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Summary

Computer Scientist working in **Data Mining** with 5+ years research experience seeking full-time opportunities

Education

Northwestern University, Evanston, Illinois USA [GPA: 3.7 / 4.0] **May 2019**
Ph.D. Candidate, Computer Engineering (expected)
Master of Science, Computer Science **Sep 2014**

Birla Institute of Technology & Science, Pilani, Rajasthan India
Master of Engineering (with Honors), Software Systems, May 2012 **May 2012**
Bachelor of Engineering (with Honors), Chemical Engineering, Dec 2009 **Dec 2009**

Programming Skills

Programming : Python, MATLAB, Java, C++, R, MySQL,HTML, CSS, JavaScript, PHP
Data Science: Keras, Tensorflow, Scikit-Learn, Torch, Gensim, NLTK, Pandas, Numpy, Matplotlib, Spacy

Professional Experience

Data Science Intern, **Northwestern Mutual**, Milwaukee, Wisconsin **Jun - Aug 2018**
- ◇ Developed distributed image to text conversion algorithms for detecting responses from scanned questionnaires
- ◇ Developed a noise reduction algorithm to denoise scanned and photocopied questionnaires

Research Intern, **Boeing Cybersecurity (Narus)**, Sunnyvale, California **Jun - Sep 2013**
- ◇ Generated synthetic user profiles with different demographic and interest features for analyzing ads across profiles
- ◇ Developed a machine learning model for predicting user demographics and interests from ads

Research Projects

Research Assistant, **Northwestern University**, Evanston, Illinois (2012 -)

- Deep Learning-based Predictive Model for Additive Manufacturing (Tensorflow, Keras) **Nov 2016 -**
  - ◇ Created time series models for temporal analysis of heat flux data
  - ◇ Investigated Recurrent Neural Network models to predict point-wise temperature information for accelerating additive manufacturing simulations
- Solar Cell Efficiency Prediction using Molecular Fingerprints (Tensorflow, Scikit Learn) **Mar 2016 -**
  - ◇ Developed a multi-input input neural network architecture by merging different molecular representations as inputs for predicting chemical properties that outperformed other state-of-the-art models
  - ◇ Designed Deep Neural Network and Random Forest models for predicting power conversion efficiency of solar cells using chemical fingerprints, and achieved mean square percentage error between 1.5-2 %
- Ensemble Learning-based Guided Optimization for Aircraft Design (MATLAB, Python) **Oct 2015 - Dec 2017**
  - ◇ Created intelligent sampling algorithms to explore the constrained search space for candidate microstructures (constrained non-convex optimization problem)
  - ◇ Achieved 100x more solutions compared to state-of-the-art methods that can accelerate the design-to-experiment life-cycle
- Convolutional Neural Nets for Thematic Image Classification in Pinterest (Torch) **Oct 2015 - Sep 2016**
  - ◇ Harnessed Association Rule Mining for thematic label curation
  - ◇ Developed ConvNet Models for hierarchical classification that led to automated image categorization based on themes
- Classification of Anonymous Posts using Recurrent Neural Networks (Tensorflow) **Jan 2015 - May 2016**
  - ◇ Generated vectorizer models using Word2vec trained on crowd-sourced (Urban Dictionary) & psycho-lingual (LIWC) dictionaries(Gensim)
  - ◇ Attained prediction accuracy of 79.8 % and 78.1 % using LSTMs and ensemble models respectively

Selected Teaching and Leadership

President/Vice-President/Treasurer, **Northwestern Toastmasters** **Sep 2015 -**
- ◇ Lead the Northwestern chapter of Toastmasters; over 30 graduate students, post doctoral fellows from 10 departments
- ◇ Organized 1.5 hour weekly meetings to improve student public speaking skills

Teaching Assistant & Guest Lecturer, **Northwestern University** **Jan 2014- June 2017**
- ◇ Prepared and delivered weekly lectures for multiple courses to 20-50 students

Fellowships

Predictive Science and Engineering Design Fellowship **2016-2017**
Segal Design Fellowship **2014-2015**
Walter P. Murphy Fellowship **2012-2013**

Recent Publications (4 of 13)

A. Paul, D.Jha, R. Al-Bahrani, W. Liao, A. Choudhary and A. Agrawal."**CheMixNet: Mixed DNN Architectures for Predicting Chemical Properties using Multiple Molecular Representations**", *NIPS Workshop on Machine Learning for Molecules and Materials, 2018*

D.Jha, L.Ward, **A. Paul**, W. Liao, A. Agrawal, A. Choudhary and C. Wolverton."**ElemNet: Deep Learning the Chemistry of Materials From Only Elemental Composition**", *Nature Scientific Reports, 2018*

M.Mozaffar, **A. Paul**, R. Al-Bahrani, S. Wolff, A. Choudhary, A. Agrawal, K. Ehmann and J.Cao."**Data-Driven Prediction of the High-Dimensional Thermal History in Directed Energy Deposition Processes via Recurrent Neural Networks**", *Manufacturing Letters, 2018*

A. Paul, P. Acar, R.Liu, W. Liao, A. Choudhary, V.Sundararaghavan and A. Agrawal. "**Data Sampling Schemes for Microstructure Design with Vibrational Tuning Constraints**", *Journal of American Institute of Aeronautics and Astronautics, 2018*