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| SUMMARY | Computer Scientist working in Data Mining with 5+ years research experience seeking full-time opportunities | |
| INTERESTS | Machine Learning, Deep Learning, Natural Language Processing, Materials Informatics, Social Media Analytics | |
| 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 | |
| CONSULTING | <i>Data Science Intern</i> , Northwestern Mutual , Milwaukee, Wisconsin | Jun - Aug 2018 |
| | <ul style="list-style-type: none">Developed distributed image to text conversion algorithms for detecting responses from scanned questionnairesDeveloped a noise reduction algorithm to denoise scanned and photocopied questionnaires | |
| | <i>Data Science Consultant</i> , EDT | June 2017 - Jan 2018 |
| | <ul style="list-style-type: none">Designed models for profanity detection from company-wide email databases | |
| | <i>Research Intern</i> , Boeing Cybersecurity (Narus) , Sunnyvale, California | Jun - Sep 2013 |
| | <ul style="list-style-type: none">Generated synthetic user profiles with different demographic and interest features for analyzing ads across profilesDeveloped a machine learning model for predicting user demographics and interests from ads | |
| | <i>Research Assistant</i> , Northwestern University , Evanston, Illinois (2012 -) | |
| | <ul style="list-style-type: none">Developed Deep Learning-based Predictive Model for Additive Manufacturing (Tensorflow, Keras) Nov 2016 -<ul style="list-style-type: none">Created time series models for temporal analysis of heat flux dataInvestigated Recurrent Neural Network models to predict point-wise temperature information for accelerating additive manufacturing simulations | |
| PROFESSIONAL & RESEARCH EXPERIENCE | <ul style="list-style-type: none">Chemical Property Prediction using Molecular Fingerprints (Tensorflow, Scikit Learn) Mar 2016 -<ul style="list-style-type: none">Developed a multi-input input neural network architecture by merging different molecular representations (SMILES and fingerprints) for predicting chemical properties and reduced the mean absolute error by half compared to state-of-the-art architecturesDesigned 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 % | |
| | <ul style="list-style-type: none">Very Deep Neural Networks for Predicting Formation Stability (Tensorflow) Mar 2016 - Sept 2017<ul style="list-style-type: none">Constructed Neural Network Models with 18-25 layers to predict formation energy of a chemical compoundAttained 20 % higher accuracy than the state-of-the-art models using Random Forests that would allow domain scientists to explore millions of possible compounds | |
| | <ul style="list-style-type: none">Ensemble Learning-based Guided Optimization for Aircraft Design (MATLAB, Python) Oct 2015 - Dec 2017<ul style="list-style-type: none">Created intelligent sampling algorithms to explore the constrained search space for candidate microstructuresDeveloped Feature Ranking-based Technique for Search Space Reduction of Constrained Non-Convex OptimizationAchieved 100x more solutions compared to state-of-the-art methods that can accelerate the design-to-experiment life-cycle | |
| | <ul style="list-style-type: none">Convolutional Neural Nets for Thematic Image Classification in Pinterest (Torch) Oct 2015 - Sep 2016<ul style="list-style-type: none">Harnessed Association Rule Mining for thematic label curationDeveloped ConvNet Models for hierarchical classification that led to automated image categorization based on themes | |
| | <ul style="list-style-type: none">Classification of Anonymous Posts using Recurrent Neural Networks (Tensorflow) Jan 2015 - May 2016<ul style="list-style-type: none">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 | |

SELECT
PUBLICATIONS
(9 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

A. Paul, P. Acar, W. Liao, A. Choudhary, V.Sundararaghavan and A. Agrawal. “**Microstructure Optimization with Constrained Design Objectives using Machine Learning-Based Feedback-Aware Data-Generation**”, *Journal of Computational Materials Science*, 2018 (in review)

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

J.Birnholtz, N.A.R. Merola, and **A. Paul**. “**Is it Weird to Still Be a Virgin?: Anonymous, Locally Targeted Questions on Facebook Confession Boards**”, *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems. ACM*, 2015.

R. Liu, D. Palsetia, **A. Paul**, R. Al-Bahrani, D. Jha, W. Liao, A. Agrawal and A. Choudhary. “**PinterNet: A Thematic Label Curation Tool for Large Image Datasets**”, *Proceedings of the Workshop on Open Science in Big Data at IEEE Bigdata Conference*, 2016.

A. Paul, A. Agrawal, W. Liao and A. Choudhary. “**Anonymine: Mining anonymous social media posts using psycho-lingual and crowd-sourced dictionaries**”, *Proceedings of the Workshop on Issues of Sentiment Discovery and Opinion Mining at 22nd Annual ACM Conference on Knowledge Discovery and Data Mining*, 2016.

K Haribabu, **A.Paul**, and C. Hota “**Detecting Sybils in Peer-to-Peer Overlays using Psychometric Analysis Methods**”, *Proceedings of the 25th IEEE International Conference on Advanced Information Networking and Applications(AINA)*, Singapore, March 2011

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 different departments
- ◇ Organized 1.5 hour weekly meetings to improve student public speaking skills
- ◇ Co-wrote proposal to The Graduate school and obtained 3000 USD to fund programming
- ◇ Managed finances, prepared budgets for auditing and reconciled dues

Co-Facilitator, Northwestern Dialogue Group

Oct 2016 - September 2017

- ◇ Facilitated dialogue in safe spaces for cultural exchange across international and domestic students
- ◇ Organized social events to enhance group cohesion

Organizer & Instructor, Machine Learning Workshop, Northwestern University

July 2016

- ◇ Delivered and prepared talk attended by 70 graduate students and professors
- ◇ Designed coding assignments for the participants

Teaching Assistant & Guest Lecturer, Northwestern University

Jan 2014- June 2017

- ◇ Prepared and delivered weekly lectures for multiple courses to 20-50 students
- ◇ Supervised course projects and provided subject matter expertise

FELLOWSHIPS

Predictive Science and Engineering Design Fellowship

2016-2017

Segal Design Fellowship

2014-2015

Walter P. Murphy Fellowship

2012-2013