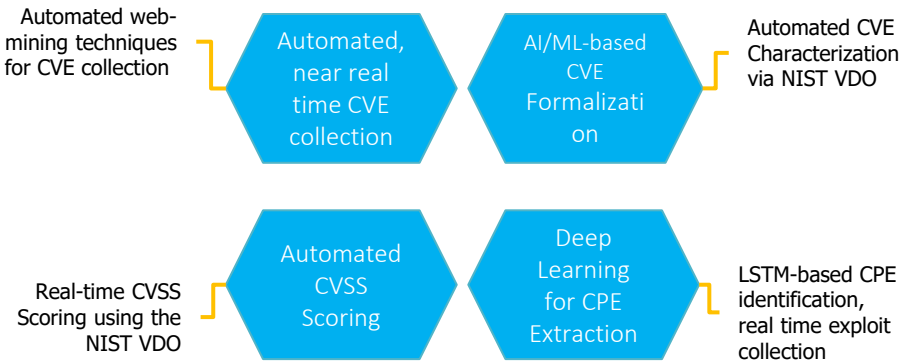
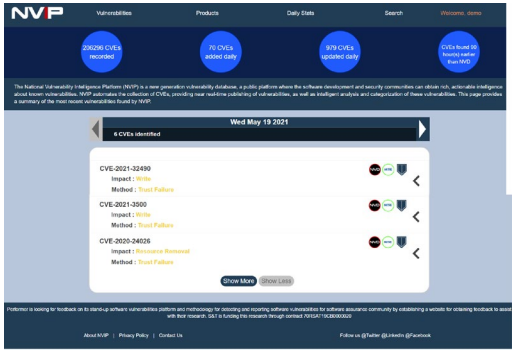
National Vulnerability Intelligence Platform (NVIP)

NVIP Project Summary



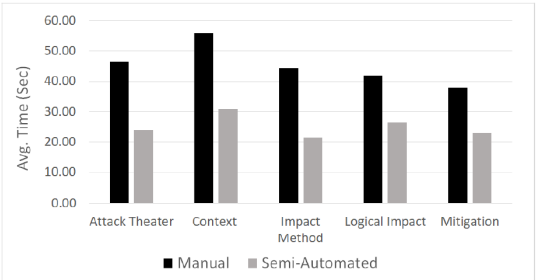
Unique System Features

- ✓ Automated Web Mining for CVE Collection
- ✓ AI/ML-based Vulnerability Characterization using NIST VDO
- ✓ Real-time CVSS Scoring with CVSS vector matching (a joint work with NIST)
- ✓ Deep Learning based Automated CPE Extraction and CVE Domain mapping



Qualitative/Quantitative Case Study Results

- ✓ **High CVE Characterization Accuracy.** Trained AI/ML models achieve up to 0.99 F-Measure values while characterizing real-life CVEs.



- ✓ **Significant Effort Reduction.** Up to 51.5% of the time spent for CVE characterization could be saved in comparison to a full manual process (based on a qualitative study with security subject matter experts (SME)).

Stats from PoC

- ✓ **Publishing CVEs earlier than NVD and MITRE:** Preliminary results show that NVIP is finding new CVEs between 7 and 95 hours earlier than NVD.
- ✓ **An online proof-of-concept system.** A list of new CVEs are being published on our demo web-site daily.
- ✓ **Finding CVEs before other vulnerability databases**. For example, at 5/18/2021 the CVE-2021-30472 was found by NVIP at https://bugs.gentoo.org/782706. At the same time, it was missing on NVD and "RESERVED" at MITRE.