BRAUDE
College of Engineering, karmiel

Authorship Verification Framework

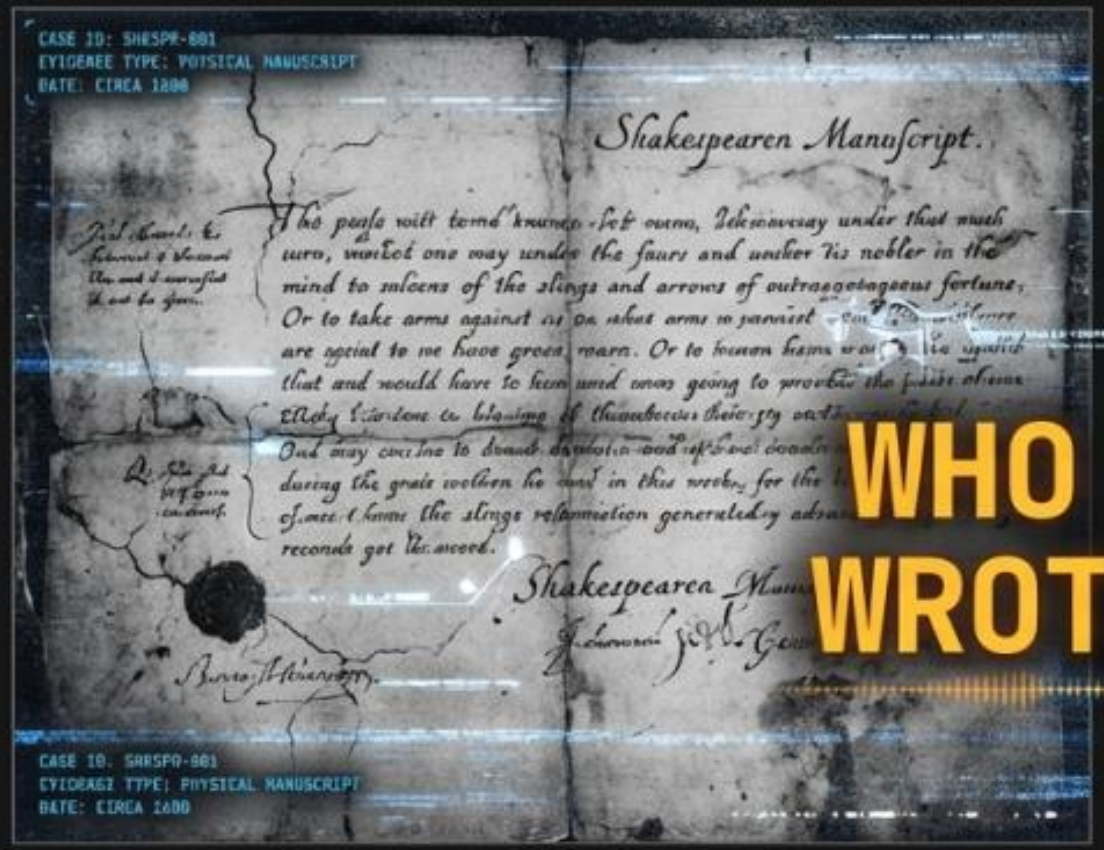
Leveraging Impostor Projection and Siamese Architectures

