FrontLine Cyber Solutions

Cyber Security – What we as an industry are doing wrong?

Mr. William Hoffman

Who am I

- Co-Founder & CSO at FrontLine Cyber
  - https://www.frontlinecyber.com
- Exploit research and development
- Red Team and Blue Team
- 25+ years in Cyber Security
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Today's Topics

- Quick history of Cyber Security.
- Attackers.
- Breaches.
- What we as an industry are doing wrong?
- Leveraging AI in Cyber Security
- Questions?

Quick History of Cyber Security

- We will start in the 1970s with ARPANET
  - Creeper (virus) / Reaper (antivirus)
  - Unauthorized access to systems
  - Password authentication
  - Unix OS
- Moving on to the 1980s
  - TCP/IP becoming widely used
  - Commercial antivirus created
  - Backdoors in software (War Games)
- Moving on to the 1990s
  - Systems move on to the World Wide Web (www)
  - Early Phishing Attempts
  - Creation of DefCon Security Conference – June 1993
  - L0pht Heavy Industries founded in 1992 (Testified in front of Congress in 1998 on the topic of 'Weak Computer Security in Government)

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Throwback

Peiter “Mudge” Zatko

L0pht Co-Founder vs CIO of DARPA

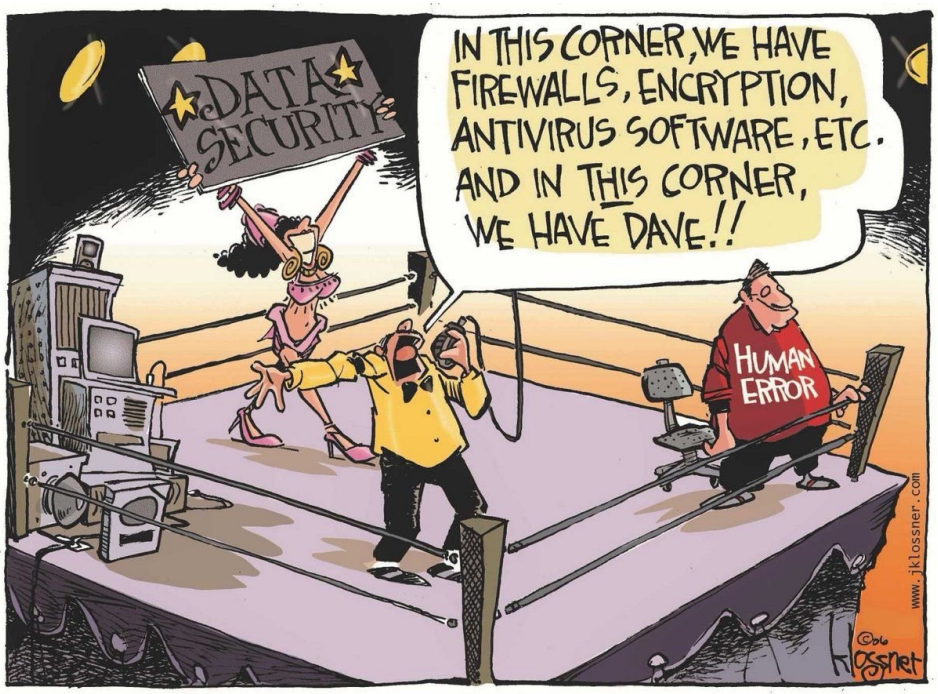
Quick Look at the 2000s

Year	Threat / Malware	Type / Vector	Key Impact / Significance
2000	ILOVEYOU	Email worm	Massive spread via Outlook; millions infected.
2001	Code Red	Web server worm	Exploited IIS; fast spread; DDoS attacks (e.g. White House).
2003	SQL Slammer	Database worm	Spread in minutes; global network slowdowns.
2008	Conficker	Botnet worm	Huge botnet across many countries; showed persistence.
2010	Stuxnet	ICS/SCADA worm	First major state-sponsored infrastructure attack; damaged centrifuges.
2017	WannaCry	Ransomware worm	Used EternalBlue; hit 200,000+ systems, including hospitals; huge financial damage.

Attackers

- Today we are seeing attacks come from all different kinds of threat actors.
  - Nation States
  - Ransomware Groups
  - Corporate espionage
  - Ecoterrorism

What about Dave? (Human Error)



Attackers cont…

So, what about Dave?

