Project Ideas

1 Bachelor Project Ideas

- **Disinformation**
  - Climate-related disinformation
  - Disinformation detection methods
    * Taken
  - Measuring the spread of disinformation
    * Taken
  - Methods to Combat disinformation
    * SOK: Compare theory with practice (do platforms adhear to the recommendations from the academic literature or do their own thing). Compare the platforms. How should it work and does it?

- **Stylometry**
  - Adversarial Stylometry
    * Review and compare the works on circumventing styloemtry. Compare automated techniques with manual techniques. Table: for each - model, adversary capabilities, method of evasion, evaluation criteria.
  - Author Attribute Classification (profiling)
    * What attrubites are considered?
    * Limitations of this reserch (stated and otherwise)
    * Methods used
    * Corpuses (and valitity of ground truth)
    * Generalizability
    * justification for why the method words
  - Forensic Application of Stylometry
    * SOK: Forensic Application of Stylometry - Review the literture on stylometry in different fields (CS/ML, FS, Linguaistics, etc.). Evaluate the usefulness of this technology in FS (reference material, quality of the trace, FP/FN/Acc, explainability, open world). Create a few case studies (will and testaments, suicide notes, etc.) and evalute the use of stylometry in these cases.

- **Malicious Social Media Behavior**
  - Reddit Manipulation
    * Sockpuppets
    * malicious bots

* disinformtion/fake news
* upvote manipulatin
* karmawhoring

– Facebook Manipulation

* Cambridge Analytica
* Ad manipulation
* Impacts of manipulation...

– Hate and Harassment on social media

* SOK: Migration of fringe users on social media platforms (incels, r/the_donald).

– Social-media-based Crime

* SOK: Systematic Analysis of Social Media-Related Cybercrimes - Provide a comprehensive overview of various types of cybercrimes that are facilitated or conducted through social media platforms. Categorize (taxonomize) these crimes and their methods.
* Goal: Money, interpersonal, etc.
* Who is the target?
* Platforms
*

– Online Radicalization

* SOK: Online Radicalization and Extremism on Social Media - Focus on the use of social media in radicalization and recruitment of individuals into extremist ideologies. Discuss the platforms, strategies, and countermeasures studied in this literature.
* SOK: The Dark Web and Social Media Links - Explore the connections between social media and the dark web, where various illicit activities, including the sale of illegal goods and services, occur. Discuss the challenges in monitoring and regulating these activities.

• **Social Media Analysis**

– Mental Health Disclosures and Detection on Social Media

* SOK: Balancing Mental health support and user privacy - Users often share personal experiences related to their mental health and well-being on social media platforms. Recently, researchers have developed methods for detecting and analyzing mental health disclosures or statuses, raising important questions about privacy, data security, and ethical research practices. This Systemisation of Knowledge (SoK) paper systematically examines the existing research landscape, focusing on the delicate balance between mental health support and user privacy.
* Methods for detecting mental health status of users (not disclosures).
* Comparing intervention methods.

• **Machine Learning**

– Website Fingerprinting Methods

* Trace the arms race that is Website Fingerprinting Attacks and Defenses. Highlight key challenges and suggesting future research directions.

– Applications of Machine Learning in FS

* Find the applications in which ML is *currently* being used in FS and explore the implictions of these applications

– Adversarial Machine Learning

- Poisoning attacks on ML Models
- ML Model Stealing Attacks
- Natural Language Processing for Digital Forensics
- Deep fake detection
- Machine Learning for Malware Detection