Outside the Closed World: On Using Machine Learning For Network Intrusion Detection

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- Outlier Detection
- High Cost of errors
- Semantic gap
- Diversity of network Traffic
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 - Difficulties of data
 - Mind the gap
 - Adversarial Setting



Recommendations for using machine learning

- Understanding the Threat Model
- Keeping the scope Narrow
- Reducing the costs
- Evaluation
 - Working with data
 - Understanding results





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Figure: Amazon Logo

Figure: Netflix Logo



Figure: Natural Language procesing



Figure: Spam

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Machine learning in intrusion detection



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Recommendations for using machine learning





Challenges of using machine learning



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High Cost of errors



Figure: Error Cost





Figure: Semantic Gap



Diversity of network Traffic



Figure: Network Traffic



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