

SUMMARY	Computer Scientist working in Machine Learning 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] Jun 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	<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 questionnairesDesigned 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
RESEARCH PROJECTS	<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 simulationsChemical 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 %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 compoundsEnsemble 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-cycleConvolutional 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 themesClassification 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, 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