Final Project – Phase A (61998) | Project ID: 26-1-R-27

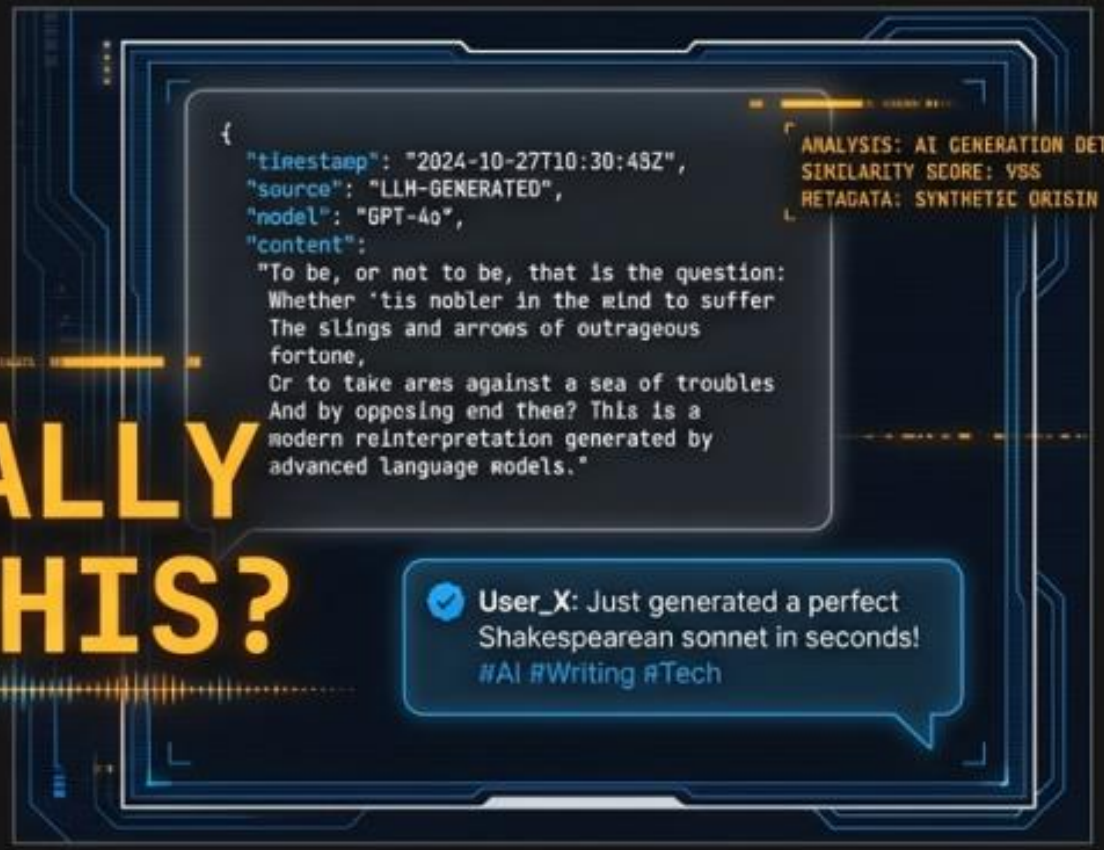
Student: Ameer Masoud (ID: 315908269)

Supervisor: Prof. Zeev Volkovich

THE PAST



THE PRESENT



WHO REALLY WROTE THIS?

DIGITAL FORENSICS

Fraud & Threats

Identify deepfakes, trace digital footprints, expose cybercrime.

