**Introduction**

- Dark Web forums offer members of extremist and terrorist groups a medium to communicate.
- Information contained within Dark Web forums represents a significant source of knowledge for security and intelligence organizations.
- We have developed systems supporting the large-scale collection, search, and analysis of Dark Web forums, specifically addressing the needs of security analysts.

**Major Functionality**
- The Arizona Forum Spider uses breadth and depth first (BFS and DFS) traversal for crawl space URL ordering based on URL tokens, anchor text, and link levels.
- Automated discovery of proxy servers to distribute collection and increase reliability.
- Website wrappers are utilized to identify updated content for collection, allowing for incremental spidering.

**Overview**

The goal of the Arizona Forum Spider for Dark Web forums is to assist in the automated collection of forum communications and other content of interest.

**Major Functionality**
- The Arizona Forum Spider utilizes major function of interest.
- Information contained within Dark Web forums represents a significant source of knowledge for security and intelligence organizations.

**AZ Forum Spider**

- **Overview**
  - The Arizona Forum Spider provides functionality to aid in the analysis of Dark Web forums within a centralized repository.
  - Provides level statistics and graphical depiction of posting activity over the forum lifespan.
  - Facility to browse forum communications by member, thread, or topic period.
  - Keyword search of thread titles or message bodies.
  - Embedded Google Translation to facilitate multilingual analysis.

**AZ Sentiment Analyzer**

- **Overview**
  - The Arizona Sentiment Analyzer is a web-based portal for the analysis of opinions and emotions expressed in Dark Web forum communications.
  - Enhances the understanding of forum communities and participants.
  - Provides tools for sentiment and affect expression of community, for easy comparison among forums.
  - Analysis across various dimensions, featuring impactful visualizations.

**AZ CyberGate Text Analyzer**

- **Overview**
  - A comprehensive system for the analysis of forum communications, utilizing automated text mining and visualization methods.

**Major Functionality**
- CyberGate can aid in Dark Web forum analysis by providing the facility to characterize the forum and compare its participants utilizing text mining approaches.
- Rich visualization offers new perspectives of the data to analysts.
- Incorporates feature selection methods based upon principle component analysis and decision tree models.
- Presents rich text visualization using multi-dimensional scaling, parallel coordinates, and ink blots.

**AZ Forum Portal Overview**

The Arizona Dark Web Forum Portal is a centralized repository of Dark Web forum communications. The portal is to provide the functionality to browse, search, and analyze the Dark Web forum collections. The current portal contains more than 2.5 million messages across 7 forums.

**Major Functionality**
- The Arizona Dark Web Forum Portal provides functionality to aid in the analysis of Dark Web forums within a centralized repository.
  - Forum-level statistics and graphical depiction of posting activity over the forum lifespan.
  - Facility to browse forum communications by member, thread, or topic period.
  - Keyword search of thread titles or message bodies.
  - Embedded Google Translation to facilitate multilingual analysis.

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