ARITRA CHOWDHURY

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EDUCATION

- **Ph.D. in Computer Science**, Rensselear Polytechnic Institute, Troy, New York, U.S.A.
  - Graduation date: August 2018**,** CGPA: 3.71
- **M.S. in Computer Science**, Rensselear Polytechnic Institute, Troy, New York, U.S.A.
  - Graduation Date: May 2016**,** CGPA: 3.71
- **B.E in Electronics and Telecommunication Engineering**, Jadavpur University, Kolkata, India.
  - Graduation date: June 2013**,** CGPA: 3.58

INTERNSHIPS AND TRAINING

- *IBM Research*, *Almaden, CA (Summer internship, May 2017-Aug 2017)*
  - Reduced annotation burden in cell segmentation tasks by using active learning with convolutional neural networks.
  - Paper under submission at *MICCAI 2018*. (paper)
- *GE Global Research Center*, *Niskayuna, NY (Summer internship, May 2016-Aug 2016)*
  - Built artificial parametric 3D models of blood vessels for performing data augmentation on neuropathological image samples for blood vessel characterization using Convolutional neural networks.
  - Paper published at *ISBI 2017*. (paper)
  - US Patent under submission.

PROJECTS

- **Scientific discovery and learning using a human in the loop architecture (Aug 2017-Present):**
  - Helped build the backend of a cognitive immersive systems laboratory (CISL) in collaboration with IBM Research for performing scientific discovery and learning.
  - This project involved building a computational system for breast cancer diagnosis involving human-computer interaction. (poster)
- **Image driven machine learning methods for microstructure recognition (Sep 2015-June 2016):**
  - Performed extensive experimentation to find the best set of algorithms (feature extraction, dimensionality reduction and classification) and corresponding hyper-parameters for performing microstructure recognition.
  - This is a project in collaboration with the Material Science department at RPI. (paper)
- **Quantification of noise in medical images (Aug 2015-Dec 2015):**
  - Built a computational tool, which quantifies image quality with the help of state of the art machine learning techniques.
  - Collaboration on this project is with GE Global Research Center, Niskayuna, NY. (paper)
- **Character recognition (May 2014-Aug 2014):**
  - Helped build a computational model for character recognition and machine translation of an ancient Chinese language called Nyushu.
  - This project was pursued in collaboration with the Natural Language Processing group at Rensselaer Polytechnic Institute. (paper)

TECHNICAL SKILLS

- Programming Language: Python (Advanced), MATLAB (Prior experience), C++ (Prior experience)
- Packages: Caffe (Prior experience), Keras, Theano, Sklearn, Skimage
- Operating System: Windows, Linux, OSX
- Areas: Machine learning, computer vision, biomedical image analysis, deep learning

PUBLICATIONS

- Aritra Chowdhury, Malik Magdon-Ismail, Bulent Yener, “Quantifying contribution and propagation of error from computational steps, algorithms and hyperparameter choices in image classification pipelines”, submitted to *IEEE Transactions on Knowledge and Data Engineering.*
- Aritra Chowdhury, Malik Magdon-Ismail, Hui Su, Bulent Yener, “Quantifying error contributions of computational steps, algorithms and hyperparameter choices in image classification pipelines”, submitted to *ICDM 2018.*
- Aritra Chowdhury, Simone Bianco, Sujoy Biswas, “Active deep learning reduces annotation burden in automatic cell segmentation”, *BioRxiv 2017* (submitted to *MICCAI 2018*).
- Aritra Chowdhury et al., “Blood vessel characterization using virtual 3D models and convolutional neural networks in fluorescence microscopy”, *IEEE ISBI, 2017.*
- Aritra Chowdhury, Alberto Santamaria-Pang, Christopher J. Sevinsky, Bülent Yener, "A computational study on convolutional feature combination strategies for grade classification in colon cancer using fluorescence microscopy data”, *SPIE Medical Imaging Conference, 2017.*
- Aritra Chowdhury, Elizabeth Kautz, Bülent Yener, Daniel Lewis, “Image driven machine learning methods for microstructure Recognition”, *Computational Materials Science, Elsevier.*
- Aritra Chowdhury, Kareem S. Aggour, Steven M. Gustafson, Christopher J. Sevinsky, Bülent Yener, “A Machine Learning Approach to Quantifying Noise in Medical Images”, *SPIE Medical Imaging Conference, 2016.*
- Tongtao Zhang, Aritra Chowdhury, Nimit Dhulekar, Jinjing Xia, Kevin Knight, Heng Ji, Bulent Yener and Liming Zhao, “From Image to Translation: Processing the Endangered Nyushu Script” *ACM Transactions on Asian and Low-Resource Language Information Processing.*
- Aritra Chowdhury, Swagatam Das, ”Automatic shape independent clustering based on ant dynamics.” *Swarm and Evolutionary Computation, Elsevier.*
- D. Maity, A. Chowdhury, S. Surender Reddy, B. K. Panigrahi, A.R. Abhayankar, M . K. Mallick“ Joint Energy and Spinning Reserve Dispatch in Wind-Thermal Power System Using IDE-SAR Technique.” *Symposium Series on Computational Intelligence*, 2013, *IEEE*.
- Arghya Sur, Aritra Chowdhury, Jaydeep Ghosh Chowdhury, Swagatam Das,” Automatic Clustering based on Cluster Nearest Neighbour Distance Algorithm.” *Frontiers in Intelligent Computing Theory and Applications Conference 2012, Springer.*
- Jaydeep Ghosh Chowdhury, Aritra Chowdhury, Arghya Sur, Swagatam Das,” Design of Non-uniform Circular Antenna Arrays using Coordinated Bacterial Dynamics and Opposite Numbers.” *Swarm, Evolutionary and Memetic Computing Conference 2012, Springer.*
- Jaydeep Ghosh Chowdhury,Aritra Chowdhury, Arghya Sur," Large Scale Optimization based on Coordinated bacterial Dynamics and Opposite numbers.” *Swarm, Evolutionary and Memetic Computing Conference 2012, Springer.*
- Aritra Chowdhury, Sandip Bose, Swagatam Das,” Automatic Clustering based on Invasive Weed Optimization Algorithm.” *Swarm, Evolutionary and Memetic Computing Conference 2011, Springer.*