

### **Abstract - old**

The GuardFile system is a secure web based cloud application designed to help users safely store, organize, and manage personal files while maintaining the core cybersecurity principles of confidentiality, integrity, and availability. GuardFile applies strong security protections including asymmetric encryption, multi factor authentication, audit logs, malware scanning, and adaptive access control. Research in encryption and secure cloud storage shows that strong cryptographic methods are essential for protecting sensitive data in cloud environments (Al Saeed 2019; Vijayarangan and Florence 2023). To verify user identity, GuardFile integrates password authentication, face recognition, and voice matching, which aligns with modern research that highlights the importance of multi factor authentication for preventing unauthorized access (Zhou, Chekole, and Ang 2025). GuardFile also provides real time email alerts and detailed audit logs that record sign in time, device, IP address, and general location to help users identify unusual activity. In addition to securing data, GuardFile features a Security Score system that educates users on safe digital practices and encourages stronger cybersecurity habits. By combining encryption, authentication, access control, and user education. GuardFile creates a practical and secure environment for individuals who want both protection and awareness while managing their data in the cloud.

### **New Abstract**

The growing reliance on digital file storage has introduced significant risks to personal data security, as individuals increasingly store sensitive files on platforms that may lack robust protections against unauthorized access, data breaches, and malware. Existing consumer storage solutions often prioritize convenience over security, leaving users without meaningful visibility into how their data is protected or accessed. GuardFile addresses this gap by providing a secure, web-based file storage system that empowers users to safely store, organize, and manage personal files while upholding the core cybersecurity principles of confidentiality, integrity, and availability.

The primary design goal of GuardFile is to deliver a secure file storage system that integrates enterprise-grade security into an accessible personal platform. Specific sub-goals include implementing strong asymmetric encryption for data at rest and in transit, providing multi-layered identity verification, enabling real-time threat detection and alerting, and promoting user awareness of cybersecurity best practices.

To meet these goals, GuardFile defines several key requirements. Functionally, the system must support file upload, organization, and retrieval alongside asymmetric encryption, multi-factor authentication via password, face recognition, and voice matching, malware scanning, adaptive access control, and detailed audit logging. Non-functionally, the system must ensure high availability, low-latency file access, and scalability for individual users. Research confirms that strong cryptographic methods are essential for protecting sensitive data in cloud environments (Al Saeed 2019; Vijayarangan and Florence 2023), and that multi-factor authentication is critical for preventing unauthorized access.

GuardFile is being developed as a web application using a layered architecture that separates the frontend interface, backend logic, and encrypted storage components. Core features currently implemented include asymmetric encryption, password-based authentication, trusted device management, and audit log generation recording sign-in time, device, IP address, and general location. Features under active development include face recognition, voice matching, malware scanning, and the Security Score system, which educates users on safe digital practices and provides measurable feedback on their security habits. Testing and validation are being conducted through functional testing of individual modules and security-focused review of authentication and encryption flows.

At this stage, GuardFile successfully encrypts stored files and generates accurate audit logs, with real-time email alerts functional for sign-in events. Remaining development is focused on integrating biometric authentication and completing the Security Score module. Upon completion, GuardFile is expected to provide individuals with a fully secure, transparent, and education-forward cloud storage experience that bridges the gap between strong data protection and everyday usability.

## ECS Student Project Innovation Expo 2026

### Abstract Review Rubric

Category	Pts	Scoring
<b>Project Background and Problem Statement</b> <ul style="list-style-type: none"> <li>Describes the project's <b>background, problem statement, and scope</b>.</li> <li>Highlights <b>key challenges and real-world impact</b>.</li> <li>Explains the project's <b>relevance to the field</b>.</li> <li>Emphasizes its potential <b>value</b> and significance.</li> </ul>	10	0 – Absent 2 – Mentioned but unclear 4 – Minimal explanation, lacks depth 6 – Moderate explanation, some details provided 8 – Detailed explanation, most aspects addressed 10 – Extensive explanation, all aspects thoroughly covered
<b>Goals and Objectives</b> <ul style="list-style-type: none"> <li>Clearly states the <b>primary design goal(s)</b> of the project.</li> <li>Includes <b>specific sub-goals</b> that contribute to the main objective.</li> <li>Ensures goals are <b>measurable, achievable, and aligned</b> with the project scope.</li> </ul>	5	0 – Absent 1 – Mentioned but unclear 2 – Minimal explanation, lacks specificity 3 – Moderate explanation, some details provided 4 – Detailed explanation, most goals identified 5 – Extensive explanation, clear and well-defined goals