ACADEMIC INTEGRITY

Ghostwriters & AI

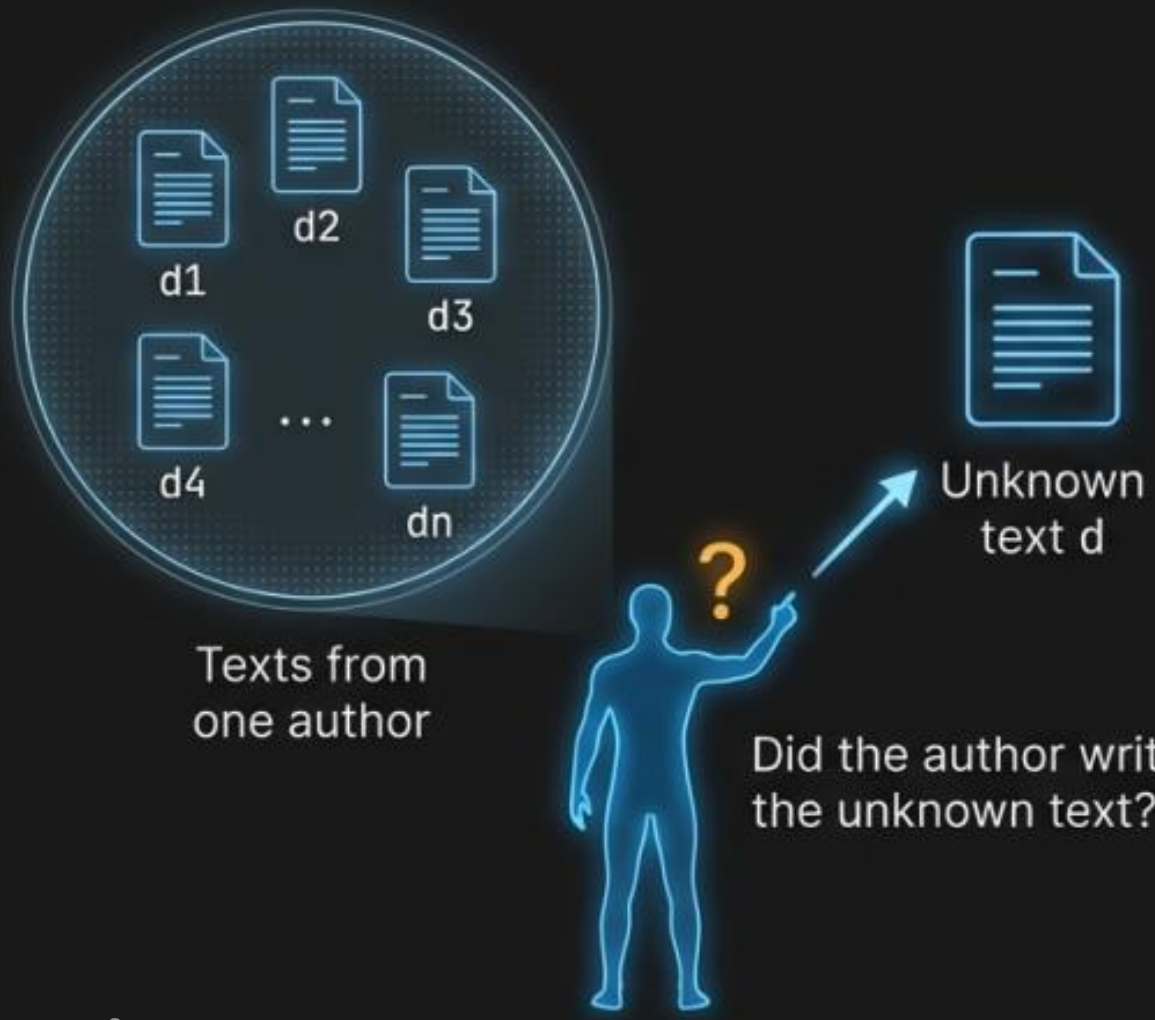
Detect plagiarism, analyze authorship, ensure originality.

HISTORICAL ANALYSIS

The Shakespeare Controversy

Revisit classic works, challenge attribution, uncover hidden truths.

The Challenge: Verification in an Open-Set World



ERROR: SHORT_TEXT_DETECTED
Insufficient data points in tweets/emails.

WARNING: ADVERSARIAL_MIMICRY
Impostors actively copying style.

CRITICAL: OPEN_SET_DOMAIN
The suspect list is infinite.

