The New Nature of Work in AI

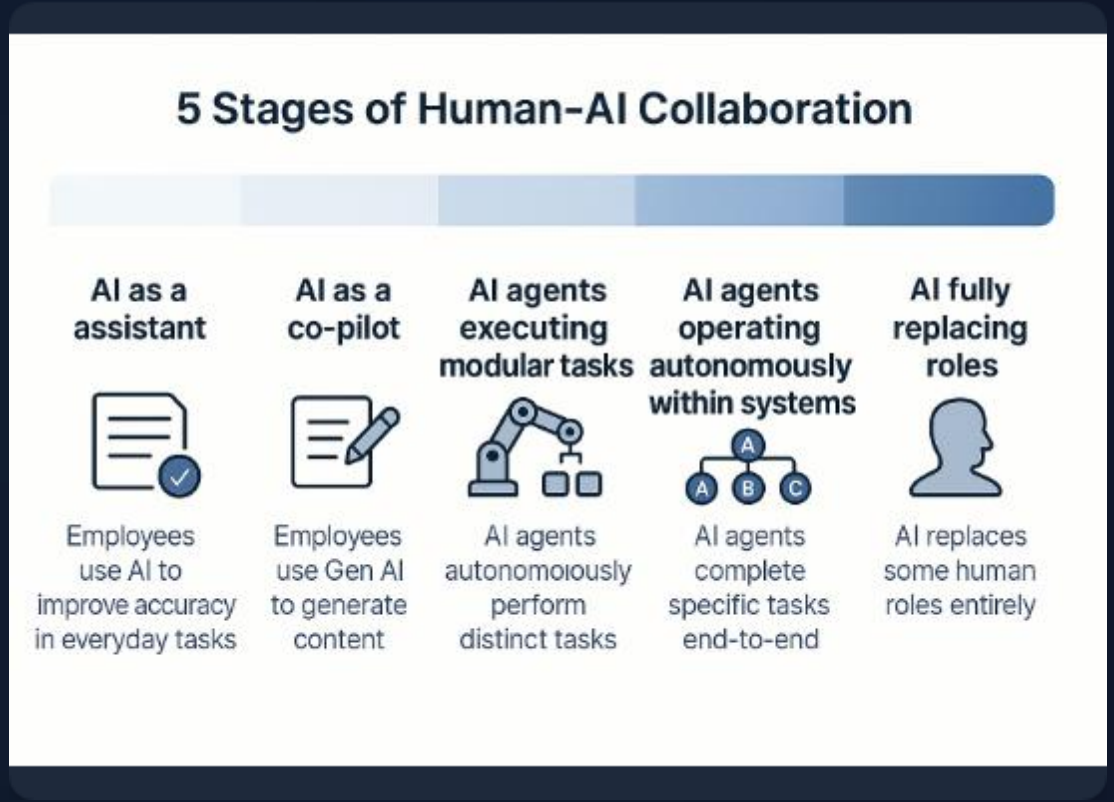
ITAI 4373 Portfolio – Hoang Dinh

Course: ITAI 4373 | Fall 2025

Professor: Patricia Mcmanus

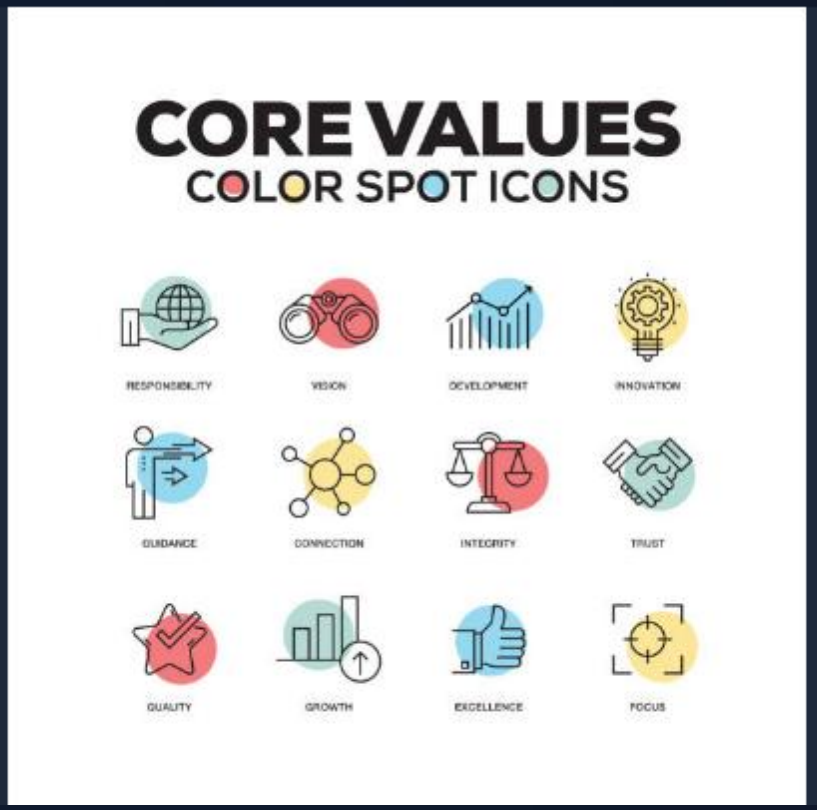
Course Overview: ITAI 4373

- **Strategic Focus:** Focuses on the strategic use of AI in modern organizations.
- **Core Pillars:** Emphasizes AI delegation, governance, and ethical frameworks.
- **Holistic Approach:** Integrates business strategy, technical implementation, and risk perspectives.
