The Role of Emotion in Risk Communication and Warning: Application to Risks of Failures to Update Software

Challenge:

- Users often ignore recommended software updates and security warnings, leading to increased risk of cyber-attacks.
- The PI identifies that ignoring and failing to address the role of emotion in the decision making process in response to pop-up warning messages contribute to the design of ineffective warning mechanisms and resulting noncompliance.

Solution:

- Investigate the current designs and delivery mechanisms of pop-up warning messages, and leverage the Communication-Human Information Processing (C-HIP) framework as an investigative tool to identify their limitations from an affective-cognitive perspective.
    - Develop User Affective Experience (UAX) scale to measure discrete emotions involved in computer use, and specifically relating to decisions involving pop-up warnings.
    - Develop a rational decision framework to identify differences in perceptions between users' who follow advice to those who do not.
- Investigate design of emotion-aware communication and delivery mechanisms to change users' behavior.

Scientific Impact:

- Operationalize the role of emotion in user experience in the context of pop-up warnings.
- Identify and leverage the anticipated and anticipatory emotions to design effective software update and security warning messages.
- Fundamentally change the way software vendors communicate the risks of running buggy and vulnerable software, and warn users about security risks.

Broader Impact:

- Identifies the role of specific emotions in designing warning communication strategies that emphasize prosocial goals of software manufacturers/service providers in helping to keep computing systems up-to-date and secure.
- Underscores the greater importance of maintaining civility and community compared to creating selfish individual advantage in creating and maintaining sustainable safe and secure cyberspace.
- This grant partially supported the work of one PhD thesis and resulted in multiple top-tier publications.