

SUMMARY	Computer Scientist working in Machine Learning with 8+ 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] Ph.D. Candidate, Computer Engineering Master of Science, Computer Science	Jun 2019 (expected) Sep 2014
	Birla Institute of Technology & Science , Pilani, Rajasthan India Master of Engineering (with Honors), Software Systems, May 2012 Bachelor of Engineering (with Honors), Chemical Engineering, Dec 2009	May 2012 Dec 2009
PROGRAMMING SKILLS	Proficient: Python, Keras, Scikit-Learn, Tensorflow, Selenium, Pandas, OpenCV Familiar: R, MATLAB, C, C++, PySpark, Java, LAMP, SQL, weka, Javascript, HTML/CSS	
PROFESSIONAL EXPERIENCE	<p><i>Data Science Intern, Northwestern Mutual</i>, Milwaukee, Wisconsin Jun - Aug 2018</p> <ul style="list-style-type: none"> Developed distributed OCR algorithms for detecting responses from scanned questionnaires Designed a noise reduction algorithm to de-noise scanned and photocopied questionnaires <p><i>Data Science Consultant, EDT</i> June 2017 - Jan 2018</p> <ul style="list-style-type: none"> Designed models for profanity detection from company-wide email databases <p><i>Research Intern, Boeing Cybersecurity (Narus)</i>, Sunnyvale, California Jun - Sep 2013</p> <ul style="list-style-type: none"> 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	<p><i>Research Assistant, Northwestern University</i>, Evanston, Illinois (2012 -)</p> <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 data Investigated Recurrent Neural Network models to predict point-wise temperature information for accelerating additive manufacturing simulations 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 architectures 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 % 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 compound Attained 20 % higher accuracy than the state-of-the-art models using Random Forests that would allow domain scientists to explore millions of possible compounds 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 microstructures Developed Feature Ranking-based Technique for Search Space Reduction of Constrained Non-Convex Optimization 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 <ul style="list-style-type: none"> 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 <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 	

- A. Paul, D.Jha, W. Liao, A. Choudhary and A. Agrawal.**“**Transfer Learning Using Ensemble Neural Nets for Organic Solar Cell Screening**”, *International Joint Conference of Neural Networks*, 2019
- A. Paul, W. Liao, A. Choudhary and A. Agrawal.** “**Mining Locally-Anonymous Taboo Confessions using Psycholinguistic and Crowd-Sourced Dictionaries**”, *Journal of Health Informatics* (under review)
- A. Paul, W. Liao, A. Choudhary and A. Agrawal.** “**Text Translation as Data Augmentation for Neural Network Modeling of Mental Health Confessions**”, *Journal of Health Informatics* (in preparation)
- A. Paul, A. Furmanchuk, W. Liao, A. Choudhary and A. Agrawal.** “**Organic Molecule Prediction for Photovoltaic Applications Using Extremely Randomized Trees**”, *Journal of Molecular Informatics* (under review)
- A. Paul, M.Mozaffar, W. Liao, A. Choudhary, J.Cao and A. Agrawal.**“**A real-time iterative approach for temperature profile prediction in additive manufacturing processes**”, *25th ACM Conference on Knowledge Discovery and Data Mining (KDD)* (under review)
- 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*, 2019
- 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
- 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.

FELLOWSHIPS

McCormick Dean’s Commendation Fellowship	2018 Spring
Predictive Science and Engineering Design Fellowship	2016-2017
Segal Design Fellowship	2014-2015
Walter P. Murphy Fellowship	2012-2013

SELECTED TEACHING AND LEADERSHIP

<i>President/Vice-President/Treasurer, Northwestern Toastmasters</i>	Sep 2015 -
<ul style="list-style-type: none"> 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 	
<i>Co-Facilitator, Northwestern Dialogue Group</i>	Oct 2016 - September 2017
<ul style="list-style-type: none"> Facilitated dialogue in safe spaces for cultural exchange across international and domestic students Organized social events to enhance group cohesion 	
<i>Organizer & Instructor, Machine Learning Workshop, Northwestern University</i>	July 2016
<ul style="list-style-type: none"> Delivered and prepared talk attended by 70 graduate students and professors Designed coding assignments for the participants 	
<i>Teaching Assistant & Guest Lecturer, Northwestern University</i>	Jan 2014- June 2017
<ul style="list-style-type: none"> Prepared and delivered weekly lectures for multiple courses to 20-50 students Supervised course projects and provided subject matter expertise 	