Aryan Mobiny

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SUMMARY

- I am a Ph.D. student skilled in Machine Learning, Deep Learning and Reinforcement Learning with applications in Computer Vision, Natural Language Processing. I published 9 research papers in MICCAI, IEEE-TMI etc. My achievements include an article featured as great innovative idea in NSF funded Computing Community Consortium, fellowship at Center for Advanced Computing and Data Systems (CACDS), creating and maintaining an open-source library and tutorial, **Easy-TensorFlow** with more than 2.5K followers.

TECHNICAL SKILLS

- **Core skills**: Python (5 years), Machine Learning (7 years), Deep learning (4 years), TensorFlow (3 years), Keras (3 years), PyTorch (3 years), Matlab (7 years), Shell (3 years), Git (3 years)
- **Libraries (2+ year)**: OpenCV, Pandas, Scikit-Learn, Matplotlib, Numpy, Scipy, Theano, Flask, Caffe, TensorFlow, Theano, CNTK
- **Other skills**: C/C++, R, HTML, CSS, SQL, OpenAI Universe, OpenAI Gym.

EXPERIENCES

- **SIEMENS Healthineers, Princeton, NJ** *(May. 2019 - Sep. 2019)*
  Machine Learning Intern, advised by Dr. Tommaso Mansi and Dr. Ali Kamen
  - Research on hierarchical point-cloud representation learning for non-rigid MRI-Ultrasound registration.
- **EigenControl, Houston, TX** *(Sep. 2019 - Dec. 2019)*
  Machine Learning Intern
  - Research on predicting the of evolution of chaotic systems in an oil refinery.
- **HULA lab at University of Houston, TX** *(Jan. 2017 - Present)*
  Senior Research Assistant, advised by Hien Van Nguyen
  - Detail-oriented Capsule Networks for fine-grained and weakly-supervised learning
  - Bayesian inference to estimate model uncertainty in deep neural networks
  - Research on scalibility and efficiency of capsule networks
  - Meta-learning for domain adaptation via memory-augmented recurrent network
- **Brain-Computer Interface Laboratory** *(Sep. 2015 - Dec. 2016)*
  Research Assistant, advised by Jose Luis Contreras Vidal
  - Quantifying and understanding the role of naturally occurring neural variability in the developing brain by analyzing the neural and head movement responses via deep convolutional neural networks.
- **Machine Intelligence and Perception Laboratory** *(Sep. 2012 - Sep. 2014)*
  Machine Learning Researcher
  - Designing and implementing a 12 class mental-task-based BCI, from feature extraction, conditioning and reduction to classification using nonlinear SVM and neural network (Master Thesis).

OPEN SOURCE PROJECTS

- **Easy-TensorFlow,** https://www.easy-tensorflow.com *(Aug'17 - Present)*
  - Open source project aimed to provide simple and ready-to-use tutorials for TensorFlow.
  - Selected as GitHub trending repository of the month
- **PyDL** (ongoing project)
  - Deep learning toolkit written in python, on top of PyTorch. It is developed to enable fast prototyping with a low entry threshold and ensure reproducibility in various data analysis applications.

PUBLICATIONS

1. Leila Saadatifard, **Aryan Mobiny**, Pavel Govyadinov, Hien Nguyen, and David Mayerich. Dvnet: A memory-efficient three-dimensional cnn for large-scale neurovascular reconstruction. *arXiv preprint arXiv:2002.01568*, 2020
2. **Aryan Mobiny**, Aditi Singh, and Hien V Nguyen. Risk-aware machine learning classifier for skin lesion diagnosis. *Journal of clinical medicine*, 8(8):1159, 2019
3. **Aryan Mobiny**, Hien V Nguyen, Supratik Moulik, Naveen Garg, and Carol C Wu. Dropconnect is effective in modeling uncertainty of bayesian deep networks. *arXiv preprint arXiv:1906.04569*, 2019

4. **Aryan Mobiny**, Hengyang Lu, Hien V Nguyen, Badrinath Roysam, and Navin Varadarajan. Automated classification of apoptosis in phase contrast microscopy using capsule network. *IEEE transactions on medical imaging*, 2019
5. **Aryan Mobiny** and Hien Van Nguyen. Fast capsnet for lung cancer screening. In *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, pages 741–749. Springer, 2018.
6. **Aryan Mobiny**, Hien Van Nguyen, Supratik K. Moulik, Naveen Garg and Carol C. Wu. Radiologist-Friendly and Automatic Lung Cancer Screening Using Memory Recurrent Networks. Medical Image Analysis, 2019 (under review).
7. Akshay Ravindran, **Aryan Mobiny**, Jesus Cruz-Garza, Andrew Paek, Anastasiya Kopteva, and José L Contreras Vidal. Assaying neural activity of children during video game play in public spaces: a deep learning approach. *Journal of neural engineering*, 16(3):036028, 2019
8. Leila Saadatifard, **Aryan Mobiny**, Pavel Govyadinov, Hien Van Nguyen and David Mayerich. A Deep Fully Convolutional Network to Model the Cellular and Vascular structure in the Mouse Brain, (In preparation).
9. **Aryan Mobiny**, Supratik Moulik, and Hien Van Nguyen. Lung cancer screening using adaptive memory-augmented recurrent networks. *arXiv preprint arXiv:1710.05719*, 2017

ACTIVITIES

- **Invited Talks & Workshops**
  - "Applications of deep learning in biomedical science", IEEE EMBS Houston Chapter
  - "TensorFlow in Deep Learning Research Workshop", UH Mathematics department
  - "Deep Learning in TensorFlow Workshop", Center for advanced computing and data science
- **Teaching**
  - Introduction to Deep Learning (Fall 2017 and Fall 2018)
  - Pattern Recognition (Fall 2013)
- **Professional Services**
  - Reviewer of conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)
  - Reviewer of IEEE International Symposium on Biomedical Imaging (ISBI)

HONORS & AWARDS

- Featured as "great innovative idea" in NSF funded Computing Community Consortium for our research on "Physician-Friendly Machine Learning Algorithms for Medical Diagnosis".
- Fellow of Center for Advanced Computing and Data Systems at University of Houston.
- Presidential Fellowship, University of Houston, Cullen College of Engineering
- Ranked 2^{nd} among M.Sc. control and machine intelligence major student, UT, Tehran
- Ranked top 1% in nationwide electrical engineering graduate entrance exam in Iran

EDUCATION

Ph.D. in Electrical and Computer Engineering	*University of Houston*	2015 - Present
MS in Electrical and Computer Engineering	*University of Tehran*	2011 - 2014
BS in in Electrical and Computer Engineering	*University of Science and Technology*	2006 - 2011

REFERENCES

- Dr. Hien Van Nguyen, ECE Assistant Professor, hvnguy35@central.uh.edu
- Prof. Robert Azencot, Professor of Mathematics, razencot@math.uh.edu
- Dr. David Mayerich, ECE Assistant Professor, mayerich@uh.edu