- **Outcome:** Prepares students for enterprise AI leadership and decision-making roles.



What This Portfolio Demonstrates

- AI implementation crisis analysis
- AI delegation decision matrices
- Enterprise prompt engineering
- Client-based AI system design
- KPI, ROI, and ethics evaluation
- Full working Proof-of-Concept (POC)



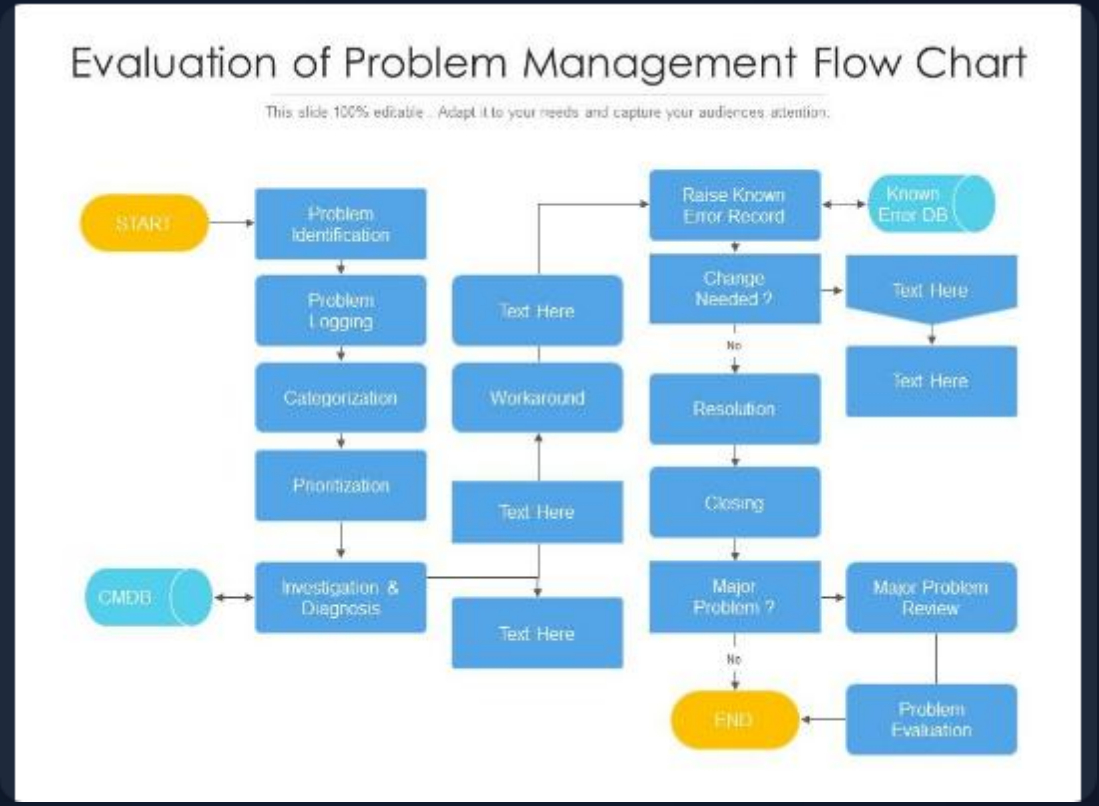
AI Implementation Crisis: TechCorp Case

A cautionary tale of investment without strategy.

