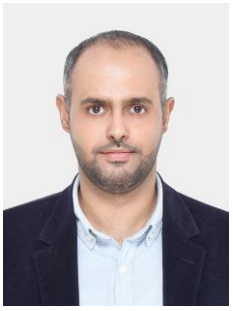
Curriculum Vitae

Personal Information		
Title	**Prof. (Assistant Professor)**	
Name	**Mohammed A. Al-masni (알마스니 모하메드)**	
Degree	**PhD**	
Country	**South Korea**	
Affiliation	**Department of Artificial Intelligence and Data Science, Sejong University**	

Educational Background

- 2006.09 - 2011.07: **B.Sc.** in Biomedical Engineering & Systems, Cairo University, Egypt
- 2012.09 - 2015.02: **M.Sc.** in Biomedical Engineering & Systems, Cairo University, Egypt
- 2015.09 - 2019.08: **Ph.D.** in Biomedical Engineering, Kyung Hee University, South Korea

Professional Career

Work Experience:

- 2015.03 - 2015.08: **Lecturer**, Technical Radiology Department, Science & Technology University, Yemen
- 2015.10 - 2019.08: **Software Developer**, Medical Engineering R&D Center, YOZMA BMTech Co., Ltd, Seoul, Republic of Korea
- 2019.09 - 2020.10: **Postdoctoral Researcher**, Yonsei University, Seoul, Republic of Korea
- 2020.11 - 2022.08: **Research Professor**, Yonsei University, Seoul, Republic of Korea
- 2022.09 - **Present**: **Assistant Professor**, Department of Artificial Intelligence and Data Science, Sejong University, Seoul, Republic of Korea
- 2024.03 – **Present**: **Director, MITI Lab** (Medical Image Technology and Intelligence Laboratory), Sejong University

Activities:

- 2024.05 – 2027.05: Member at ***Annual Meeting Program Committee (AMPC)***, International Society for Magnetic Resonance in Medicine (ISMRM).
- 2024-2025: **Guest Editor** for the Special Issue “AI Advancements in Healthcare: Medical Imaging and Sensing Technologies” in ***Bioengineering journal***.

Honors:

- 2024.11.21: Awarded **Korean citizenship** for outstanding academic achievements through the Special Naturalization for Outstanding Talents Program
- 2024.08: Recognized as one of the **World's Top 2% Scientists** by Elsevier and Stanford University.

Research Field

- **Deep learning for medical image analysis**, including detection, segmentation, and classification across various modalities.
- **AI-based segmentation techniques for:**
  - Brain tumors in MRI (adult, pediatric, and low-resource settings)
  - Retinal blood vessels in fundus images
  - Skin lesions in dermoscopic images
- **Computer-Aided Detection (CADe)** and **Diagnosis (CADx)** systems for breast cancer assessment.
- **Detection and quantification of cerebral small vessel diseases,** including microbleeds and lacunes, using advanced deep learning models.
- **MRI sequence synthesis** to address missing modalities for reliable tumor segmentation.
- **MRI head motion artifact correction** using:
  - Supervised learning with image priors

- GAN-based synthesis methods tailored with motion simulation parameter modules
- Deformation-Aware Segmentation Robust to Motion Artifacts Using Disentanglement Learning

- **Meta-reweighting learning** to tackle data scarcity and noisy labels, particularly in brain tumor segmentation across diverse populations and age groups.
- **Cross-modality image registration** via reference-augmented frameworks that generate aligned images from different modalities.

Main Scientific Publications

Main Achievements (10 max)

[1] Seuk Kim, **Mohammed A. Al-masni**, Seul Lee, Sunyoung Jung, Kyu-Jin Jung, Chuanjiang Cui, Sung-Min Gho, Young Hun Choi, and Dong-Hyun Kim, "Unsupervised learning for motion correction and assessment in brain magnetic resonance imaging using severity-based regularized cycle consistency," ***Engineering Applications of Artificial Intelligence***, vol. 142, 109978, Feb, **2025**. https://doi.org/10.1016/j.engappai.2024.109978 *[Equally contributed with 1st author]*

