

Developing a Comprehensive Network Traffic Monitoring System; Approaches,  
Challenges, and Solutions  
(Technical Report)

The Balancing Act: Navigating the Tight Rope of Online Privacy  
(Sociotechnical Research Paper)

An Undergraduate Thesis Portfolio  
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Bachelor of Science in Computer Science

by

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## **Preface**

The internet is not only a medium of information exchange, commercial transactions, and interpersonal communication; it is also a realm of controversial value extraction, legal and illegal.

The gravity of cyberthreats grows as artificial intelligence augments attacks and as dependence on online systems grows. Critical infrastructure systems, for example, are increasingly vulnerable to cyberthreats. A review of cyberthreat developments and of evolving defenses was conducted. To succeed, defenders must be at least as innovative as cyberattackers.

In the United States, ecommerce enterprises, data collectors, and privacy advocacies compete to draw a line between permissible and proscribed online data collection. Data collectors defend unlimited online data collection by arguing that it supports valuable but cost-free online services, by associating it with better online user experiences, and by drawing attention to users' right to opt out. Privacy advocates, however, reply that unlimited online data collection is a violation of personal rights, that it constitutes uncompensated value extraction from users, and that opportunities to opt out are deliberately inconvenient so as to promote excessive data collection.