Machine Learning+Security+Verification Workshop 2019

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CONTEXT AND MOTIVATION FOR THIS WORKSHOP

Machine Learning

and

Applied Logic

(verification, analysis, synthesis, security, software engineering)
MACHINE LEARNING FOR SOFTWARE ENGINEERING AND SECURITY

• ML applied to logic, software engineering, and security (broadly construed) tools/algorithms
  • ML-based program analysis: Mayur Naik, Prateek Saxena
  • ML-based logic solvers: Vijay Ganesh, Elias Khalil, Kshitij Bansal, Antonina Kolokolova
  • ML-based verification and invariant synthesis: Arie Gurfinkel
  • ML for physics and mathematics: Craig Larson, Sebastian Wetzel
  • ML-based fuzzers: Joe Scott (poster)
  • ML-based runtime verification: Reza Babaee (poster)
SECURITY OF ML

• Logic, verification, analysis, and security tools/algorithms as applied to ML
  
  • Introduction to reinforcement learning and robustness issues: Pascal Poupart
  
  • Adversarial attacks: Nicolas Papernot, Yaoliang Yu
  
  • Adversarial robustness: Alexander Madry, Alexey Kurakin, Bo Li, Florian Kerschbaum, Dirk Nowotka
  
  • Verification of DNNs: Nina Narodytska, Yichen Yang, Kuldeep Meel, Gagandeep Singh
  
  • Verification and analysis of systems that use ML as a component: Krzysztof Czarnecki
  
  • Logic Guided ML: Joe Scott (poster)
  
  • Bias in ML: Haobei Song (poster)
  
  • Causes of Adversarial Vulnerability: Angus Galloway (poster)
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• Waterloo AI Institute
• Vector Institute
• Waterloo Electrical and Computer Engineering Department