PROJECT GOALS & SCOPE

PHASE A: Research & Design

Hybrid Architecture Design
Mathematical Logic Defined

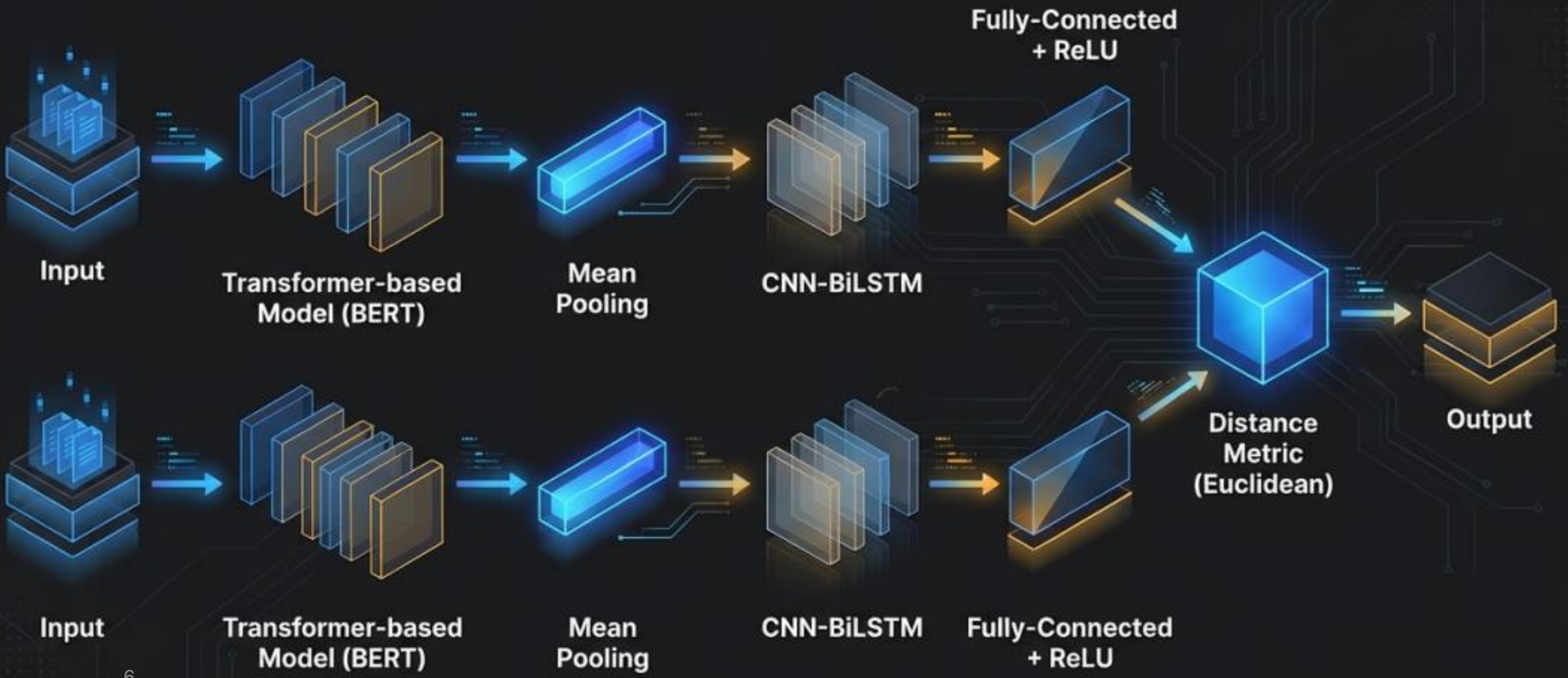
PHASE B: Implementation

Python/PyTorch Coding
