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### **Research Area: Computational Sciences and Engineering**

There is an enormous amount of content being replicated through peer-to-peer (p2p) networks and most of the content being replicated is either copyrighted or illegal. The focus of this project is to explore the behavior of peers which share specific content, in particular initial seeds and highly active peers, by developing techniques and software tools to monitor torrent indexing sites and torrent trackers as well as make content-to-Internet Address (IP address) to time mappings. BitTorrent is taken as the peer-to-peer network test bed since it is one of the most widely used p2p protocols today. A virtual network in a closed and controlled environment is used to simulate the internet and generic test data that will not involve any actual file sharing through the World Wide Web, only on a private virtual network. This project is intended to establish a new methodology and techniques for monitoring specific content, profile initial seeders and highly active peers, and correlate initial seeders and highly active peers with torrent indexer usernames. This involves designing a new software tool to crawl torrent indexers for recently added torrents, designing a new software tool to query torrent trackers and saving peer list data to a database, and designing a new software tool to verify IPs in the peer list by using active methods. Web Feeds, DHT, and Gossip protocol will also be investigated and evaluated for possible future tracking vulnerabilities that can be exploited.

### **Research Mentor:**

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