FIG. 2 - MACHINE LEARNING DECISION ENGINE TECHNICAL IMPLEMENTATION
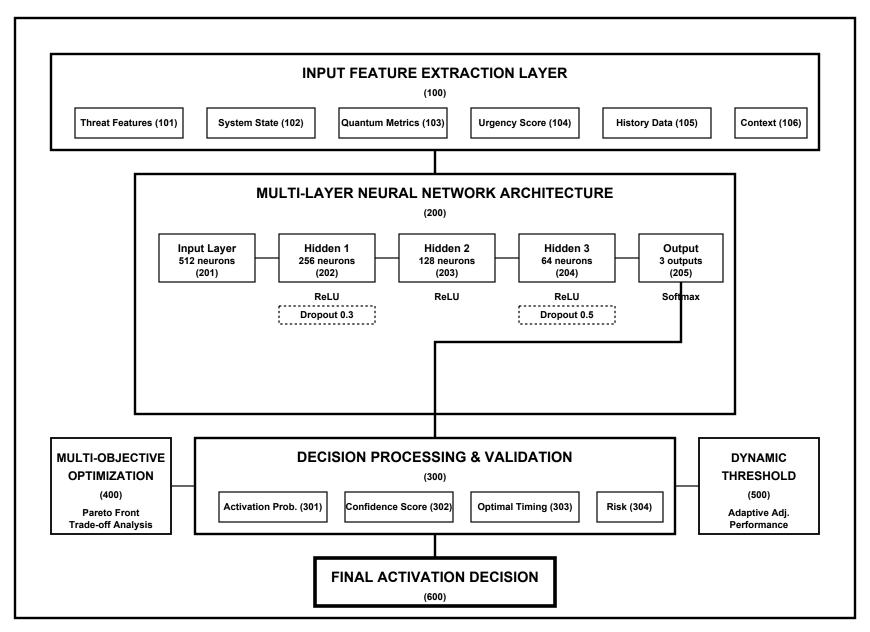
INPUT FEATURE EXTRACTION LAYER
(100)

| Threat Features (101) | System State (102) | Quantum Metrics (103) | Urgency Score (104) | History Data (105) | Context (106) |

MULTI-LAYER NEURAL NETWORK ARCHITECTURE
(200)

| Input Layer 512 neurons (201) | Hidden 1 256 neurons (202) | Hidden 2 128 neurons (203) | Hidden 3 64 neurons (204) | Output 3 outputs (205) |

ReLU   ReLU   ReLU   Softmax

Dropout 0.3   Dropout 0.5

MULTI-OBJECTIVE OPTIMIZATION
(400)
Pareto Front Trade-off Analysis

DECISION PROCESSING & VALIDATION
(300)

| Activation Prob. (301) | Confidence Score (302) | Optimal Timing (303) | Risk (304) |

DYNAMIC THRESHOLD
(500)
Adaptive Adj. Performance

FINAL ACTIVATION DECISION
(600)

PERFORMANCE METRICS:

• Decision Time: <100 microseconds   • Accuracy: 94.7% optimal activation   • Efficiency: 340% improvement