[2] Jun-Ho Kim, **Mohammed A. Al-masni***, Seul Lee, Haejoon Lee, Woo-Ram Kim, Young Noh, Koung Mi Kang, and Dong-Hyun Kim*, "Toward automated detection of microbleeds with anatomical scale localization using deep learning," ***Medical Image Analysis***, vol. 101, April **2025**. https://doi.org/10.1016/j.media.2024.103415 *[Corresponding author]*

[3] Abdulkhalek Al-Fakih, Abdullah Shazly, Abbas Mohammed, Mohammed Elbushnaq, Kanghyun Ryu, Yeong Hyeon Gu, **Mohammed A. Al-masni***, Meena M. Makary*, "FLAIR MRI sequence synthesis using squeeze attention generative model for reliable brain tumor segmentation," ***Alexandria Engineering Journal***, vol. 99, pp. 108-123, July **2024**. https://doi.org/10.1016/j.aej.2024.05.008 *[Corresponding author]*

[4] **Mohammed A. Al-masni**, Dildar Hussain, Nagwan Abdel Samee, Mona M. Jamjoom, Yeong Hyeon Gu, and Abobakr Khalil Al-Shamiri, "A Unified Multi-Task Learning Model with Joint Reverse Optimization for Simultaneous Skin Lesion Segmentation and Diagnosis," ***Bioengineering***, vol. 11(11), pp. 1173, November, **2024**. https://doi.org/10.3390/bioengineering11111173

[5] Yoonseok Choi, **Mohammed A. Al-masni***, Kyu-Jin Jung, Roh-Eul Yoo, Seong-Yeong Lee and Dong-Hyun Kim*, "A Single Stage Knowledge Distillation Network for Brain Tumor Segmentation on Limited MR Image Modalities," ***Computer Methods and Programs in Biomedicine***, 107644, **2023**. https://doi.org/10.1016/j.cmpb.2023.107644 *[Corresponding author]*

[6] **Mohammed A. Al-masni**, Seul Lee, Abobakr Khalil Al-Shamiri, Sung-Min Gho, Young Hun Choi, and Dong-Hyun Kim, "A Knowledge Interaction Learning for Multi-Echo MRI Motion Artifact Correction towards Better Enhancement of SWI," ***Computers in Biology and Medicine***, vol. 153, pp. 106553, 2023, November **2022**. https://doi.org/10.1016/j.compbiomed.2023.106553

[7] Haejoon Lee, Jun-Ho Kim, Seul Lee, Kyu-Jin Jung, Woo-Ram Kim, Young Noh, Koung Mi Kang, Chul-Ho Sohn, Dong Young Lee, **Mohammed A. Al-masni***, and Dong-Hyun Kim*, "Detection of Cerebral Microbleeds in MR Images using a Single-Stage Triplanar Ensemble Detection Network (TPE-Det)," **Journal of Magnetic Resonance Imaging**, October **2022**. https://doi.org/10.1002/jmri.28487 *[Corresponding author]*

[8] **Mohammed A Al-masni,** Seul Lee, Jaeuk Yi, Sewook Kim, Sung-Min Gho, Young Hun Choi, Dong-Hyun Kim, "Stacked U-Nets with Self-Assisted Priors Towards Robust Correction of Rigid Motion Artifact in Brain MRI," ***NeuroImage***, vol. 259, pp. 119411, **2022**. https://doi.org/10.1016/j.neuroimage.2022.119411

[9] **Mohammed A. Al-masni** and Dong-Hyun Kim "CMM-Net: Contextual Multi-Scale Multi-Level Network for Efficient Biomedical Image Segmentation," ***Scientific Reports***, 10191 , **2021**. https://doi.org/10.1038/s41598-021-89686-3

[10] Mohammed A. Al-masni, Woo-Ram Kim, Eung Yeop Kim, Young Noh, and Dong-Hyun Kim "Automated Detection of Cerebral Microbleeds in MR Images: A Two-Stage Deep Learning Approach," ***NeuroImage: Clinical***, vol. 28, pp. 102464, **2020**. https://doi.org/10.1016/j.nicl.2020.102464