On Managing Vulnerabilities in AI/ML Systems

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Document Markings

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What if **flaws** in machine learning (**ML**) were **assigned** Common Vulnerabilities and Exposures (CVE) identifiers (**CVE-ID**s)?

Flaw

“A vulnerability is a set of conditions or behaviors that allows the violation of an explicit or implicit security policy. Vulnerabilities can be caused by software defects, configuration or design decisions, unexpected interactions between systems, or environmental changes.”

https://vuls.cert.org/confluence/display/CVD/1.2.+CVD+Context+and+Terminology+Notes

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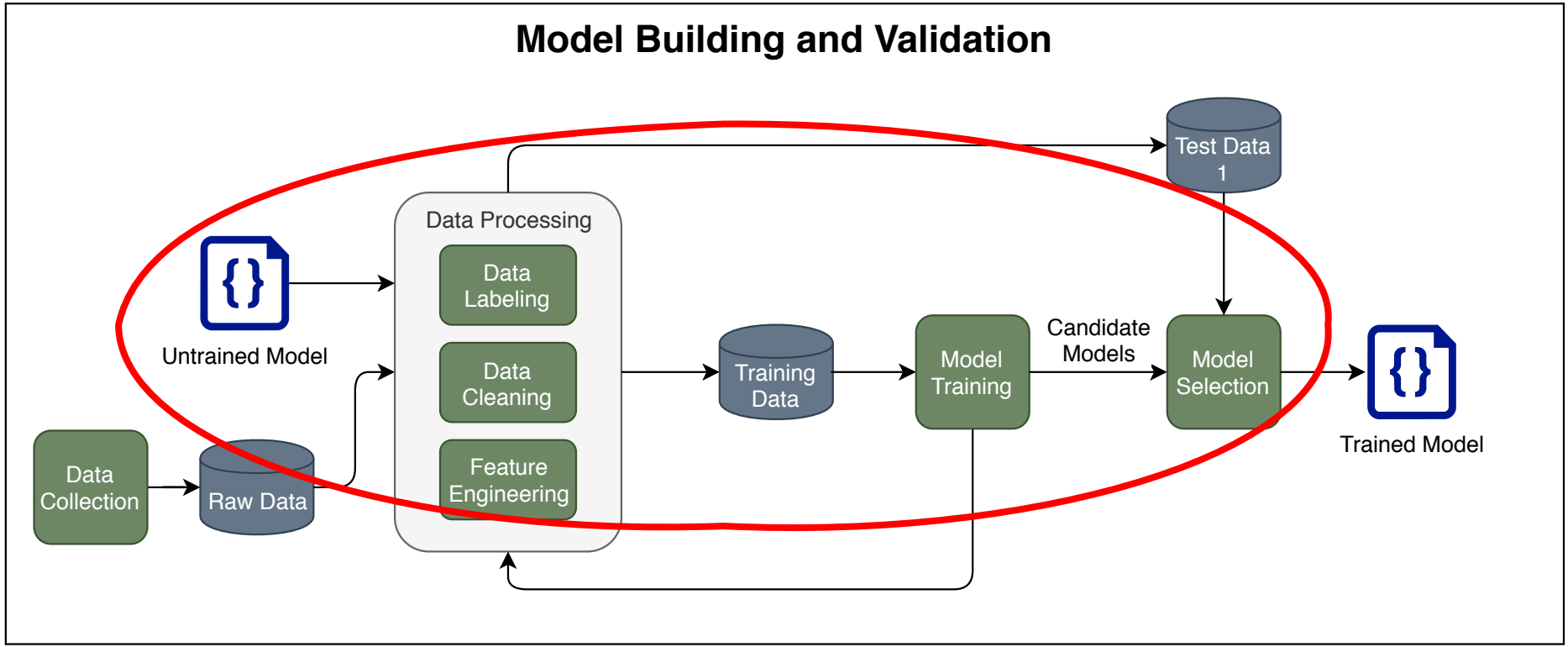
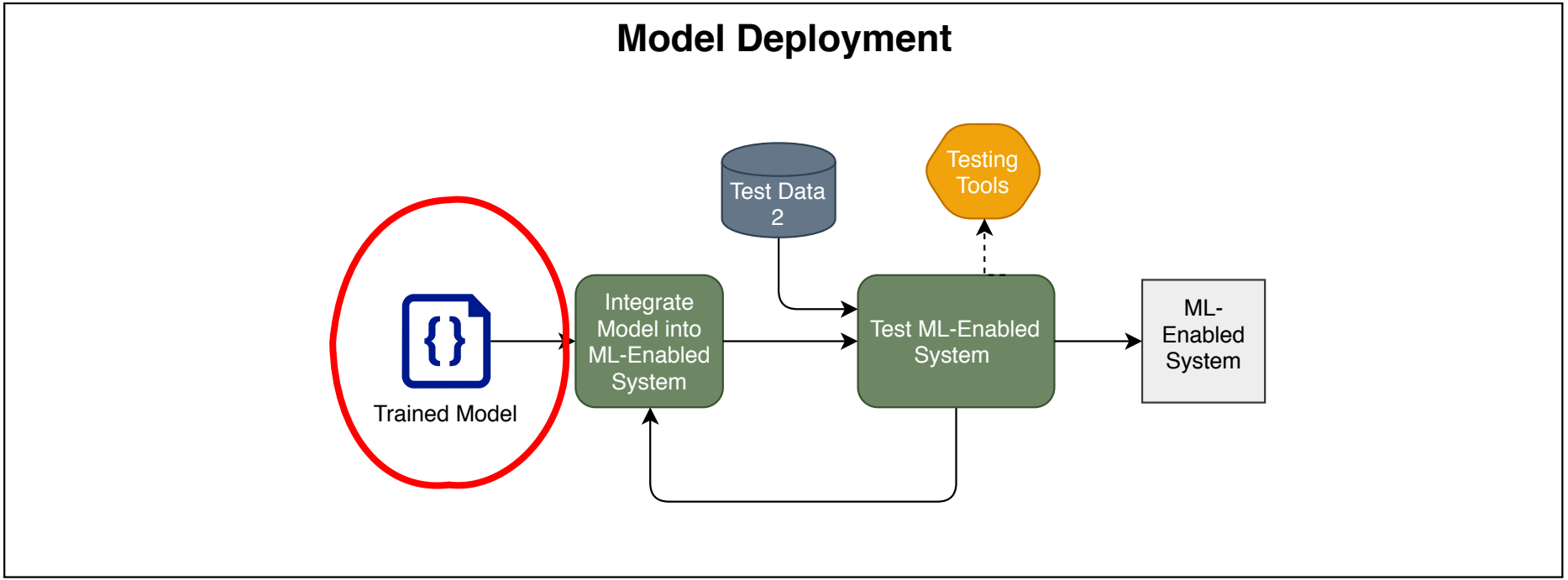
Assigned to ML algorithm or model object?

ML algorithm or ML model object



ML algorithm or ML model object



CVE-IDs are:

- Assigned to implementation vulnerabilities in products
- Assigned to protocol vulnerabilities
- Tag any instance of a vulnerable product

CVE-IDs are not:

- Assigned to individual instances of vulnerabilities
- Assigned to categories of vulnerabilities (CWE)
- Assigned to configuration errors

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What would change in vulnerability management if CVE-IDs were assigned to ML algorithms? ML model objects?

Vulnerability Management† and ML Algorithms

1. Vulnerability discovery / research
2. Vulnerability report intake
3. Vulnerability analysis
4. Vulnerability coordination
5. Vulnerability disclosure
6. Vulnerability response

† https://www.first.org/standards/frameworks/csirts/csirt_services_framework_v2.1#7-Service-Area-Vulnerability-Management

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Thanks for your time.

Questions?

Contact: spring AT cmu<>edu
or https://kb.cert.org/vuls/report/