., Fu, H., Martí, R., Li, X. (2023). *DeCAF: Distributed, Collaborative and Federated Learning Workshop-MICCAI 2023*. [Best Paper Award]

Self-Prompting Large Vision Models for Few-Shot Medical Image Segmentation. Wu, Q., Zhang, Y., & **Elbatel, M.** (2023). *DART: Domain Adaptation and Representation Transfer Workshop-MICCAI 2023*.
[Undergraduates Supervision]

Seamless Iterative Semi-supervised Correction of Imperfect Labels in Microscopy Images. **Elbatel, M.,** Bornberg, C., Kattel, M., Almar, E., Marrocco, C., Bria, A. (2022). *DART: Domain Adaptation and Representation Transfer Workshop-MICCAI 2022*. [Best Paper Award]