



S. Mohammad Mostafavi I. – Senior Applied AI Research Scientist

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Interests

- Computational Pathology (Cell Detection, Tissue Segmentation, Sub-cell Models).
- Event-based (Neuromorphic) Cameras/Vision (Reconstruction, Super-resolution, Depth/Flow estimation).
- Super-resolution (RNNs for Event-cameras, weighted patches for Facial images).
- Generative Models (Diffusion-based, Bridging, CTMs, and GANs).

Education

- Gwangju Institute of Science and Technology ([GIST](#)) – South Korea, Gwangju (2015 – 2021).
 - Ph.D. in electrical engineering and computer science (Presidential Excellence Award).
 - Doctoral Dissertation: **Event-based vision**: Image reconstruction, Super-resolution, Depth estimation.
 - Advisors: [Prof. Jonghyun Choi](#) ([GIST](#)), and [Prof. Kuk-Jin Yoon](#) ([KAIST](#)).
- Hakim Sabzevari University – Iran, Sabzevar (2009 – 2011).
 - M.Sc. in Electrical Engineering and Electronics.
 - Thesis: Facial Image **Super-Resolution** Using Weighted Patch Pairs.
 - Advisors: [Prof. Javad Haddadnia](#) (Hakim Sabzevari Uni.), and [Prof. Payman Moallem](#) (Uni. of Isfahan).

Recent Experiences

- [SNUMPR](#) – **PostDoc Researcher** (Mar. 2024– Continued).
 - Depth estimation with Event Cameras using Spiking Neural Networks | Image to image Translation with Diffusion Models | Versatile Incremental Learning | Mentoring MS students (Contributions: 3 paper submission).
- [MISP](#) – **PostDoc Researcher** (Jun. 2024– Feb 2025).
 - Medical Image and Signal Processing Center – Medical University of Isfahan
 - Developed semi-automated data labeling systems, deep learning models, and analysis software.
 - Conducted AI courses for university professors and medical experts, tailored to various branches of medicine.
 - Designed university curricula for teaching AI applications in Ophthalmology and Dentistry, while teaching part of it.
 - Collaborated with disciplines of general medicine, pathology, dentistry, ophthalmology, pharmacy, and neuroscience.
- [Lunit Inc.](#) – **Research Scientist (Senior)** (Jun. 2021 – Mar. 2024) and **Team Leader** (Mar. 2023 – Mar. 2024).
 - Oncology Model-Centric AI Research – Led a team of 3~4 members.
 - Performance improvement for the main products (SCOPE) and pharma-requested models/bakeoffs.
 - Deep-learning-based cell detection and tissue segmentation models for SCOPE ([IO](#), [PD-L1](#)), and UIHC.
 - Taskforce leading in 4 out of 8 model development periods.
 - Establishing, persuading, and developing further product-oriented research directions.
 - Universal IHC models [A1, J6], Sub-cellular models [P1,P2], WSI synthesis, and End-point mutations.
 - Sharing recent CV/ML trends through study groups and weekly research seminars.
 - Publishing the findings, practices, and resources in Computational Pathology and PathOmics.
 - Abstracts [A1~A4], Journals [J3~ J6], Patents [P1,P2], and Challenges [S4].
 - Collaborating across pathology, biomedical engineering, product engineering, and business development.
- [GIST](#) – **Research Assistant and Ph.D. student** (Sep. 2015 – Jun. 2021).
 - Proposing novel deep-learning approaches on the event-based vision for image reconstruction [J1, C3], super-resolution [J2, C4], and depth estimation [C1, C2].
 - Publishing in top-tier journals (TPAMI/IJCV [J1, J2]), conferences (CVPR/IJCV [C1~C4] – **1 oral CVPR** [C3]), and registered a Patent [P3].

- Mentoring a master's student, from teaching basic concepts to publishing in a CVPR paper [C1].
- Reaching **Rank #1** in the [CVPRW Event-based Vision](#) Competition (2021).
- Contributing to the research community by releasing 2 code repos on GitHub from papers:
 - <https://github.com/gistvision/e2sri> ★ 51 [C3] (as of Feb 2025).
 - <https://github.com/yonseivnl/se-cff> ★ 46 [C1] (as of Feb 2025).

