**TASK – 2**

**Application Domains and Complex Problems**

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| **Serial Number** | **Application Domain** | **Complex Problem Identified** | **Justification** |
| 1 | Cybersecurity – AI Threat Detection | Existing AI-based security solutions struggle with zero-day attacks and adaptive cyber threats. | According to Anderson (2001) in *Security Engineering*, a proactive approach is required to handle evolving threats. Using Design Thinking, cybersecurity models can be developed with real-time threat adaptation and AI-augmented risk assessments. |
| 2 | Renewable Energy – Smart Grid Optimization | Inefficiencies in energy distribution lead to wastage and unreliability in renewable sources. | Inspired by Lovins (1977) in *Soft Energy Paths*, decentralized and intelligent grid systems can optimize energy flow. Design Thinking enables iterative improvements in energy prediction models and adaptive load balancing. |
| 3 | Finance – AI in Fraud Detection | AI-based fraud detection models produce too many false positives, causing inconvenience and inefficiencies. | As per Kahneman (2011) in *Thinking, Fast and Slow*, understanding cognitive biases in fraudulent behavior enhances detection accuracy. Design Thinking aids in creating fraud detection systems that balance accuracy with user experience. |

This document presents three application domains with complex issues and justifications based on relevant literature references.