Jahandar Jahanipour

CONTACT INFO.

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SUMMARY OF QUALIFICATIONS

- Hands on experience with machine learning and deep learning techniques using famous libraries such as TensorFlow, PyTorch, OpenCV.
- Expert in design of user-friendly Graphical User Interfaces (GUIs).
- Hands on experience with large-scale datasets and big data.

PROFESSIONAL EXPERIENCE

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

- Develop customized open source visualization and machine learning tools for comprehensive 2D / 3D image analysis of multiplex fluorescence immunohistology datasets.

II. University of Houston, Houston, Texas Aug 2015 – Dec 2019
Research Assistant

- Discover and analyze patterns using clustering techniques such as hierarchical clustering and the Dirichlet process mixture models in massive biomedical dataset of size $>$ 300GB
- Utilize deep networks for abstract feature extraction and unsupervised cell type cluster labeling with $>$ 88% accuracy
- Validate and edit 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
- Use pattern recognition methods such as outlier detection to detect errors with AUC $>$ 70%
- Design GUI to visualize the mapping between the analysis results and the raw data
- Detect and classify cells in whole rat brain images with AUC of $>$ 96%
- Develop a comprehensive pipeline for fluorescence signal correction of multi-spectral wide field fluorescence microscopic images correcting for non-specific signals such as non-uniform illumination, auto-fluorescence, photo-bleaching, tissue folds, bleed-through and molecular co-localization

III. National Institute of Health May 2018 – Aug 2018
Pre-Doc Fellow

- Develop algorithms for unmixing immunohistochemistry multi-spectral images
- Develop cell detection pipeline for whole brain image datasets with AUC $>$ 96%

IV. Imam Khomeini International University, Qazvin, IRI Sep 2011 – Jan 2012
Lab. Designer and Instructor

- Design of instruction, quizzes, utilization and presentation of microwave laboratory
- Taught related experiments of the microwave communication course to more than 50 students

EDUCATION

University of Houston, Houston, TX
Ph.D., Electrical Engineering; **GPA 4** Aug 2015 – Dec 2019
Relevant Courses: Stochastic Processes, Machine Learning, Data Mining, Bio-photonics, GPU Computing, Automatic Learning (Deep Learning)

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

TECHNICAL SKILLS

- **Programming:** Python | MATLAB| C++ | CUDA | CMake (Familiar with: R and Lua)
- **Tools and Libraries:** 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, LaTeX
- **Bilingual:** English, Persian

PUBLICATIONS

- 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., ... & Van Nguyen, H. (2020). "Few Is Enough: Task-Augmented Active Meta-Learning for Brain Cell Classification." arXiv preprint arXiv:2007.05009.
- 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, doi: 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.
- J. Jahanipour, K. Hajipour "Design of a NLFM Radar Signal by Different Use of Price Model." 17th Iranian student conference on electrical engineering.

Poster Presentations

- J. Jahanipour, X. Li, A. , D. Maric, B. Roysam. "Multiscale Mapping of Cellular Alterations in Brain Tissue" BioImage Informatics Conference - Allen Brain Institute
- 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
- 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
- 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

Invited Talks & Workshops

- "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

Teaching Experience

Teaching Assistant

- Electronics Lab, University of Houston Fall 2015 - Spring 2016

Instructor

- Microwave Lab, Imam Khomeini International University Fall 2011 - Spring 2012

Professional Service

- Journal Reviewers:
  - Nature Translational Psychiatry
  - 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)

Honors & Awards

- 2nd best poster presentation award in TBI area - Mission Connect Annual Scientific Symposium 2017
- Fellow at Center for Advanced Computing and Data Systems at University of Houston 2017 - 2018
- Graduate Tuition Fellowship, University of Houston College of Engineering 2015 - 2018
- Presidential Fellowship, University of Houston College of Engineering 2015 - 2017
- Ranked top 5% in nationwide electrical engineering Graduate entrance exam in Iran 2012