Selected Publications - * indicates equal contribution across the marked authors | Full list at my [Google Scholar](#) [NNvELCcAAAAJ](#) - No. of citations: 575 and h-index: 8 as of Feb 2025. | [ORCID 0000-0002-5883-3844](#) | [Scopus 40461500600](#)

Conferences *on Computer Vision / Machine Learning*

- [C1] [“Stereo Depth from Event Cameras: Concentrate and Focus on the Future”](#) – Y Nam*, **M Mostafavi***, KJ Yoon, JH Choi – *equal contribution – CVF/IEEE – **CVPR 2022** (25.33% accept. rate) [[Code](#)]
- [C2] [“Event-Intensity Stereo: Estimating Depth by the Best of Both Worlds”](#) – **M Mostafavi**, KJ Yoon, J Choi – CVF/IEEE – **ICCV 2021** (25.9% accept. rate)
- [C3] 🏆 [“Learning to Super Resolve Intensity Images from Events”](#) – **M Mostafavi**, J Choi, KJ Yoon – CVF/IEEE – **CVPR 2020** (5% accept. rate) [[Oral](#)][[Code](#)]
- [C4] [“Event-based high dynamic range image and very high frame rate video generation using conditional generative adversarial networks”](#) – L Wang*, **M Mostafavi***, YS Ho, and KJ Yoon – CVF/IEEE – **CVPR 2019** (25.2% accept. rate)

Journals *on Computer Vision / Machine Learning*

- [J1] 🏆 [“E2SRI: Learning to Super-Resolve Intensity Images from Events”](#) – **M Mostafavi**, Y Nam, J Choi, KJ Yoon – IEEE-Transactions on Pattern Analysis and Machine Intelligence – **TPAMI 2021** (IF 24.31)
- [J2] [“Learning to reconstruct HDR images from events, with applications to depth and flow”](#) – **M Mostafavi**, L Wang, KJ Yoon – Springer- International Journal of Computer Vision – **IJCV 2021** (IF 11.54)

Journals *on AI-assisted oncology and Computational Pathology*

- [J3] [“Artificial intelligence-powered spatial analysis of tumor-infiltrating lymphocytes as a predictive biomarker for axitinib in adenoid cystic carcinoma”](#) – DH Kim, Y Lim, C-Y Ock, G Park, S Park, H Song, M Ma, **M Mostafavi**, EJ Kang, M-J Ahn, K-W Lee, JH Kwon, Y Yang, YH Choi, MK Kim, JH Ji, T Yun, S-B Kim, B Keam – **Head & Neck 2023** (IF 2.9)
- [J4] [“Artificial intelligence-powered whole-slide image analyzer reveals a distinctive distribution of tumor-infiltrating lymphocytes in neuroendocrine neoplasms”](#) – HG Cho, SI Cho, S Choi, W Jung, J Shin, G Park, J Moon, M Ma, H Song, **M Mostafavi**, M Kang, S Pereira, K Paeng, D Yoo, CY Ock, S Kim. **MDPI Diagnostics 2022** (IF 3.99)
- [J5] [“Changes in the tumor microenvironment in recurrent head and neck squamous cell carcinoma and its implication on efficacy of immune checkpoint inhibitors”](#) – DH Kim, M Kang, G Park, **M Mostafavi**, Y Lim, CY Ock, J Koh, YK Jeon, KC Jung, SH Ahn, EJ Chung, SK Kwon, B Keam – **Springer - Discover Oncology 2024-** (IF 2.8)
- [J6] [“A universal immunohistochemistry analyzer for generalizing AI-driven assessment of immunohistochemistry across immunostains and cancer types”](#) – B Brattoli*, **M Mostafavi***, T Lee*, W Jung, J Ryu, S Park, J Park, S Pereira, S Shin, S Choi, H Kim, D Yoo, SM Ali, K Paeng, CY Ock, SI Cho, S Kim – **Nature - npj precision oncology 2024** (IF 6.8)