- We have seen systems that are not fully hardened.
- Misconfigured systems deployed to production.
- User not following security awareness training.

- Security risk assessments over the past 4 years, we have seen a lack in security approach.
  - Missing security patches
  - Missing endpoint protection
  - No central monitoring (Security operations center or SIEM)
  - 3rd party vendors not allowing systems to be updated
  - Normal users have admin rights
  - Users clicking on links and submitting creds.

Breaches

- Salesforce
  - The attacks did not exploit a vulnerability within the core Salesforce platform, but relied on compromised OAuth tokens for Salesloft Drift, a third-party AI chat bot.
- Akira Ransomware
  - Targeted organizations using SonicWall Gen 7 firewalls with SSL VPN enabled, initially suspected as exploiting a zero-day vulnerability, but later traced to the known CVE-2024-40766
- NPM Packages / CrowdStrike
  - An ongoing supply chain attack has compromised multiple npm packages published by CrowdStrike, extending a malicious campaign known as the “Shai-Halud attack”.

Sidenote

- On July 23, 2025, CrowdStrike put out the following –
  - CrowdStrike Falcon Prevents Supply Chain Attack Involving Compromised NPM Packages
- On September 16, 2025
  - A new supply chain attack has compromised multiple npm packages maintained by the crowdstrike-publisher account, marking a worrying continuation of the so-called “Shai-Halud attack.”
  - Developers and organizations using these packages should take immediate action to safeguard credentials and prevent unauthorized code execution.

What we as an industry are doing wrong

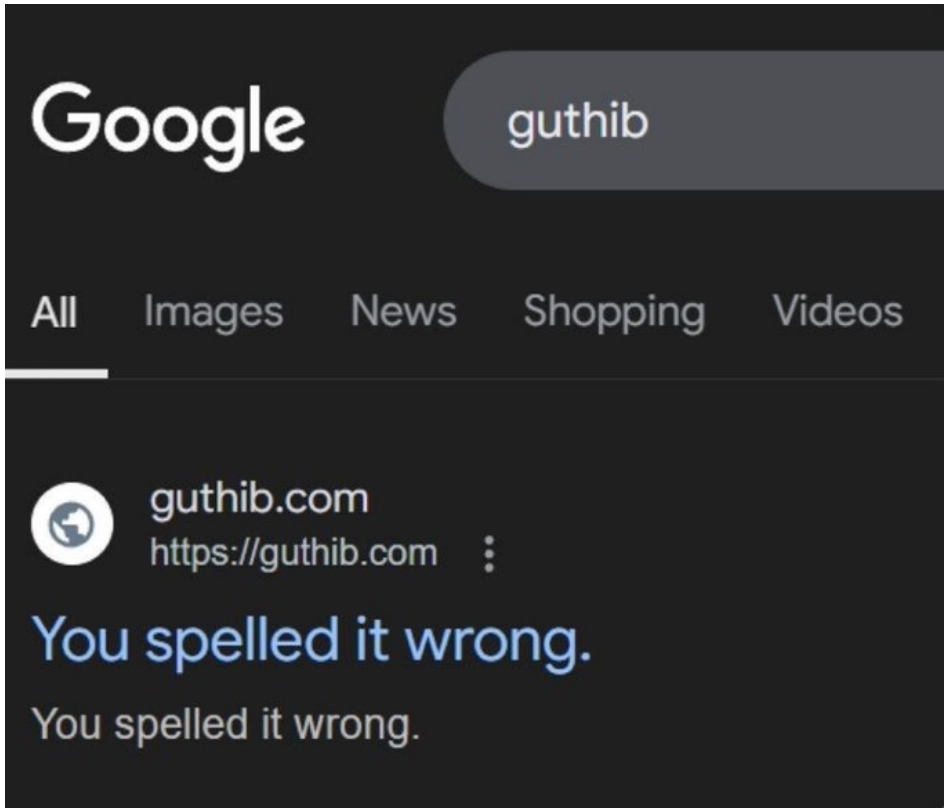
- Since the 1980's we have been fighting cyber attacks
- Since the 1990's with DefCon and Conferences for security awareness

- What are we missing? We are seeing the same type of attacks since then, and we have had "Standards / Framework" since 2005

