

SecurePass

Honors Senior Project

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CSCI 499 | Dr. Hayes

Statement of Purpose

- Weak passwords → major security risk
- 81% of breaches involve weak/compromised passwords
- Goal: Help users create stronger passwords in real time
- Local, privacy-focused evaluation

My “Why”

- Interest in cybersecurity
- Passion for protecting users
- Real-world relevance
- Combines security & usability

Honors Component

- Enhanced as an Honors Capstone Project
- Required real-world deployment
- Chrome Web Store preparation

Live Demo

Implementation

- Chrome Extension (Manifest V3)
- JavaScript, HTML, CSS
- Key components:
 - Content script (field detection)
 - Popup (evaluation logic)
 - SHA-256 hashing
- Local processing only

Key Features

- Real-time feedback
- Entropy-based evaluation
- Actionable suggestions
- Educational insights
- Fully local (privacy-focused)

Challenges Overcome

- Secure password history (hashing vs plaintext)
- Dynamic websites (MutationObserver)
- Chrome deployment requirements

Test Results

- 100% of unit tests passed
- 6/6 users understood feedback
- <2 second response time
- No network activity detected

Future Enhancements

- Advanced password analysis
- Cross-browser support
- Optional history controls
- Integration with breach databases

Conclusion

- Improves password security
- Educates users
- Privacy-focused design
- Real-world ready

Questions?