- **Failed Investment:** $50M AI investment yielded poor early outcomes and negative ROI.
- **Workforce Impact:** Significant employee anxiety, resistance, and fear of replacement.
- **Performance Hit:** Declining productivity and erosion of client trust.
- **Root Issue:** Lack of structured AI governance and clear implementation protocols.

Why the Initial AI Rollout Failed

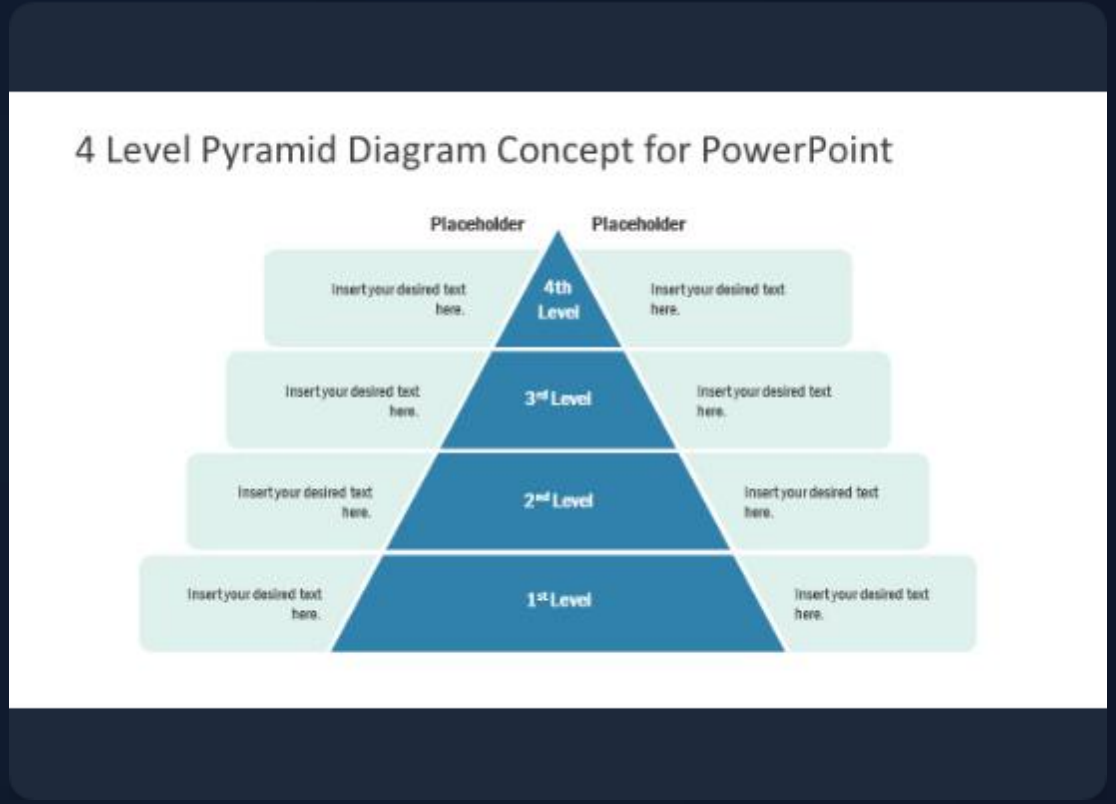
- **No Delegation Framework:** Lack of clarity on what AI should do vs. humans.
- **Skills Gap:** No workforce reskilling strategy to support the new tools.
- **Process Bottlenecks:** Overreliance on manual verification slowing down output.
- **Strategic Errors:** Rushed leadership timeline and fragmented tool adoption.



Four-Tier AI Delegation Model

- **Tier 1: Human decides, AI informs.** Used for high-stakes strategic decisions.
- **Tier 2: AI recommends, human selects.** Best for complex data analysis tasks.
- **Tier 3: AI acts with guardrails.** Suitable for standard, low-risk operations.
- **Tier 4: Full automation.** Reserved for repetitive, zero-risk tasks.

*Correct tier depends on risk, complexity, and impact.



