

Mathematical Addendum: Symbolic Resonance Encryption and Simulation Framework

Amendment to U.S. Patent Application No. 19/169,399

This document supplements the original patent specification with mathematical equations and symbolic logic that substantiate the existing claims. It does not introduce any new claims, but instead clarifies and reinforces the methods and systems already described in the original filing.

I. Symbolic Resonance-Based Encryption

1.1 Symbolic XOR Encryption with Waveform-Derived Key

Encryption is performed as:

$$C_i = D_i \oplus H(W_i)$$

Where $H(W_i) = \text{mod}(A_i * \cos(\phi_i), p)$

W_i represents a symbolic waveform with amplitude A and phase ϕ .

1.2 Key Derivation Enhancement with Geometric Hashing

External input x (e.g., image or file) is processed to extract:

$$G(x) = \text{WaveformHash}(x) = (A_x, \phi_x)$$

A new waveform key is derived as:

$$W_{\text{combined}} = (A + A_x, (\phi + \phi_x) \bmod 2\pi)$$

II. Resonance Fourier Transform (RFT)

2.1 Forward RFT

$$\text{RFT}_k = \sum A_n * e^{i\phi_n} * e^{-2\pi i k n / N}$$

2.2 Inverse RFT

$$W_n = (1/N) \sum \text{RFT}_k * e^{2\pi i k n / N}$$

III. Symbolic Qubit Representation & Simulation

3.1 Qubit State:

$$|\psi\rangle = \alpha|0\rangle + \beta|1\rangle, \text{ where } \alpha = A_0 * e^{i\phi_0}, \beta = A_1 * e^{i\phi_1}$$

3.2 Hadamard Gate:

$$H|\psi\rangle = 1/\sqrt{2} * [[1, 1], [1, -1]] * [\alpha, \beta]$$

IV. Probabilistic Symbolic Resonance Search

4.1 Frequency Matching:

$$x^* = \operatorname{argmin}_x ||f_{\text{target}} - f_x||_{\text{resonance}}$$

4.2 Grover-Inspired Amplification:

$$s_i' = -s_i \text{ if } i == \text{target}; \text{ else } s_i = 2 * \text{avg} - s_i$$

V. Symbolic Entropy Model

5.1 Entropy Function:

$$H(W) = -\sum p_i \log(p_i), \text{ where } p_i = A_i^2 / \sum A_j^2$$

Filing Metadata

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- This document is filed in support of the original claims and does not introduce new claims.