Adversarial Stress Testing
Validation against Impostors

The Solution: A Hybrid Approach

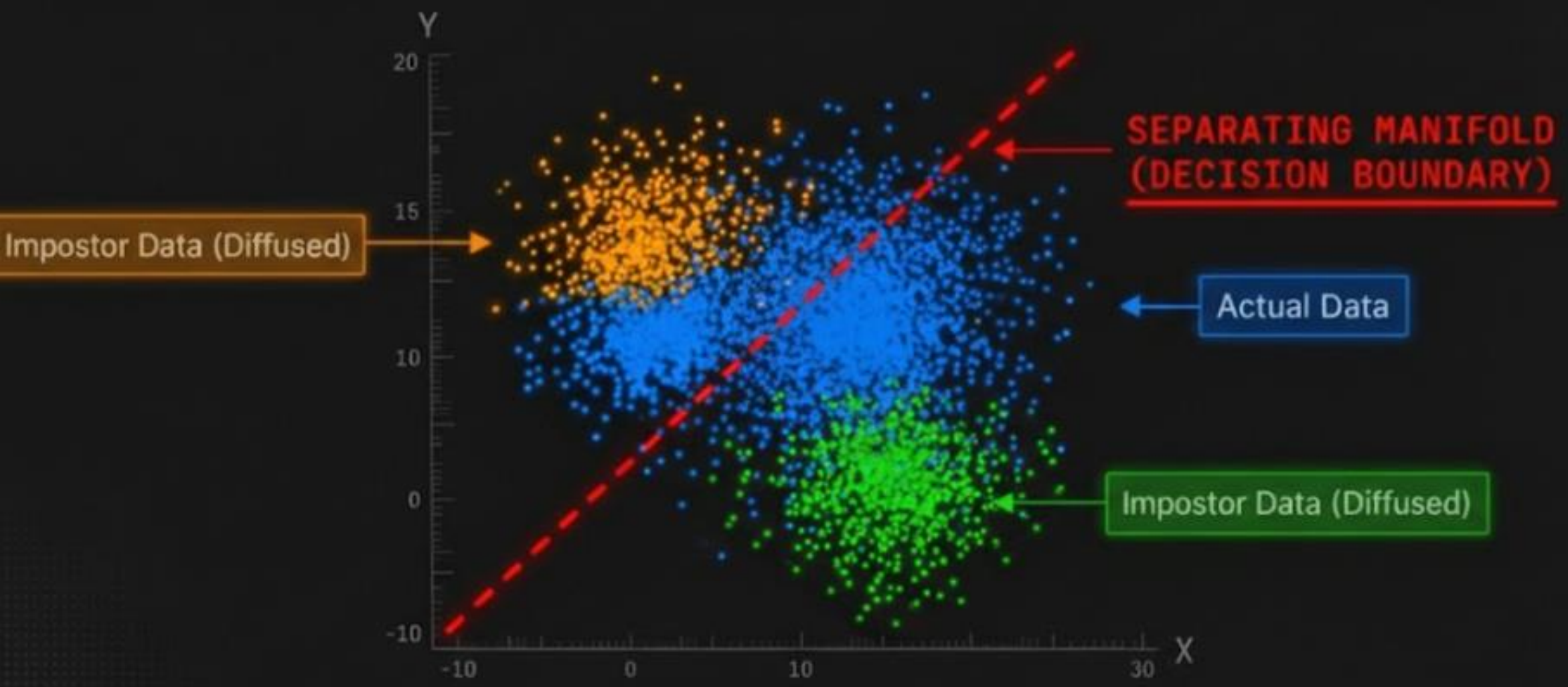
Combining Deep Meaning with Stylistic Fingerprints.