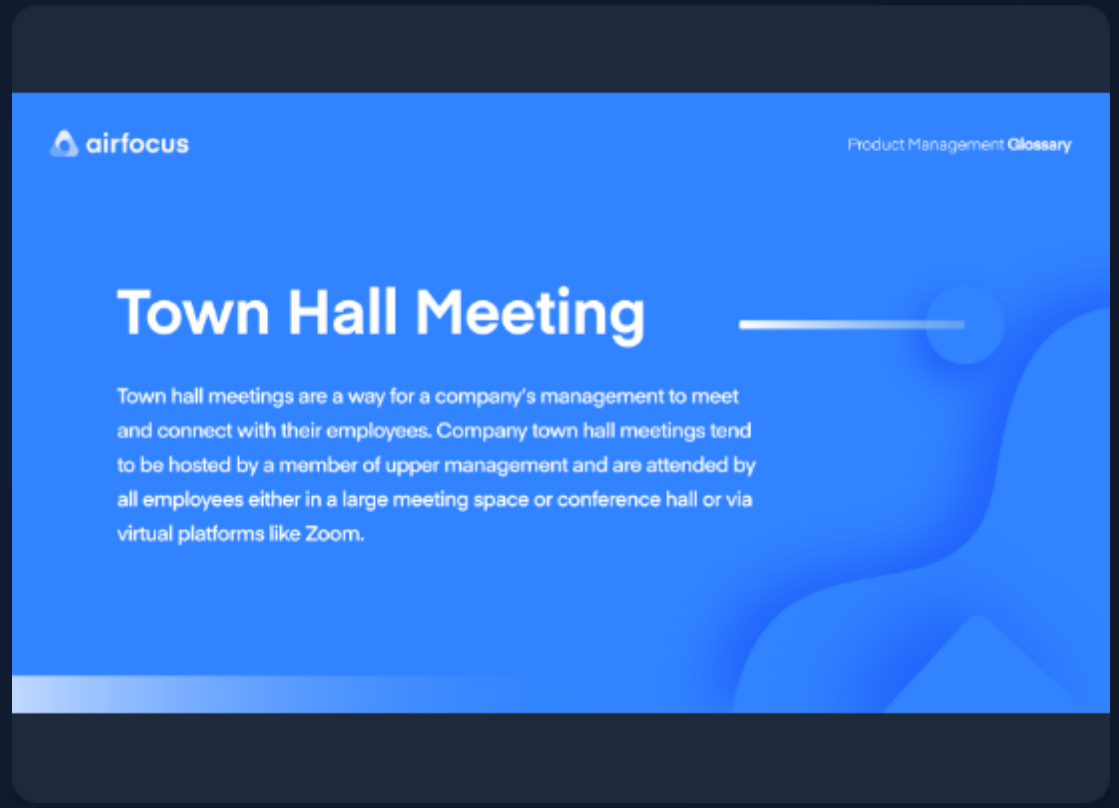
Scenario Example: Communication Crisis

The Challenge

- High employee anxiety and misinformation spreading internally.
- Training overload leading to leadership confusion.

