

SUMMARY	Computer Scientist working in Machine Learning with 8+ years research experience seeking full-time opportunities	
INTERESTS	Machine Learning, Deep Learning, Natural Language Processing, Social Media Mining, Scientific Computing	
EDUCATION	Northwestern University, Evanston, Illinois USA Ph.D. Candidate, Computer Science Master of Science, Computer Science	Jul '19 (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, NLTK, Gensim, Tensorflow, Pandas, Selenium, XGBoost Familiar: OpenCV, PySpark, PyTorch, Theano, R, MATLAB, C, C++, Java, LAMP, SQL, weka, HTML/CSS	
PROFESSIONAL EXPERIENCE	Data Science Intern, Northwestern Mutual, Milwaukee, Wisconsin • Developed distributed OCR algorithms for detecting responses from scanned questionnaires • Designed a noise reduction algorithm to de-noise scanned and photocopied questionnaires Data Science Consultant, EDT • Designed models for profanity detection from company-wide email databases Data Science Consultant, SnuvikTech • Developed time-series modeling for inventory data for computer accessories Research Intern, Boeing Cybersecurity (Narus), Sunnyvale, California • 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	Jun - Aug '18           Jun '17 - Jan '18           Jan '18 - May '18           Jun - Sep '13
RESEARCH PROJECTS	Research Assistant, Northwestern University, Evanston, Illinois • Chemical Property Prediction using Molecular Fingerprints (Tensorflow, Scikit Learn) ◊ 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 (CheMixNet architecture) ◊ Designed Bagged Ensemble models for predicting power conversion efficiency of solar cells using chemical fingerprints, and achieved mean absolute percentage error between 1.5-2 % ◊ Developed a transfer learning solution to predict solar cell properties with mean absolute percentage error below 1 % (SINet architecture) • Developed Predictive Model for Additive Manufacturing (Tensorflow, Keras) ◊ Created time series models for temporal analysis of temperature and heat flux data ◊ Investigated Recurrent Neural Network models to predict point-wise temperature information for accelerating additive manufacturing simulations ◊ Developed an iterative real-time predictive model using bagged decision trees • Ensemble Learning-based Guided Optimization for Aircraft Design (MATLAB, Python) ◊ 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 • Classification of Anonymous Posts using Recurrent Neural Networks (Keras, Scikit Learn) ◊ Developed customized vector model using crowd-sourced (Urban Dictionary) & psycho-lingual (LIWC) dictionaries ◊ Explored Word2vec, GloVe and FastText embedding schemes (Gensim) ◊ Attained prediction accuracy of 79.8 % and 78.1 % using ensemble and LSTM models respectively	Sep '12 -

- 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. "Mining Anonymous Taboo Confessions using Psycho-lingual and Crowd-Sourced Dictionaries for Emotional Well-being", *Journal of Health Informatics Research* (under review)
- Z.Yang, D. Jha, A. Paul, W. Liao, A. Choudhary and A. Agrawal. "Generative adversarial networks with mixture density networks for inverse modeling in materials microstructural design", *28th ACM Conference on Information and Knowledge Management (CIKM)* (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. "Pinterest: 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 &amp; Guest Lecturer, Northwestern University</i>	Jan '14-
<ul style="list-style-type: none"> <li>◇ Prepared and delivered weekly lectures for 20-50 students</li> <li>◇ Supervised course projects and provided subject matter expertise</li> <li>◇ Courses: Social Media Mining, Data Structures , Introduction to Programming (Python)</li> </ul>	
<i>President/Vice-President/Treasurer, Northwestern Toastmasters</i>	Sep '15 -May '18
<ul style="list-style-type: none"> <li>◇ Lead the Northwestern chapter of Toastmasters with over 30 graduate students, post doctoral fellows from 10 different departments</li> <li>◇ Organized 1.5 hour weekly meetings to improve student public speaking skills</li> <li>◇ Co-wrote proposal to The Graduate school and obtained 3000 USD to fund programming</li> <li>◇ Managed finances, prepared budgets for auditing and reconciled dues</li> </ul>	
<i>Co-Facilitator, Northwestern Dialogue Group</i>	Oct '16 - Sep '17
<ul style="list-style-type: none"> <li>◇ Facilitated dialogue in safe spaces for cultural exchange across international and domestic students</li> <li>◇ Organized social events to enhance group cohesion</li> </ul>	
<i>Organizer &amp; Instructor, Machine Learning Workshop, Northwestern University</i>	Jul '16
<ul style="list-style-type: none"> <li>◇ Delivered and prepared talk attended by 70 graduate students and professors</li> <li>◇ Designed coding assignments for the participants</li> </ul>	