THE ARCHITECTURE: SIAMESE NETWORK



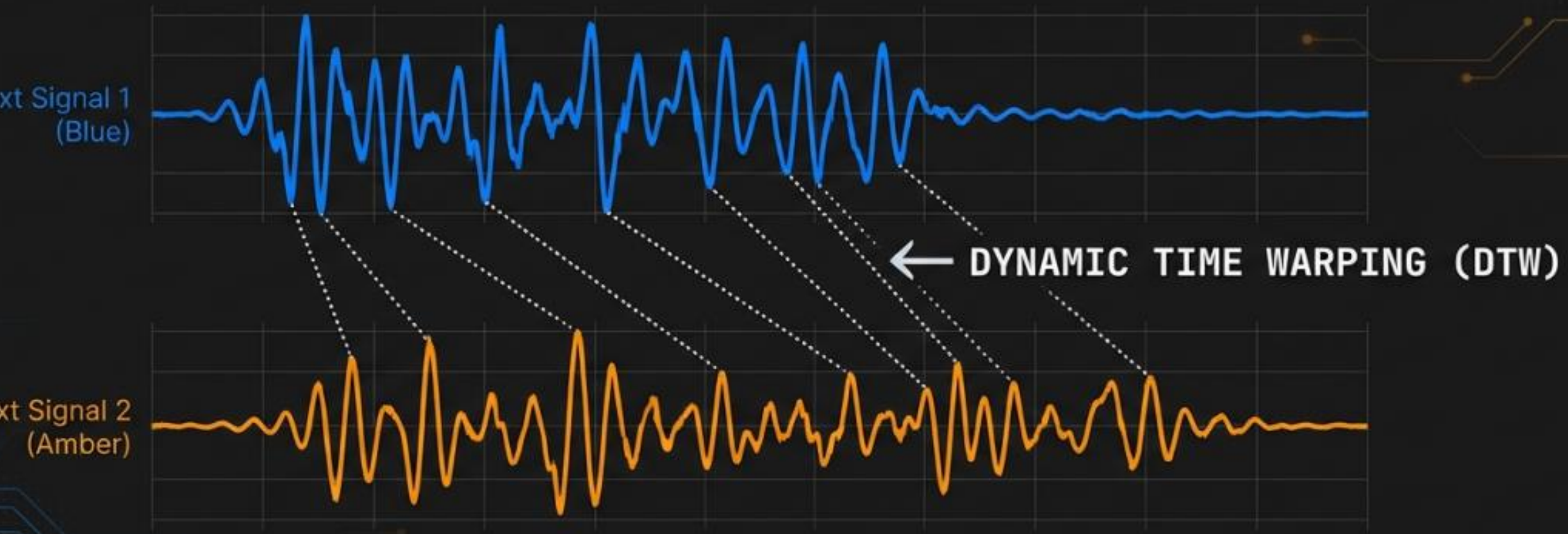
Digital Forensic Noir

INNOVATION I: IMPOSTOR PROJECTION TRAINING



NNOVATION II: TEXT AS A TEMPORAL SIGNAL

gital Forensic Noir

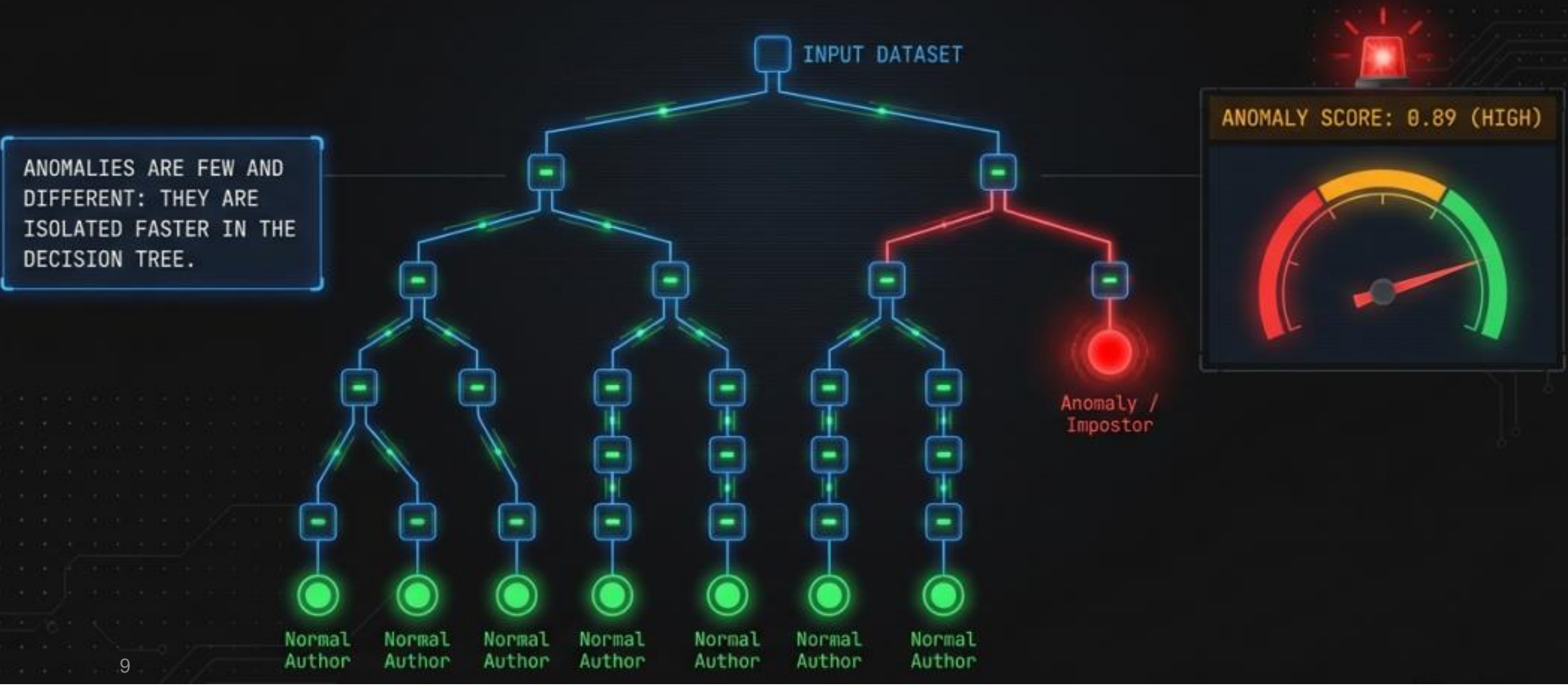


Aligning stylistic rhythm across texts of different lengths.

