

SUMMARY	<b>Computer Scientist</b> working in <b>Machine Learning</b> with 8+ years research experience seeking full-time opportunities	
INTERESTS	Machine Learning, Deep Learning, Natural Language Processing, Social Media Mining, Scientific Computing	
EDUCATION	<b>Northwestern University</b> , Evanston, Illinois USA	<b>Jul '19</b>
	Ph.D. Candidate, Computer Science	(expected)
	Master of Science, Computer Science	<b>Sep '14</b>
	<b>Birla Institute of Technology &amp; Science</b> , Pilani, Rajasthan India	
	Master of Engineering (with Honors), Software Systems	<b>May '12</b>
	Bachelor of Engineering (with Honors), Chemical Engineering	<b>Dec '09</b>
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	<i>Data Science Intern</i> , <b>Northwestern Mutual</b> , Milwaukee, Wisconsin	<b>Jun - Aug '18</b>
	<ul style="list-style-type: none"><li>Developed distributed OCR algorithms for detecting responses from scanned questionnaires</li><li>Designed a noise reduction algorithm to de-noise scanned and photocopied questionnaires</li></ul>	
	<i>Data Science Consultant</i> , <b>EDT</b>	<b>Jun '17 - Jan '18</b>
	<ul style="list-style-type: none"><li>Designed models for profanity detection from company-wide email databases</li></ul>	
	<i>Data Science Consultant</i> , <b>SnuvikTech</b>	<b>Jan '18 - May '18</b>
	<ul style="list-style-type: none"><li>Developed time-series modeling for inventory data for computer accessories</li></ul>	
	<i>Research Intern</i> , <b>Boeing Cybersecurity (Narus)</b> , Sunnyvale, California	<b>Jun - Sep '13</b>
RESEARCH PROJECTS	<ul style="list-style-type: none"><li>Generated synthetic user profiles with different demographic and interest features for analyzing ads across profiles</li><li>Developed a machine learning model for predicting user demographics and interests from ads</li></ul>	
	<i>Research Assistant</i> , <b>Northwestern University</b> , Evanston, Illinois	<b>Sep '12 -</b>
	<ul style="list-style-type: none"><li>Chemical Property Prediction using Molecular Fingerprints (Tensorflow, Scikit Learn)<ul style="list-style-type: none"><li>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)</li><li>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 %</li><li>Developed a transfer learning solution to predict solar cell properties with mean absolute percentage error below 1 % (SINet architecture)</li></ul></li></ul>	
	<ul style="list-style-type: none"><li>Developed Predictive Model for Additive Manufacturing (Tensorflow, Keras)<ul style="list-style-type: none"><li>Created time series models for temporal analysis of temperature and heat flux data</li><li>Investigated Recurrent Neural Network models to predict point-wise temperature information for accelerating additive manufacturing simulations</li><li>Developed an iterative real-time predictive model using bagged decision trees</li></ul></li></ul>	
	<ul style="list-style-type: none"><li>Ensemble Learning-based Guided Optimization for Aircraft Design (MATLAB, Python)<ul style="list-style-type: none"><li>Created intelligent sampling algorithms to explore the constrained search space for candidate microstructures</li><li>Developed Feature Ranking-based Technique for Search Space Reduction of Constrained Non-Convex Optimization</li><li>Achieved 100x more solutions compared to state-of-the-art methods that can accelerate the design-to-experiment life-cycle</li></ul></li></ul>	
	<ul style="list-style-type: none"><li>Classification of Anonymous Posts using Recurrent Neural Networks (Keras, Scikit Learn)<ul style="list-style-type: none"><li>Developed customized vector model using crowd-sourced (Urban Dictionary) &amp; psycho-lingual (LIWC) dictionaries</li><li>Explored Word2vec, GloVe and FastText embedding schemes (Gensim)</li><li>Attained prediction accuracy of 79.8 % and 78.1 % using ensemble and LSTM models respectively</li></ul></li></ul>	

- 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", *6th IEEE International Conference on Data Science and Advanced Analytics (DSAA)* (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>	