The Strategy

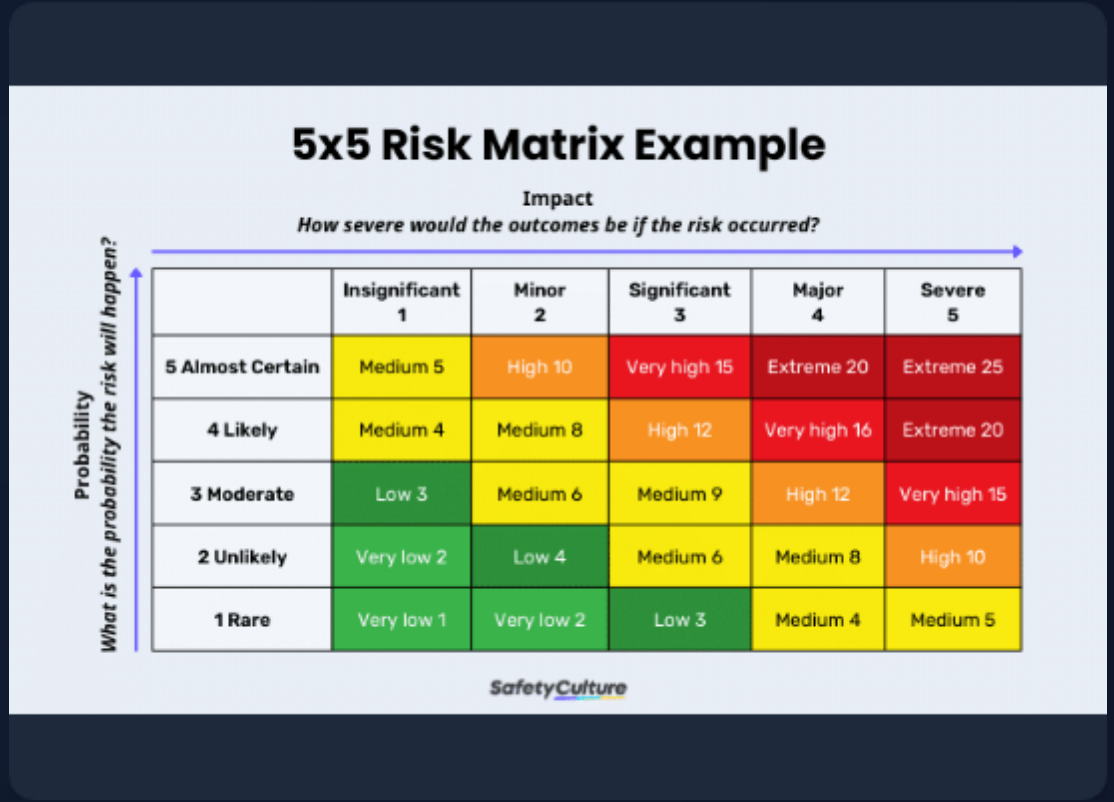
- **Recommended Tier 1:** Human-Led Strategy.
- AI supports sentiment monitoring but leadership drives the message to restore trust.



AI Delegation Decision Matrix

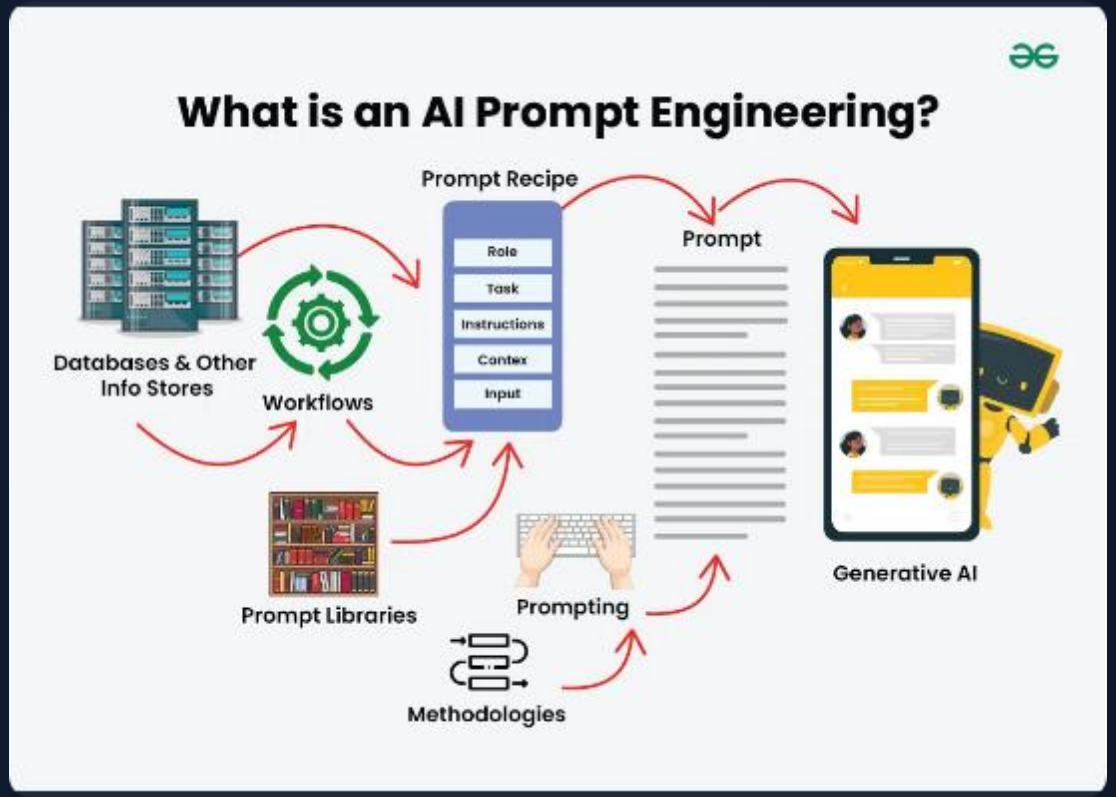
A structured approach to determining the safe level of automation.