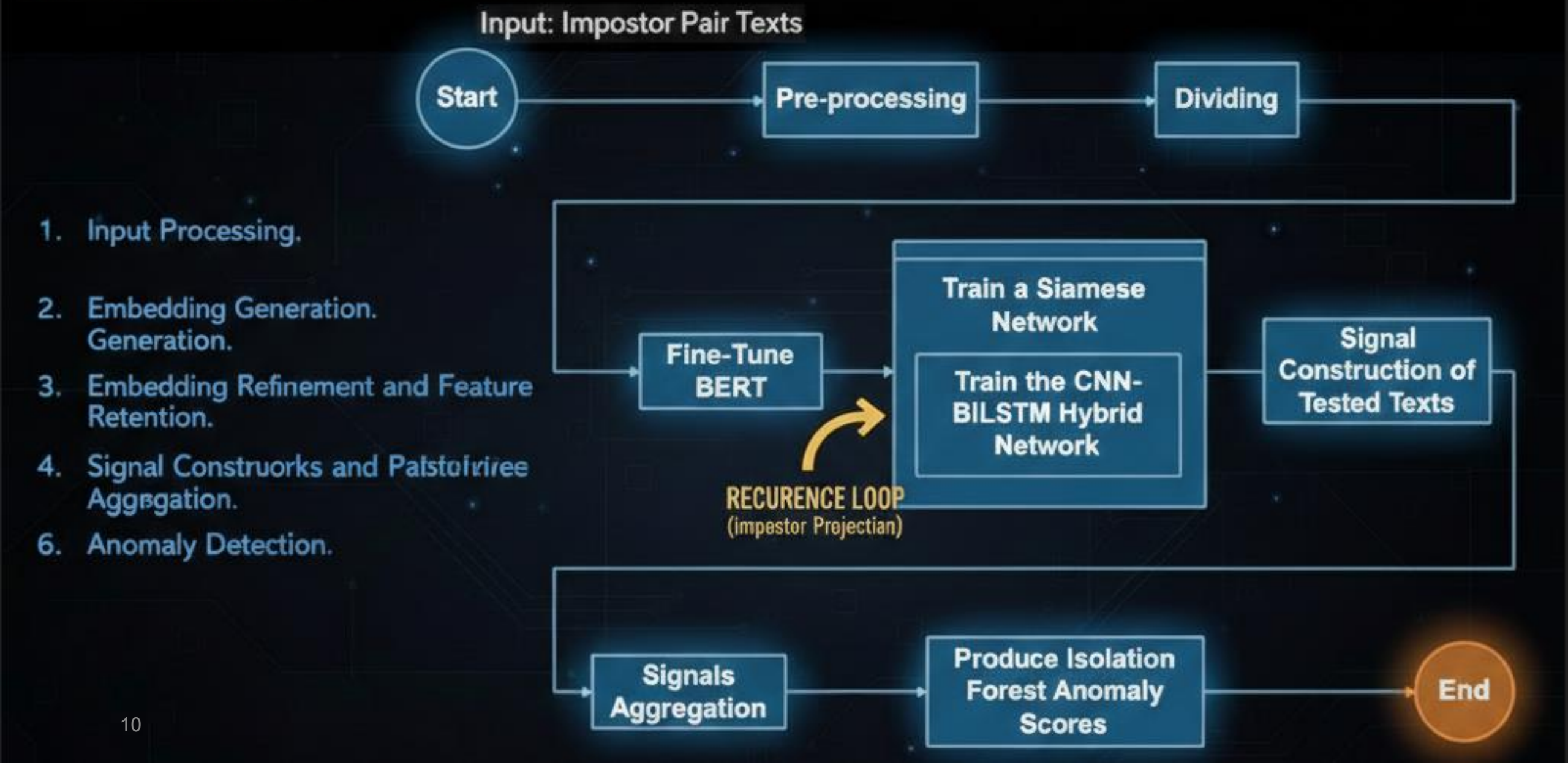
THE VERDICT: ANOMALY DETECTION

Digital Forensic Noir

ANOMALIES ARE FEW AND DIFFERENT: THEY ARE ISOLATED FASTER IN THE DECISION TREE.