<p><b>Design Requirements/Specifications</b></p> <p><b>For Hardware-based Projects:</b></p> <ul style="list-style-type: none"> <li>• Clearly defines <b>technical requirements</b>, including performance parameters and operational constraints.</li> <li>• Specifies <b>materials, components, and fabrication methods</b> essential for development.</li> <li>• Identifies <b>design constraints</b> such as size, weight, cost, power consumption, or regulatory compliance.</li> </ul> <p><b>For Software-based Projects:</b></p> <ul style="list-style-type: none"> <li>• Defines <b>functional requirements</b>, including core features and system capabilities.</li> <li>• Outlines <b>non-functional requirements</b>, such as performance, scalability, security, and user experience.</li> <li>• Identifies <b>platform constraints</b>, dependencies, and integration requirements.</li> </ul>	5	0 – Absent 1 – Mentioned but lacks detail 2 – Minimal explanation, missing key details 3 – Moderate explanation, some requirements and constraints provided 4 – Detailed explanation, most technical aspects covered 5 – Extensive explanation, all required details covered
<p><b>Methodology</b></p> <ul style="list-style-type: none"> <li>• <b>For Hardware-based Projects:</b> <ul style="list-style-type: none"> <li>◦ Describe the <b>overall system design</b> and analytical approach.</li> <li>◦ Provide detailed insights into the <b>prototype development process</b>, including fabrication, assembly, integration, and testing.</li> </ul> </li> <li>• <b>For Software-based Projects:</b> <ul style="list-style-type: none"> <li>◦ Describe the <b>system architecture</b>, development approach, and key technologies used (e.g., programming languages, frameworks, libraries).</li> <li>◦ Outline the <b>testing and validation</b> process, including performance benchmarking and debugging.</li> </ul> </li> </ul>	10	<p><b>For Hardware-based Projects:</b></p> <ul style="list-style-type: none"> <li>• 0 – Absent</li> <li>• 2 – Mentioned but lacks clarity</li> <li>• 4 – Minimal explanation, lacks some details</li> <li>• 6 – Moderate explanation, some details of design and testing</li> <li>• 8 – Detailed explanation, most elements of the development process covered</li> <li>• 10 – Extensive explanation, all aspects of the process fully described</li> </ul> <p><b>For Software-based Projects:</b></p> <ul style="list-style-type: none"> <li>• 0 – Absent</li> <li>• 2 – Mentioned but lacks clarity</li> <li>• 4 – Minimal explanation, lacks some details</li> <li>• 6 – Moderate explanation, some details on development and testing</li> <li>• 8 – Detailed explanation, most key technologies and methods covered</li> <li>• 10 – Extensive explanation, all aspects of the methodology fully described</li> </ul>

<p><b>Results or Outcomes</b></p> <ul style="list-style-type: none"> <li>• <b>For Hardware-based Projects:</b> <ul style="list-style-type: none"> <li>○ Describe current development progress (e.g., <b>prototype fabrication, system integration</b>, initial testing).</li> <li>○ Outline <b>validation methods</b> and key performance metrics.</li> <li>○ State <b>expected final outcomes</b> and potential challenges.</li> </ul> </li> <li>• <b>For Software-based Projects:</b> <ul style="list-style-type: none"> <li>○ Summarize <b>development progress</b> (e.g., core features implemented, initial testing).</li> <li>○ Explain testing and validation methods (e.g., usability, performance, security).</li> <li>○ Describe <b>expected final outcomes and deployment readiness</b>.</li> </ul> </li> </ul>	10	<p><b>For Hardware-based Projects:</b></p> <ul style="list-style-type: none"> <li>● 0 – Absent</li> <li>● 2 – Mentioned but unclear</li> <li>● 4 – Minimal explanation, lacks key performance metrics</li> <li>● 6 – Moderate explanation, some validation methods and progress outlined</li> <li>● 8 – Detailed explanation, most results and outcomes covered</li> <li>● 10 – Extensive explanation, all aspects thoroughly addressed</li> </ul> <p><b>For Software-based Projects:</b></p> <ul style="list-style-type: none"> <li>● 0 – Absent</li> <li>● 2 – Mentioned but unclear</li> <li>● 4 – Minimal explanation, lacks testing and validation details</li> <li>● 6 – Moderate explanation, some testing and progress outlined</li> <li>● 8 – Detailed explanation, most aspects of outcomes and readiness covered</li> <li>● 10 – Extensive explanation, all aspects thoroughly described</li> </ul>
<p><b>Innovation and Originality</b></p> <ul style="list-style-type: none"> <li>• Demonstrates a <b>novel approach</b> to solving a problem.</li> <li>• Presents a <b>unique concept or methodology</b> that pushes the boundaries of existing solutions.</li> <li>• Highlights the <b>project's contribution to the field</b> by offering new insights, technologies, or applications.</li> </ul>	5	0 – Very poor, no innovative approach 1 – Poor, minimal novelty or contribution 2 – Moderate, some original aspects present 3 – Good, notable innovation but lacks full originality 4 – Very good, significant contribution to the field 5 – Excellent, highly innovative and contributes uniquely to the field
<p><b>Spelling, Grammar, and Completeness</b></p> <ul style="list-style-type: none"> <li>• Abstract is <b>well-written</b>, with correct spelling, grammar, and punctuation.</li> <li>• All required sections are <b>fully developed and complete</b>, with no missing information.</li> <li>• Writing is <b>clear, concise, and professional</b>, enhancing readability and comprehension.</li> </ul>	5	0 – Very poor, incomplete 1 – Poor, several sections incomplete 2 – Moderate, some sections incomplete 3 – Good, no sections incomplete 4 – Very good, no sections incomplete 5 – Excellent, no sections incomplete, highly readable