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SUMMARY OF QUALIFICATIONS

- 7 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.
- Expert on AI fields including Machine Learning (ML), Deep Learning (DL), Computer Vision (CV) with hands-on experience on famous Python libraries such as TensorFlow, PyTorch, scikit-learn scikit-image and OpenCV with >5 years of experience in teaching.
- Expert in design of user-friendly Graphical User Interfaces (GUIs) using Python with libraries such as PyQt, tkinter and PySimpleGUI.

PROFESSIONAL EXPERIENCE

I. National Institute of Health Feb 2020 – Present
Postdoctoral Visiting 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

EDUCATION

University of Houston, Houston, TX, U.S.
Ph.D., Electrical Engineering; **GPA 4** Aug 2015 – Dec 2019

Isfahan University of Technology, Isfahan, Iran
M.S., Electrical Engineering Sep 2012 – Jul 2014

TECHNICAL SKILLS • **Programming:** Python | MATLAB | C++ | CUDA | CMake (Familiar with: R and Lua)
 • **Tools and Libraries:** scikit-learn | TensorFlow | PyTorch | OpenCV | scikit-image | Qt | DeepLearningToolkit(MATLAB)
 • **Environments and Editors:** Microsoft Visual Studio | PyCharm | Jupyter Notebook | Linux
 • **Version Control:** Git
 • **Typesetting Applications:** Microsoft Office, L^AT_EX
 • **Bilingual:** English, Persian

PUBLICATIONS • Ramsden, CE., Keyes, GS., Calzada, E., Horowitz, MS., Zamora, D., Jahanipour, J., Sedlock, A., Indig, FE., Moaddel, R., Kapogiannis, D., Maric, D.. Lipid Peroxidation Induced ApoE Receptor-Ligand Disruption as a Unifying Hypothesis Underlying Sporadic Alzheimer’s Disease in Humans. *J Alzheimers Dis.* 2022 Apr 16. PMID: 35466940. <https://doi.org/10.3233/jad-220071>.
 • 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. *Neuro-oncology*.
<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”. *Nat Commun* **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 *International Conference on Medical Image Computing and Computer-Assisted Intervention* (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 ” *Analyst*, <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

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| INVITED TALKS &
WORKSHOPS | <ul style="list-style-type: none"> • "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 | <ul style="list-style-type: none"> • Journal Reviewers: <ul style="list-style-type: none"> • IEEE Transactions on Medical Imaging • Nature Translational Psychiatry • eLife • MDPI Bioengineering • IEEE Transactions on Industrial Informatics • Journal of Modern Power Systems and Clear Energy (MPCE) • Conference Reviewers: <ul style="list-style-type: none"> • IEEE International Symposium on Biomedical Imaging (ISBI) • Medical Image Computing and Computer-Assisted Intervention (MICCAI) |