# Phishing Detection Using Semi-Supervised Methods with New Features

Victor Zeng

Advisor: Rakesh M. Verma

# Motivation

- Phishing is the act of sending fake emails to trick a user into doing something.
  - Beachhead for 95% of attacks on enterprise networks
  - Average cost: $1.6 Million
- Cannot depend on user to identify phishing emails
- Creating labeled training data is expensive

Source: Eitan Katz. Phishing statistics: What every business needs to know, May 2019

# Goal

- Improve upon the current state-of-the-art THEMIS model
- Publish a paper based on my results

# Objectives

- Identify new features which can be used for phishing detection
- Use semi-supervised methods to detect phishing emails

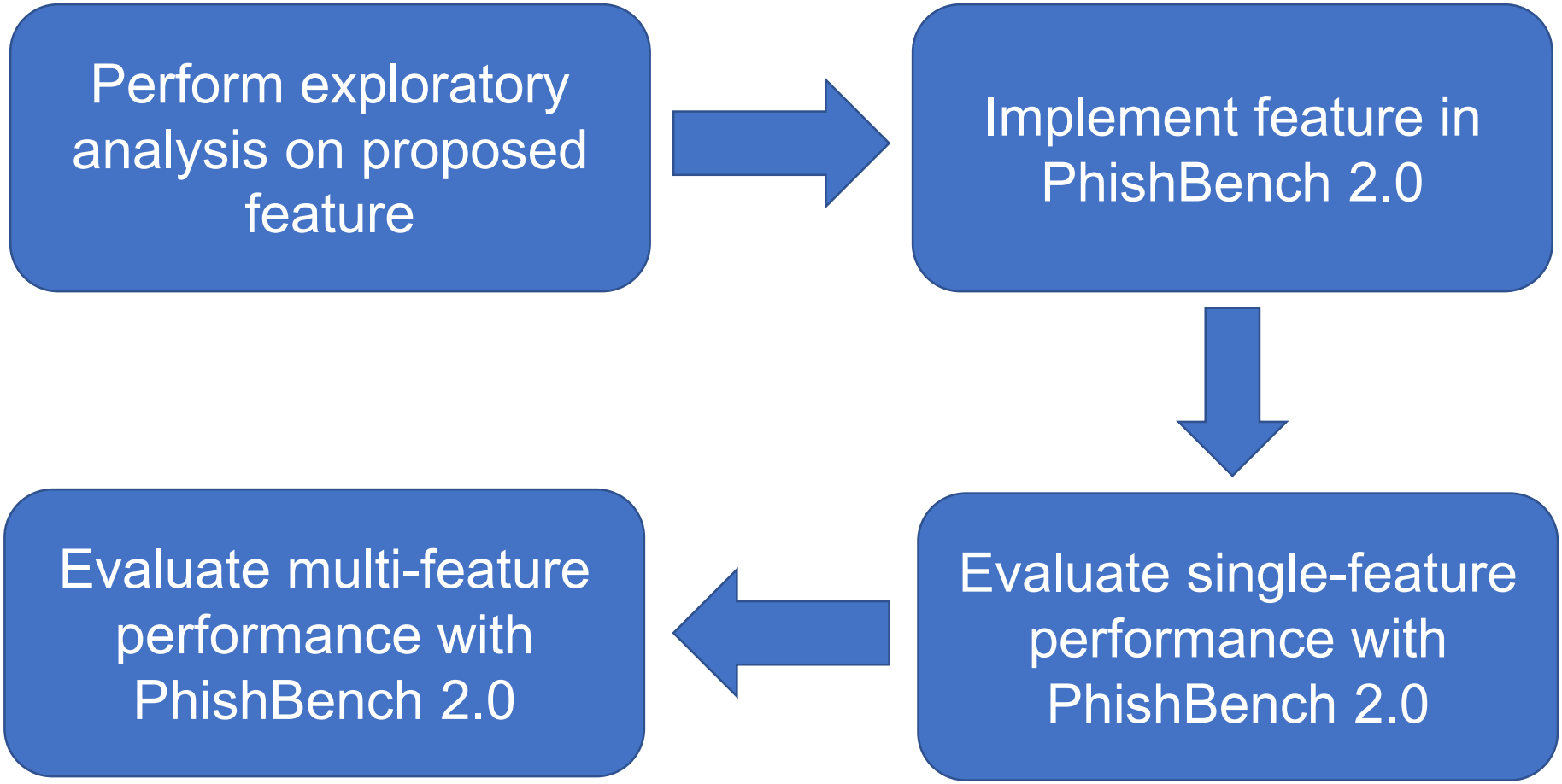
# Expected Impact

- Improve performance of phishing detection methods
- Decrease the amount of labeled data required to train phishing detection models

# Deliverables

- Code + Documentation
- Poster
- Report
- Paper
- Final Presentation

# Methods: Objective 1



# Results: Objective 1

- Spellcheck ratio feature
  - Statistically different between phish and legit emails (p-value: 1.512e-22)
  - Random Forest identifies 54% of phish emails in single feature test

# Conclusions

- Spellcheck ratio is a promising feature for phishing detection

# Methods: Objective 2

Extend PhishBench 2.0 to support semi-supervised methods

Implement semi-supervised methods in PhishBench 2.0

Evaluate performance of semi-supervised methods against pre-existing supervised methods

# Remaining Work

- Evaluate features from Statement Analysis
- Acquire additional datasets
- Work for Objective 2

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