Sakshi Udeshi

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RESEARCH INTERESTS

Machine Leaning Testing, Fairness in Machine Learning, Explainability and Interpretability in Machine Leaning, Machine Learning Robustness, Machine Learning Security

EDUCATION

Singapore University of Technology and Design
Doctor of Philosophy *Sept 2017 - Ongoing*
Computer Science
Advisor: Dr. Sudipta Chattopadhyay

Birla Institute of Technology and Science, Pilani
M.Sc. (Tech.) *Aug 2012 - May 2016*
Information Systems

EXPERIENCE

Singapore University of Technology and Design *Sept 2017 - Ongoing*
PhD Candidate;

Conducted research in the domains of ML fairness, Natural Language Processing and ML security

Teaching Assistant for undergraduate Algorithms and Software Engineering courses

@WalmartLabs *Aug 2016 - June 2017*
Software Engineer;

Housing.com *Jul 2015 - Dec 2015*
Software Development Intern;

RESEARCH PROJECTS

Machine Learning Fairness
Developed Aequitas, a tool to discover, estimate and fix individual fairness violations in arbitrary machine learning models

Grammar Based NLP Testing
Worked on OGMA, a directed, grammar based approach to systematically find violations in the input space for natural language processing systems

Backdoor Attack Detection
Developed a completely blackbox methodology to detect backdoor attacks in image classification machine learning models

PUBLICATIONS

1. **Udeshi, S.**, Arora, P., & Chattopadhyay, S. (2018, September). Automated directed fairness testing. In *Proceedings of the 33rd ACM/IEEE International Conference on Automated Software Engineering (pp. 98-108).* ACM.
2. **Udeshi, S.**, & Chattopadhyay, S. (2019). Grammar Based Directed Testing of Machine Learning Systems. *arXiv preprint arXiv:1902.10027.*
   Under major revision in IEEE Transactions of Software Engineering
3. **Udeshi, S.**, Shanshan, P., Woo, G., Loh, L., & Chattopadhyay, L. R. S. (2019). Model agnostic defence against backdoor attacks in machine learning. *Under Review*

HONORS

SUTD President's Graduate Fellowship