- **Risk Evaluation:** Assesses financial, operational, and reputational risks.
- **Application:** Applied rigorously to real enterprise scenarios.
- **Outcome:** All test cases mapped to **Tier 2 (AI Recommendations)** to ensure human oversight.
- **Goal:** Ensures safe, explainable, and trustworthy AI deployment.



Enterprise Prompt Engineering

- **Role-Based Prompting:** Defining specific personas for business accuracy.
- **Constraints & Validation:** Embedding rules to prevents hallucinations and errors.
- **Targeted Output:** Generating risk-aware and stakeholder-specific responses.
- **Transformation:** Converts generic AI into a reliable decision-support system.



Client Project Overview: ArtConnect AI

The Client

Independent Digital Artist

The Problem

- Struggled with audience growth and engagement.
- Manual social media management consumed valuable creative time.

The Need

Needed an ethical, human-centered AI system to support engagement without losing authenticity.

Strategic Goals of ArtConnect AI

Human-in-the-Loop

Maintain artist control over all public interactions.

High-Value Focus

Identify and prioritize high-value engagement opportunities.

Time Reclamation

Reclaim creative time by automating analysis.

Authenticity

Preserve trust through transparent and genuine responses.

ArtConnect AI System Architecture

Input & Processing

- Social data ingestion (CSV / JSON)
- Sentiment & keyword preprocessing
- Opportunity scoring engine

Output & Action

- AI reply generator
- Streamlit dashboard visualization
- Human approval workflow

Architecture Diagram (Text-based):

[Social Data (Simulated)]

|

v

[1. Data Input Layer]

|

v

[2. Preprocessing Layer]

| (Cleaned, Scored Data)

v

[3. AI Logic Layer (Opportunity Scoring)]

| (Opportunity Score, Rank)

v

[4. Interface Layer (Streamlit Dashboard)] <--> [5. Analytics & Logging Layer]

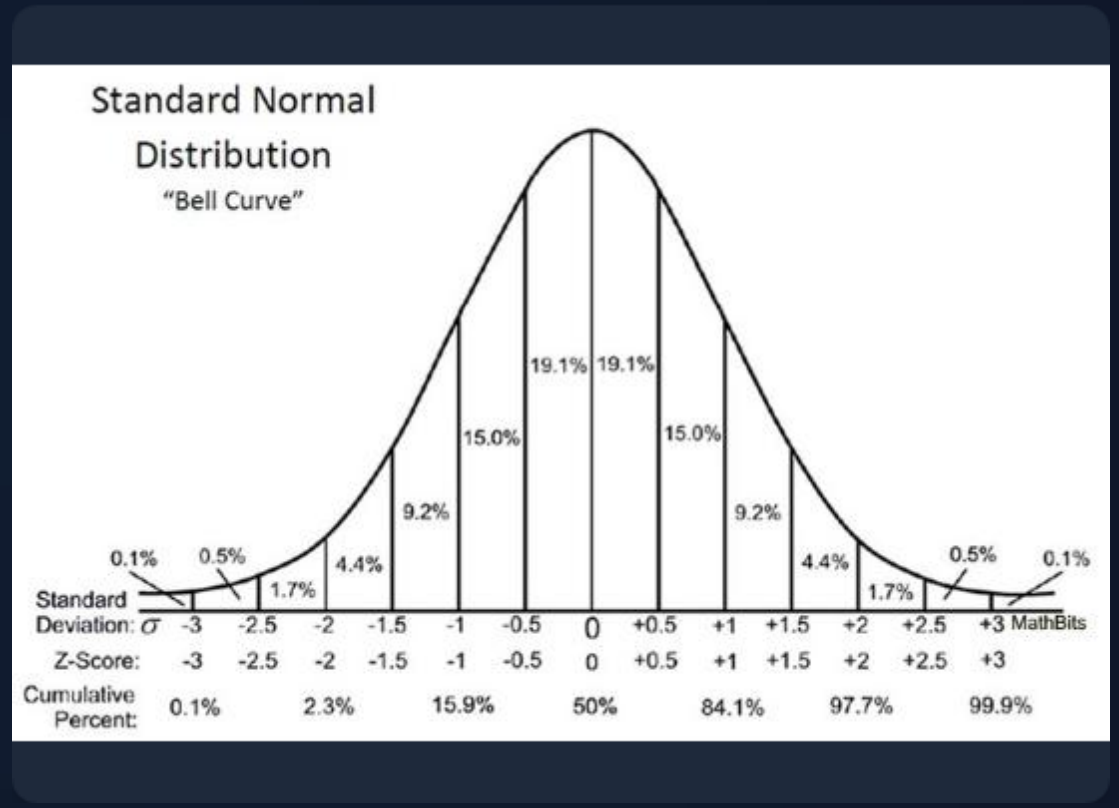
| (User Action: Approve/Edit/Reject)