Abstracts *on AI-assisted oncology and Computational Pathology*

- [A1] 🏆 [“Universal immunohistochemistry positivity classification of cancer cells across multiple cancer types and antibodies using artificial intelligence”](#) – B Brattoli*, **M Mostafavi***, S Choi, T Lee, S Kim, W Jung, SI Cho, J Lee, K Chung, J Ryu, S Park, S Pereira, S Shin, CY Ock – **AACR Annual Meeting Abstracts 2023**
- [A2] [“1293 Fragmented pattern of tumor mass is related to fibroblast activation mitigating spatial interaction between tumor and immune cells”](#) – S Kim, S Song, S Kim, M Kang, **M Mostafavi**, D Yoo, CH Ahn, S Ali, C-Y Ock – **SITC Meeting Abstracts 2023**
- [A3] [“123P Artificial intelligence \(AI\)-powered analysis of human epidermal growth factor receptor-2 \(HER2\) and tumor-infiltrating lymphocytes \(TILs\) in advanced biliary tract cancer \(BTC\)”](#) – G Kim, C Kim, B Kang, S Shin, T Lee, S Song, S Kim, **M Mostafavi**, H Song, S Pereira, H Chon – **ESMO Congress Abstracts 2023**
- [A4] [“Performance validation of an artificial intelligence-powered PD-L1 combined positive score analyzer in six cancer types”](#) – T Lee, SI Cho, S Choi, S Kim, W Jung, D Lee, S Lee, **M Mostafavi**, S Park, J Lee, J Shin, S Kim, K Paeng, CY Ock – **ASCO Annual**

Patents

- [P1] A method and apparatus for analyzing pathological slide images -2024.12- J Ryu., **M Mostafavi**, B Brattoli, CH Ahn, Y Lee, T Lee, S Kim, W Hwang, **Korean Patent (2024-0193383)** {병리 슬라이드 이미지를 분석하는 방법 및 장치}.
- [P2] A method and apparatus for analyzing IHC stained images using an AI model -2024.02- B Brattoli, **M Mostafavi**, Y Lee, CH Ahn, T Lee, and J Ryu. **Korean Patent (2024-0018904)** {AI 모델을 이용한 IHC 염색 슬라이드 이미지 분석 방법 및 장치}.
- [P3] A method and apparatus for generating super resolve intensity image - 2020 - J Choi, **SM Mostafavi I**, and KJ Yoon. **Korean Patent (102366187)** {고해상도 강도 이미지 생성 방법 및 장치}.

Honors and Awards

- 🏆 **Presidential Excellence Award** - Best Ph.D. Dissertation - GIST (2021).
- 🏆 **Rank #1 CVPRW Event-based vision** competition for depth estimation from event cameras (2021).
- **Outstanding RA Award** - GIST (2020).
- **Doctoral Consortiums:** IEEE CVPR (2020 - USA, Virtual) and KCCV (2020 - Korea).
- **Best paper awards:** KSC (2019 - Korea), IPIU Bronze (2019 - Korea).
- **Scholarships:** Korean Gov. (2015-2019), Global Uni. Project (2015), Iranian Gov. Scholarship (2009-2011).

Languages

- **English: Bilingual fluency**, Farsi: Native, Korean: Low-Intermediate.

Programming Skills and Tools

- **Programming Languages:** Python, MATLAB, C++, Bash. ■ **Libs. :** PyTorch, OpenCV, TensorFlow, Keras.
- **Tools:** GNU Linux, Google GCP, Docker, ROS, Git, Meshlab, LaTeX, Confluence, Jira, Notion.

Services

- [S1] **Reviewer** - MICCAI 24 workshops: [COMPAYL](#), [CaPTion](#), [MOVI](#), and [MLMI](#).
- [S2] **Challenge organizer** - [Advances in Neuromorphic Vision](#) - ICME 2024.
- [S3] **Volume Editor** - [MICCAI 2023 satellite events proceedings](#) - Springer LNCS 2024 .
- [S4] **Challenge organizer** - [OCELOT 2023: Cell Detection from Cell-Tissue Interaction](#) - MICCAI 2023.
- [S5] **Reviewer** of CVPR, ECCV, ICCV | MICCAI | Springer: IJCV | IEEE: MIP, TIM, TCI | IET: IP.
- [S6] **First Manager** of [IEEE Young Prof. Affinity Group](#) in Gwangju Korea (2016).

Management Skills

- Performance management, One-on-one meetings, Roadmaps / OKRs (Objective, Key Results) management.
- Lunit research interview committee (Sep 2021 - Feb 2024) - 80+ screening and 20+ live technical interviews.

Teaching

- **Course Designer and Lecturer** -MUI (Fall 2024 ~ Contd.) Special series on AI for medical practitioners (Pathology, Dentistry, Cardiology, Pharmacy, Ophthalmology)
- **Teaching Assistant** - GIST- Korea (Spring 2020) Visual Recognition and Reasoning.
- **Teaching Assistant** - GIST- Korea (Spring 2017) Digital Signal Processing.
- **Lecturer** - Islamic Azad University - Mobarakeh - Iran (Fall 2011 ~ Spring 2013) Electronic circuits, and 6 labs.

References

Available on request.