SEC_RITY IS NOT COMPLETE WITHOUT U!

Roy Campbell

Lecture 1: Motivation, Introduction, The importance of Information Assurance and the assessment of risk.

ABOUT THE INSTRUCTOR

- 43 years as Professor of Computer Science

- 3 years as Associate Dean of Engineering for IT

- 20 years as Director of NSA approved Center of Educational Excellence on Information Assurance

- 10 or more Projects in Cyber Security

- His PhD advisor was Brian Randell who discovered the existence of the Colossus machine – a British wartime effort at Bletchley Park to decode automatically German Encrypted war messages

- Now Emeritus Professor with Wife Ann and 6 grandchildren, 3 sons, 1 daughter

- Trisha Crowley, as his class moderator, will try to keep things running smoothly despite his help.

RULES OF THE ROAD

- Please ask questions but at allotted times (middle or end of lecture)
- Email rhc@Illinois.edu for more lengthy suggestions, questions, and comments.
- Many slides will have an attribution of the information source. If they don't, Google and Wikipedia can probably tell you.
- My knowledge is typical of some Professors – I know a lot about a very small amount of knowledge.
- Please don't expect me to be able to answer all your questions about Windows 11 or Apple Monterey 12.1. They were built after I retired.
- I have no idea about the inner motives of the government, industry, Russian mafia, or cyber criminals. They do all provide a good motivation for the employment of security professionals.
- There are no guarantees or safety assurances implied by anything I might say in class.

WEEK 1: INTRODUCTION

1. Motivation [9–19]:
   a) The Dark Web and Cost/Benefit of Cybercrime
2. A brief introduction to
   a) Information Assurance Principals [19–27]
   b) The Assessment of Risk [28–33]
   c) ATTACKS. An EASY EXERCISE [34–38]
3. GUIDELINES TO AVOID CYBER CRIME [39–63]
4. PASSWORDS [slide 64–69]
5. Cyber Warfare – Russia/Ukraine Cyberwar Part 1 [70-72]
6. Killerbots, MOVIES and references [72-]

WEEK 2: HOW CYBERSECURITY AFFECTS US ALL

- Infrastructure, Finance, Supply Chains and Denial of Service
- News, Reputation, Disinformation, Fake News
- Ransomware, Pfishing, Privacy, Property Theft
- Cloud hacks and data breaches.
- Practical Exercise in Computer Security
- Making your Home Computing Secure
- Russia/Ukraine Cyberwar maybe – Part 2

WEEK 3: IS IT POSSIBLE TO MAKE SOFTWARE, HARDWARE, AND NETWORKS SECURE?

- The fallibility of humans?
- What does theory tell us?
- The difficulties of governance, management, and maintenance.
- Encryption: its uses and abuses.
- The dark web. Cybercrimes. Mobiles. Bitcoin. The Great Firewall of China.
- Making your home network secure?
- Russia/Ukraine Cyberwar perhaps – Part 3

WEEK 4: CYBER WARFARE.

- Principles of Cyberwarfare
- War Games
- Resources
- Terrorist Networks and the Dark Web
- Trading in Weapons
- Examples taken from war games, pipeline attacks, the nuclear industry, invasions, drones, disinformation, SolarWinds, SolarStorm, Sunburst, grassroot revolution, ransomware
- Practical Exercise in Security: What you can do?
  - Democracy, Freedom of Information, Standards, Protection through Law
- Russia/Ukraine Cyberwar or maybe latest Cybercrime – Part 4

INFORMATION RESOURCES

- https://cybersecurityventures.com/movies-about-cybersecurity-and-hacking

- 2020 Internet Crime Report https://www.ic3.gov/Media/PDF/AnnualReport/2020_IC3Report.pdf

- 10 Biggest Cyber Attacks in History https://clearinsurance.com.au/10-biggest-cyber-attacks-in-history/

- Dark Web Price Index. https://www.privacyaffairs.com/dark-web-price-index-2021/

- 2022 Cybersecurity Almanac: 100 Facts, Figures, Predictions And Statistics,https://cybersecurityventures.com/cybersecurity-almanac-2022/

- FBI/IC3 – Internet Crime Report https://www.computerweekly.com/opinion/The-shape-of-fraud-and-cyber-crime-10-things-we-learned-from-2020

- 11 ways to help protect yourself against cybercrime (contains advertising unfortunately) https://us.norton.com/internetsecurity-how-to-how-to-recognize-and-protect-yourself-from-cybercrime.html

- Advice on passwords https://www.security.org/how-secure-is-my-password/

- Horror Movie https://www.youtube.com/watch?v=9fa9lVwHHqg