  - NIST 800-53 – Started in 2005
  - NIST SP 800-171 - Started in 2015
  - Now we have CMMC
- Five areas where all three overlap
  - **Cryptographic, Access Control**, **Configuration & System Hardening**, **Protection of Data in Transit**, **and Auditability & Compliance**

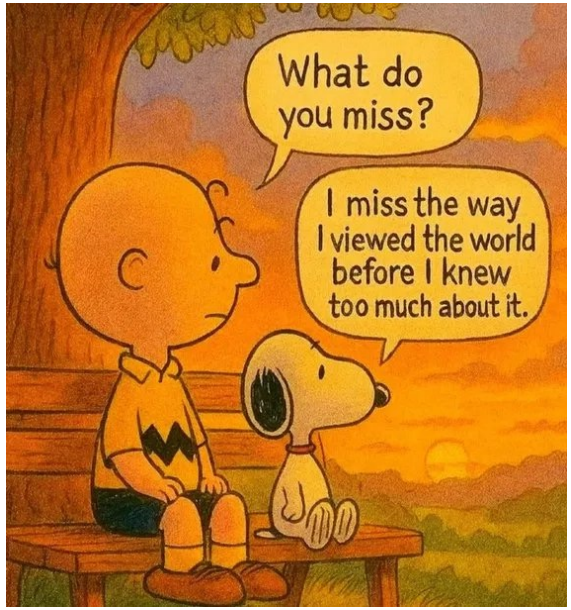
What we as an industry are doing wrong cont…

- Cyber Security 101 – Know thyself.
  - We come across so many companies that have no asset list, asset information or know what is on their network.
- Normal users with Domain level access.
- Unsecure software – Bad software development and bad coding practice
- User still clicking on links, installing software, reusing password, and sharing creds with attackers.



How do we fix this issue?

- Asset inventory
- Hardening systems
- Patching systems and firmware
- System monitoring and reporting
  - (Attacks will happen, we need to detect them)
- Endpoint protection
- Secure Software development and testing
- Tabletop exercises
- BC/DR Plans
- Playbooks (Formerly Runbooks) – Old School SOPs
- **Important number 1 – Security awareness training**
- **Important number 2 – Executive Team buy in**



Leveraging AI in Cyber Security

Pros

1. **Threat Detection at Scale**
AI can analyze enormous volumes of network traffic, logs, and endpoint data much faster than human analysts.

2. **Predictive Capabilities**
By identifying patterns of attacker behavior, AI can forecast likely attack paths or detect early indicators of compromise (IoCs), giving defenders more time to react.

3. **Automation of Repetitive Tasks**
AI reduces analyst fatigue by automating routine tasks like malware classification, triage of alerts, and patch prioritization. This allows human teams to focus on higher-level investigations and strategy.

4. **Improved Accuracy Over Time**
Well-trained AI models can adapt to evolving threats by continuously learning from new data, reducing false positives compared to rule-based systems.

5. **Faster Incident Response**
AI-driven security orchestration and automated playbooks enable quicker containment and remediation (e.g., isolating compromised endpoints within seconds).

6. **Insider Threat & Anomaly Detection**
AI excels at spotting subtle deviations in user or system behavior, which is crucial for detecting insider threats or compromised accounts.

Cons

1.**Adversarial Attacks Against AI**
Attackers can manipulate AI models with adversarial inputs (e.g., data poisoning, evasion techniques) to bypass detection or cause misclassification.

2. **High False Positives / Negatives if Poorly Trained**
If not properly trained on diverse, high-quality datasets, AI can overwhelm analysts with false alerts or miss sophisticated threats.

3. **Cost and Resource Intensive**
Building, training, and maintaining AI systems requires specialized talent, computational power, and ongoing investments—barriers for smaller organizations.

4. **Lack of Explainability**
AI decisions (especially deep learning models) are often “black boxes.” This lack of transparency makes it harder for analysts to trust or validate alerts.

5. **Data Privacy Risks**
AI systems require large datasets for training, which may involve sensitive user or organizational information. Improper handling can lead to compliance issues.

6. **Dependence and Overconfidence**
Organizations may become overly reliant on AI tools and underinvest in human expertise, leaving them vulnerable if the AI is compromised or fails.

Questions?

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