

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 Engineering	(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, Javascript, 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>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>Developed Deep Learning-based Predictive Model for Additive Manufacturing (Tensorflow, Keras) <ul style="list-style-type: none"> <li>Created time series models for temporal analysis of heat flux data</li> <li>Investigated Recurrent Neural Network models to predict point-wise temperature information for accelerating additive manufacturing simulations</li> </ul> </li> </ul>	
	<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</li> <li>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 %</li> </ul> </li> </ul>	
	<ul style="list-style-type: none"> <li>Very Deep Neural Networks for Predicting Formation Stability (Tensorflow) <ul style="list-style-type: none"> <li>Constructed Neural Network Models with 18-25 layers to predict formation energy of a chemical compound</li> <li>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</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>Convolutional Neural Nets for Thematic Image Classification in Pinterest (Torch) <ul style="list-style-type: none"> <li>Harnessed Association Rule Mining for thematic label curation</li> <li>Developed ConvNet Models for hierarchical classification that led to automated image categorization based on themes</li> </ul> </li> </ul>	
	<ul style="list-style-type: none"> <li>Classification of Anonymous Posts using Recurrent Neural Networks (Tensorflow) <ul style="list-style-type: none"> <li>Generated vectorizer models using Word2vec trained on crowd-sourced (Urban Dictionary) &amp; psycho-lingual (LIWC) dictionaries (Gensim)</li> <li>Attained prediction accuracy of 79.8 % and 78.1 % using LSTMs and ensemble 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.** “**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.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.** “**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

*Teaching Assistant & Guest Lecturer, Northwestern University* **Jan ’14-**

- ◊ 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)

*President/Vice-President/Treasurer, Northwestern Toastmasters* **Sep ’15 -May ’18**

- ◊ 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

*Co-Facilitator, Northwestern Dialogue Group* **Oct ’16 - Sep ’17**

- ◊ 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* **Jul ’16**

- ◊ Delivered and prepared talk attended by 70 graduate students and professors
- ◊ Designed coding assignments for the participants