

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	Aug '19
	Ph.D. Candidate, Computer Engineering Master of Science, Computer Science	(expected) Sep '14
	Birla Institute of Technology & Science , Pilani, Rajasthan India	
	Master of Engineering (with Honors), Software Systems Bachelor of Engineering (with Honors), Chemical Engineering	May '12 Dec '09
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	<i>Data Science Intern</i> , Northwestern Mutual , Milwaukee, Wisconsin	Jun - Aug '18
	<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 	
	<i>Data Science Consultant</i> , EDT	Jun '17 - Jan '18
	<i>Research Intern</i> , Boeing Cybersecurity (Narus) , Sunnyvale, California	Jun - Sep '13
	<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 	
	<i>Research Assistant</i> , Northwestern University , Evanston, Illinois	Sep '12 -
RESEARCH PROJECTS	<ul style="list-style-type: none"> Developed Deep Learning-based Predictive Model for Additive Manufacturing (Tensorflow, Keras) <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) <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) <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) <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) <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) <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, R. Al-Bahrani, 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.** “**Text Translation as Data Augmentation for Neural Network Modeling of Mental Health Confessions**”, *Journal of Health Informatics (in preparation)*
- 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.Birnholz, 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.** “**Pinter-Net: 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 Sentiment Mining at 22nd Annual ACM Conference on Knowledge Discovery and Data Mining, 2016.*

FELLOWSHIPS

McCormick Dean’s Commendation Fellowship	’18 Spring
Predictive Science and Engineering Design Fellowship	’16-’17
Segal Design Fellowship	’14-’15
Walter P. Murphy Fellowship	’12-’13

SELECTED TEACHING AND LEADERSHIP

<i>Teaching Assistant & Guest Lecturer, Northwestern University</i>	Jan ’14- Jun ’17
<ul style="list-style-type: none"> ◊ Prepared and delivered weekly lectures for 20-50 students ◊ Supervised course projects and provided subject matter expertise ◊ Courses: Social Media Mining, Data Structures , Introduction to Programming (Python) 	
<i>President/Vice-President/Treasurer, Northwestern Toastmasters</i>	Sep ’15 -
<ul style="list-style-type: none"> ◊ Lead the Northwestern chapter of Toastmasters with 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 ’16 - Sep ’17
<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>	Jul ’16
<ul style="list-style-type: none"> ◊ Delivered and prepared talk attended by 70 graduate students and professors ◊ Designed coding assignments for the participants 	