Hongda Shen

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Technical Skills

Python, Tensorflow, PostgreSQL, Spark, Matlab, C/C++, CUDA, Java, HTML+CSS.

Education

- Ph.D. in Electrical Engineering, University of Alabama in Huntsville *2013–2016*
  - Minors: Computer Science and Math
  - Track: Machine Learning and Data Compression GPA:3.82/4.00
- M.S. in Electrical Engineering, Western Carolina University *2011–2013*
  - Track: Computer Vision GPA:3.92/4.00
- B.E. in Electrical Engineering, Anhui Polytechnic University *2007–2011*
  - Track: Control Theory GPA:3.53/4.00

Professional Experiences

- **Johnson & Johnson Health and Wellness Solutions** **New Brunswick, NJ**
  Data Scientist ***April 2017 – Present***
  - Designing new deep neural network architectures to infer causal relationships of existing human behaviors and behavior change technologies.
  - Wrangling big healthcare data from multiple sources to create a unified dataframe for analysis and building an adaptive solutions.
  - Developed a new recurrent neural network architecture to forecast the chance of missing medication for Care4Today® Mobile Health Manager app users and achieved an AUC score of 0.94.
  - Developed a drug name matching algorithm using autoencoder technique.

Research Projects

- **Deep Learning in the Compressed Domain** ***Dec. 2014 – Present***
  - Designing a Recurrent Neural Network architecture to detect discriminative features in compressed bitstream data.
  - Developing a new image lossless compression methods leveraging deep learning technique and implementing it using Tensorflow.
  - Developed a data-driven parameter estimation method for image coding using Deep Belief Network.
  - Developed and implemented a Convolutional Neural Network based automatic malaria infection identification system with an accuracy of 98%.
- **Big Image Data Compression** ***Aug. 2013 – Present***
  - Developing a new lossless compression algorithm for medical and 4-D hyperspectral images based on Deep Learning technique and implementing it using Tensorflow framework.

* Developed a new lossless compression algorithm for huge volumetric 4-D time lapse hyperspectral images using sequential learning technique.
* Designed and implemented a new algorithm to compress the hyperspectral image ROIs using Matlab and Python.

Selected Publications

- **H. Shen**, "Predicting the Chance of Missing Your Next Dose Using Deep Recurrent Neural Network." [To be submitted to International Conference on Learning Representations Workshop (ICLR-18)]
- **H. Shen** and W. D. Pan, "Learning the optimal Golomb-Rice coding parameters from data using Deep Belief Network." [IEEE Intl. Geosci. Remote Sens. Symposium (IGARSS 2017)]
- Y. Dong, Z. Jiang, **H. Shen** and W. D. Pan, "Evaluations of Deep Convolutional Neural Networks for Automatic Identification of Malaria Infected Cells." [IEEE Intl. Conf. on Biomedical and Health Informatics 2017 (BHI 2017)]
- **H. Shen**, W. D. Pan, Y. Dong and M. Alim, "Lossless Compression of the Curated Erythrocyte Images Using Deep Autoencoders for Malaria Infection Diagnosis." [The 32nd Picture Coding Symposium (PCS 2016)]
- **H. Shen** and W. D. Pan, "Predictive lossless compression of regions of interest in hyperspectral image via Maximum Correntropy Criterion based Least Mean Square learning." [2016 IEEE Intl. Conf. on Image Proc. (ICIP)].
- **H. Shen**, W. D. Pan and Y. Dong, "Efficient Lossless Compression of 4D Hyperspectral Image Data." [3rd Intl. Conf. on Advances in Big Data Analytics 2016 (ABDA16')]
- **H. Shen**, W. D. Pan and D. Wu, "Predictive Lossless Compression of Regions of Interest in Hyperspectral Images With No-Data Regions." [*IEEE Trans. on Geosci. Remote Sens.*, vol. 55, no. 1, pp.173-182, 2017].

Relevant Coursework

Machine Learning and Pattern Recognition, Computer Vision and Image Processing, Data Compression, Algorithm Design, Statistics, Probability and Random Variables

Awards and Honors

- Graduate Teaching Assistantship, University of Alabama in Huntsville *2013 - 2016*
- Graduate Assistantship, Western Carolina University *2011 - 2013*
- Kendall Scholarship, Western Carolina University *2011*
- Outstanding Academic Excellence Award, Western Carolina University *2011*