Framework Flow Chart



CHNOLOGY STACK & OPTIMIZATION

Forensic Noir

CORE FRAMEWORK

Python
Inter

PyTorch
Inter

NLP ENGINE

BERT

ALGORITHMS

Scikit-Learn

OPTIMIZATION

AdamW Optimizer
Early Stopping
Dropout (Sparsity Handling)

PHASE B: IMPLEMENTATION & TESTING PLAN

Digital Forensic Noir

UNIT INTEGRITY

Tokenizer validation, Chunking logic verification.

SYSTEM INTEGRATION

Signal Aggregation flow, Gradient propagation.

ADVERSARIAL ATTACK

Injecting AI-generated mimicry to stress-test the Impostor Projection logic.

SUCCESS METRICS

ACCURACY

General identification ratio.

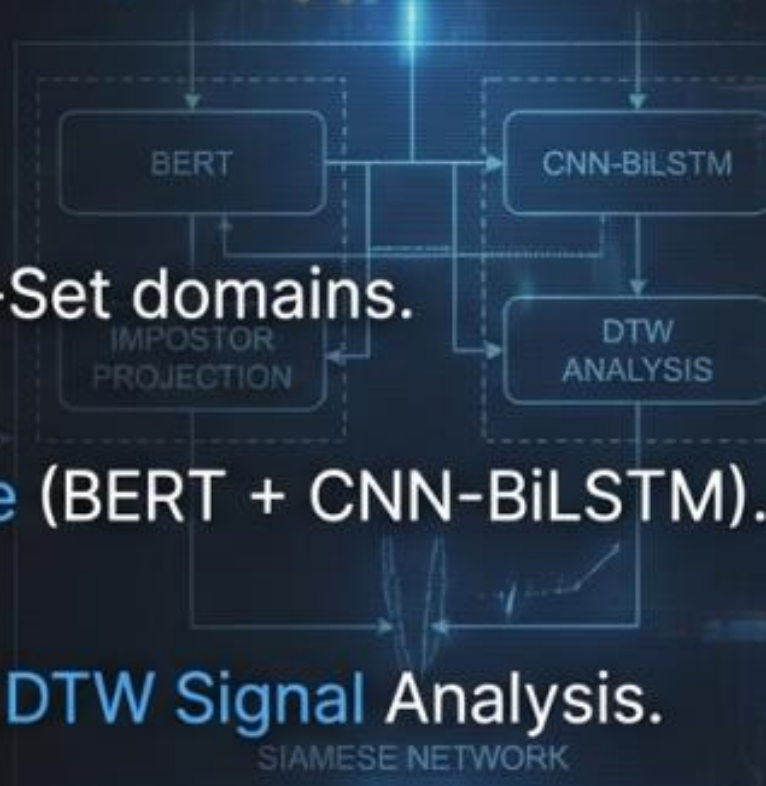
F1-SCORE

Primary Metric.
Balances Precision & Recall for imbalanced impostor data.

ROBUSTNESS

Performance against Adversarial Attacks.

PHASE A ACHIEVEMENTS



- **DEFINED: Verification** vs. **Attribution** in Open-Set domains.
- **DESIGNED:** Novel Hybrid Siamese Architecture (BERT + CNN-BiLSTM).
- **INNOVATED:** Integrated Impostor Projection & DTW Signal Analysis.
- **READY:** Theoretical framework complete. Phase B Roadmap set.

WHO IS THE REAL AUTHOR?

A Signal-Based Framework for Digital Truth.

Project 26-1-R-27 | Braude College of Engineering
Ameer Masoud | Prof. Zeev Volkovich

Thank You. Questions?