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- SUMMARY OF QUALIFICATIONS
- 8+ years of experience in proposing AI-based algorithms for existing problems and improving upon existing AI methods to increase scalability and efficiency and utilizing them in other scientific fields.
 - 8+ years of experience (including 6+ years of teaching experience) in Machine Learning (ML), Deep Learning (DL) and Computer Vision (CV) toolkits and platforms including (but not limited to) TensorFlow, PyTorch, scikit-learn scikit-image and OpenCV.
 - Expert in UI design and development for data visualization of user-friendly Graphical User Interfaces (GUIs) using Python with libraries such as PyQt, tkinter and PySimpleGUI.

- PROFESSIONAL EXPERIENCE
- I. Mayo Clinic** June 2023 – Present
Principal Data Science Analyst
- Research and implement state-of-the-art techniques in deep learning, machine learning, and computer vision to address complex problems in the analysis of large-scale whole slide images (WSIs) of the brain, with a specific focus on digital pathology of neurodegenerative disorders like Alzheimer's Dementia.
 - Collaborate with biomedical experts, providing technical expertise and consultation, to design and implement algorithms for quantifying various neuropathological markers. Aiming to seek novel solutions for hypothesis-testing, disease characterization, and assist pathology research organizations and medical institutions in integrating AI-driven solutions into their diagnostic and research practices effectively.
 - Harness cloud-based environments, such as Google Cloud Platform, to build scalable and robust image processing pipelines, leveraging the capabilities of cloud-based machine learning services for optimizing the training and deployment of AI models.
- II. National Institute of Health** Feb 2020 – June 2023
Postdoctoral Fellow
- Develop customized open-source visualization, machine learning, deep learning and computer vision tools for comprehensive 2D/3D image analysis of large multiplex fluorescence immunohistology datasets.
 - Hands on experience with large-scale datasets and big data, specifically big image datasets of 300,000 x 300,000 pixels and 150 channels.
 - Propose new algorithms or utilize existing AI-based algorithms to generate quantitative results for hypothesis-testing.
 - Develop user-friendly GUIs for algorithms and pipeline for ease-of-use.
 - Provide consultation to biomedical image analysis companies on integration of visualization and quantification algorithms using AI-based algorithms.
- II. University of Houston, Houston, Texas** Aug 2015 – Dec 2019
Research Assistant
- Discovered and analyzed patterns using clustering techniques such as hierarchical clustering and the Dirichlet process mixture models in massive biomedical dataset of size > 300GB
 - Utilized deep neural networks for abstract feature extraction and unsupervised cell type cluster labeling with > 88% accuracy
 - Validated and edited the segmentation results of whole brain images using object detection methods such as Faster-RCNN with > 90% recall to increase the accuracy of the segmentation algorithms
 - Used pattern recognition methods such as outlier detection to detect errors with AUC > 70%

- Designed GUI to visualize the mapping between the analysis results and the raw data
- Detected and classified cells in whole rat brain images with AUC of > 96%
- Developed a comprehensive pipeline for fluorescence signal correction of multi-spectral wide field microscopic images correcting for non-specific signals such as auto-fluorescence, non-uniform illumination, tissue folds, bleed-through and molecular co-localization

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| EDUCATION | University of Houston , Houston, TX, U.S. | Aug 2015 – Dec 2019 |
| | Ph.D., Electrical Engineering; GPA: 4 | |
| | Isfahan University of Technology , Isfahan, Iran | Sep 2012 – Jul 2014 |
| | M.S., Electrical Engineering | |
| | Imam Khomeini International University , Qazvin, Iran | Sep 2008 – Jul 2012 |
| | B.S., Electrical Engineering | |

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| TECHNICAL SKILLS | • Programming: Python MATLAB C++ CUDA CMake |
| | • Tools and Libraries: TensorFlow PyTorch scikit-learn OpenCV scikit-image Qt |
| | • Environments and Editors: Microsoft Visual Studio PyCharm Jupyter Notebook |
| | • Version Control: Git |
| | • Image Editing: Adobe Photoshop |
| | • Typesetting Applications: Microsoft Office, L ^A T _E X |
| | • Bilingual: English, Persian |

