Rushit N. Shah

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EDUCATION

University of Illinois at Chicago Ph.D., Computer Science   *August 2018 – Present*
GPA:3.8/4

University of Maryland, College Park M.S., Mechanical Engineering   *January 2016 – August 2018*
Thesis Title: "A Fault Detection Framework for Imbalanced and
Partially-Labeled Data Sets Using Self-Organizing Maps"
GPA: 3.1/4

VIT University, Vellore, India B.Tech., Mechanical Engineering   *July 2011 – May 2015*
GPA: 8.57/10

RESEARCH EXPERIENCE

Towards Resolving Causal Confusion via Robust Imitation Learning   *August 2019 – December 2019*
- Proposed and implemented using Python an algorithm to alleviate the problem of distributional shift in imitation learning by imposing constraints on non-causal variables during optimization, resulting in a robust imitation agent.

Cursor and Keyboard Control via Hand-Tracking   *August 2019 – December 2019*
- Used Python, OpenCV, and Tensorflow to detect hand(s) in a live webcam video feed using a CNN (Single-shot Multi-Box Detector) and other skin segmentation techniques. Used hand location within video feed to enable real-time cursor/keyboard control.

Informed Exploration-Exploitation Strategies in Deep Reinforcement Learning   *January 2019 – May 2019*
- Surveyed and analyzed recent techniques for performing the exploration vs. exploitation trade-off in deep reinforcement learning.

Graduate Research Assistant, CALCE, University of Maryland, College Park   *January 2016 – August 2018*
- Developed machine learning-based prognostics models for electronic and mechanical systems.
- Collaborated and communicated with clients to deliver data-driven and physics-based prognostics solutions.

Fault Detection In Aerospace Systems Using Self-Organizing Maps   *June 2016 – August 2018*
- Developed a novel supervised learning methodology to quantify extent of damage in aerospace systems, by training multiple self-organizing maps (SOMs) simultaneously.
- Extended the base classification method to allow classification on imbalanced and partially-labeled (semi-supervised) data sets.

Analyzing Data Complexity Using Metafeatures for Algorithm Recommendation   *May 2017 – August 2018*
- Developed a method which, based on the metafeatures of data collected from a fleet of vehicles, can be used to characterize the generalizability of a fault detection model over the entire fleet a priori.

Fault Detection in Bearings Using Autocorrelation   *Jan 2016 – May 2017*
- Developed an autocorrelation-based method to predict the early onset of faults in rolling-element bearings, using vibration data.

PUBLICATIONS

- "Analyzing Data Complexity Using Metafeatures for Classification Algorithm Selection." **Rushit N. Shah**, Varun Khemani, Michael Azarian, Michael Pecht, and Yan Su, In IEEE Conference on Prognostics and System Health Management (PHM-Chongqing), 2018.
- "Fault Detection in Bearings Using Autocorrelation." **Rushit N. Shah**, Michael H. Azarian, and Michael Pecht, In Proceedings of the Society for Machinery Failure Prevention Technology Conference, 2017.

LANGUAGES & FRAMEWORKS

Languages: Python, C/C++, C#, MATLAB, HTML, CSS, T-SQL.
Frameworks/Libraries: PyTorch, Tensorflow, Keras, Scikit-learn, OpenCV, Numpy, Pandas, Matplotlib.