SaTC: CORE: Medium: Collaborative:

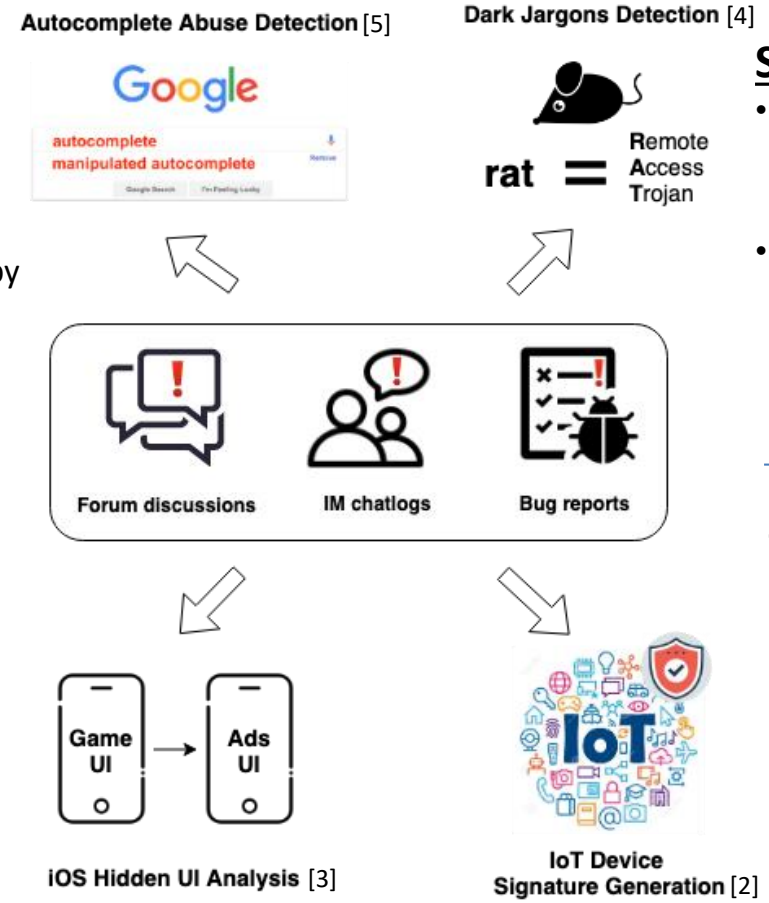
Understanding and Discovering Emerging Cybercrimes through Automatic Analysis of Online Text Traces

Challenge:

- Innocent-looking deceptive content can be easily blended into legitimate traces
- Encoded words such as dark jargons are extensively used by cybercriminals
- Hard to interpret the text information and extract actionable knowledge

Solution:

- Applying NLP techniques to discover the semantic discrepancies in the cybercrime text content
- ML techniques can help discover in-depth knowledge from the text traces



Scientific Impact:

- A critical step for more intelligent and automated defense against Cybercrimes based on text content
- Result in more in-depth understanding of the dark business world, enabling identification of its key weaknesses and rapid responses to new threats

Broader Impact:

- Will contribute to new interdisciplinary research on applying NLP and learning techniques to support intelligent security protection
- Outcomes of the project can be transferred to the industry partners
- Working closely to involve HBCU students
- Organizing an annual semantics-aware security challenge

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Publications

- **[1] Into the Deep Web: Understanding E-commerce Fraud from Autonomous Chat with Cybercriminals**
  Peng Wang, Xiaojing Liao, Yue Qin, XiaoFeng Wang
  to appear ISOC Network and Distributed System Security Symposium (NDSS), 2020
- **[2] Understanding and Securing Device Vulnerabilities through Automated Bug Report Analysis**
  Xuan Feng, Xiaojing Liao, XiaoFeng Wang, Haining Wang, Qiang Li, Kai Yang, Hongsong Zhu, Limin Sun
  in Proceeding of USENIX Security Symposium (Security), 2019
- **[3] Understanding iOS-based Crowdturfing through Hidden UI Analysis**
  Yeonjoon Lee, Xueqiang Wang, Kwangwuk Lee, Xiaojing Liao, XiaoFeng Wang, Tongxin Li, Xianghang Mi
  in Proceeding of USENIX Security Symposium (Security), 2019
- **[4] Reading Thieves' Cant: Automatically Identifying and Understanding Dark Jargons from Cybercrime Marketplaces**
  Kan Yuan, Haoran Lu, Xiaojing Liao, XiaoFeng Wang.
  in Proceeding of USENIX Security Symposium (Security), 2018