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| PUBLICATIONS | • Ramsden, C.E., Zamora, D., Horowitz, M.S., Jahanipour, J., Calzada, E., Li, X., Keyes, G.S., Murray, H.C., Curtis, M.A., Faull, R.M. and Sedlock, A., 2023. ApoER2-Dab1 disruption as the origin of pTau-associated neurodegeneration in sporadic Alzheimer’s disease. <i>Acta Neuropathologica Communications</i> , 11(1), p.197. |
| | • Sapio, M.R., King, D.M., Staedtler, E.S., Maric, D., Jahanipour, J., Kurochkina, N.A., Manalo, A.P., Ghetti, A., Mannes, A.J. and Iadarola, M.J., 2023. Expression pattern analysis and characterization of the hereditary sensory and autonomic neuropathy 2 A (HSAN2A) gene with no lysine kinase (WNK1) in human dorsal root ganglion. <i>Experimental Neurology</i> , 370, p.114552. |
| | • Ksendzovsky, A., Bachani, M., Altshuler, M., Walbridge, S., Mortazavi, A., Moyer, M., Chen, C., Fayed, I., Steiner, J., Edwards, N., Inati, S.K., Jahanipour, J., Maric, D., Heiss, J.D., Kapur, J. and Zaghloul K.A., 2023. Chronic neuronal activation leads to elevated lactate dehydrogenase A through the AMP-activated protein kinase/hypoxia-inducible factor-1’s hypoxia pathway. <i>Brain Communications</i> , 5(1), p.fcac298. |
| | • Mortazavi, A., Fayed, I., Bachani, M., Dowdy, T., Jahanipour, J., Khan, A., Owotade, J., Walbridge, S., Inati, S.K., Steiner, J. and Wu, J., 2022. IDH Mutated Gliomas Promote Epileptogenesis through D-2-Hydroxyglutarate Dependent mTOR Hyperactivation. <i>Neuro-oncology</i> . https://doi.org/10.1093/neuonc/noac003 |
| | • Maric, D., Jahanipour, J., Li, X.R. et al. “Whole-brain tissue mapping toolkit using large-scale highly multiplexed immunofluorescence imaging and deep neural networks”. <i>Nat Commun</i> 12 , 1550 (2021). https://doi.org/10.1038/s41467-021-21735-x |
| | • Yuan, P., Mobiny, A., Jahanipour, J., Li, X., Cicalese, P.A., Roysam, B., Patel, V.M., Dragan, M. and Van Nguyen, H., 2020, October. Few Is Enough: Task-Augmented Active Meta-Learning for Brain Cell Classification. In <i>International Conference on Medical Image Computing and Computer-Assisted Intervention</i> (pp. 367-377). Springer, Cham. https://arxiv.org/pdf/2007.05009.pdf |
| | • S. Berisha, M. Lotfollahi, J. Jahanipour, I. Gurcan, M. Walsh, R. Bhargava, H. V. Nguyen, D. Mayerich. “Deep learning for FTIR histology: leveraging spatial and spectral features with convolutional neural networks ” <i>Analyst</i> , https://doi.org/10.1039/C8AN01495G |
| | • S. Ahmadian, B. Vahidi, J. Jahanipour, S.H. Hosseinian, H. Rastegar “Price Restricted |

Optimal Bidding Model Using Derated Sensitivity Factors by Considering Risk Concept." IET Generation, Transmission & Distribution. doi: 10.2 (2016): 310-324.

POSTER
PRESENTATIONS

- J. Jahanipour, X. Li, B. Roysam, D. Maric. "Python-based Open-Source Toolkit for Large-Scale Analysis of Highly-Multiplexed Immuno-fluorescence Brain Tissue Image Datasets" BRAIN Initiative toolmaker social, Neuroscience 2022 Fall 2022
- J. Jahanipour, B. Roysam, A. Sedlock, D. Maric. "Improved spatial registration method for highly multiplexed gigapixel immunohistological image datasets in brain mapping studies " Neuroscience 2021 Fall 2021
- J. Jahanipour, X. Li, D. Maric, B. Roysam. "Multiscale Mapping of Cellular Alterations in Brain Tissue" BioImage Informatics Conference - Allen Brain Institute Fall 2019
- J. Jahanipour, X. Li, A. Sedlock, B. Roysam, J. Smith, D. Maric. "Quantitative In-situ Image Analysis in Highly Multiplexed Fluorescence IHC Image Datasets of Rat Brain" NINDS DIR Scientific Retreat -NIH Summer 2018
- J. Jahanipour, X. Li, H.Lu, J. Redell, P. Dash, D. Maric, B. Roysam. "Computational profiling of astrocytes' activation patterns after mild fluid percussion injury" Mission Connect Annual Scientific Symposium Winter 2017
- J. Jahanipour, H. V. Nguyen, J. Redell, P. Dash, D. Maric, B. Roysam. "Deep Hierarchical Profiling & Pattern Discovery: Application to Whole Brain Rat Slices After Traumatic Brain Injury" Graduate Research Conference, ECE, UH Summer 2018

INVITED TALKS &
WORKSHOPS

- "Biomedical Image Analysis with Python" [FAES @ NIH](#) October 2023
- "Introduction to Machine Learning and Deep Learning" National Library of Medicine (NLM) Data Science Bootcamp June 2019
- "Introduction to Machine Learning and Deep Learning" [2019 Data Science in Materials Workshop](#) April 2019
- "Deep Learning with TensorFlow Workshop" [UH Math department](#) Spring 2019
- "Deep Learning with TensorFlow Workshop" [UH Math department](#) Spring 2018
- "Deep Learning with TensorFlow Workshop" [UH CACDS](#) Spring 2018
- "Applications of Deep Learning in Biomedical Datasets and Workshop on Deep Learning with TensorFlow" IEEE EMBS Houston Chapter Dec 2017

PROFESSIONAL
SERVICE

- Journal Reviewers:
 - IEEE Transactions on Medical Imaging
 - Nature Translational Psychiatry
 - Nature Methods
 - eLife
 - MDPI Bioengineering
 - IEEE Transactions on Industrial Informatics
 - Journal of Modern Power Systems and Clear Energy (MPCE)
- Conference Reviewers:
 - IEEE International Symposium on Biomedical Imaging (ISBI)
 - Medical Image Computing and Computer-Assisted Intervention (MICCAI)