v

[External Platform (Simulated Posting)]

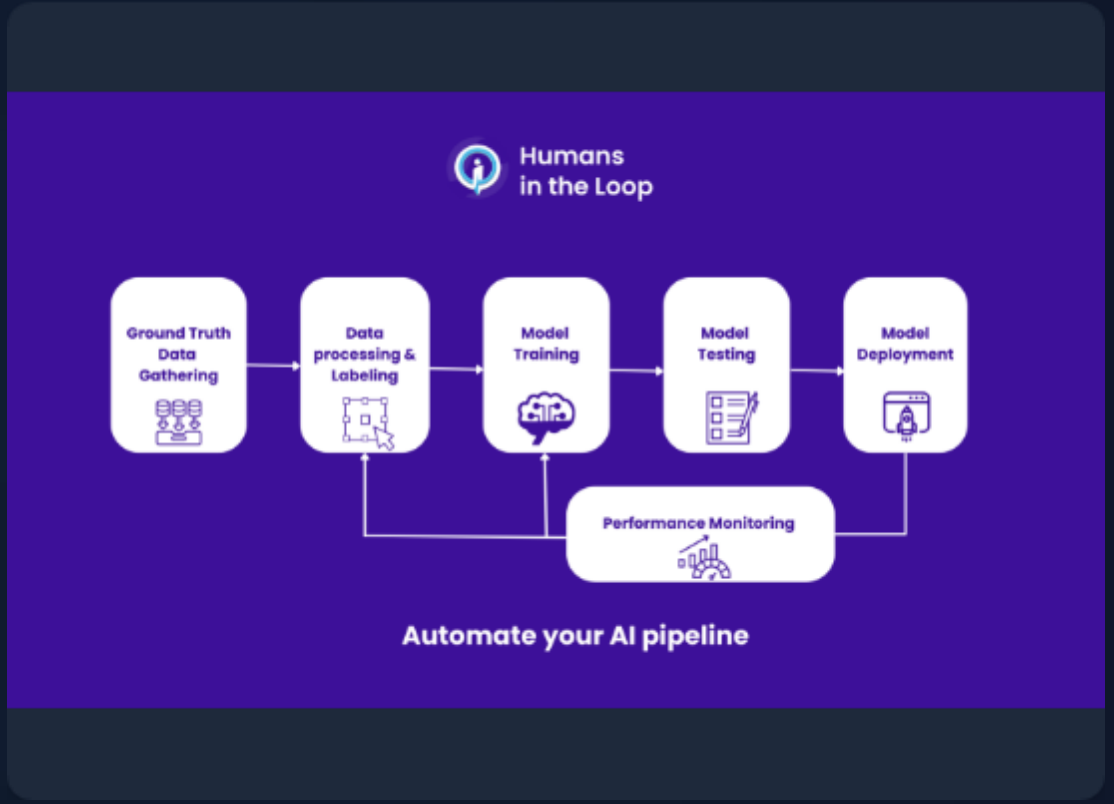
Opportunity Scoring Engine

- **Scoring Mechanism:** Scores each interaction on a scale of 0–100.
- **Key Factors:**
  - Keyword relevance
  - Sentiment analysis
  - User influence
  - Recency of post
- **Model:** Weighted mathematical model to calculate potential value.
- **Benefit:** Automatically prioritizes high-value buyers, filtering out noise.



Human-in-the-Loop Approval Workflow

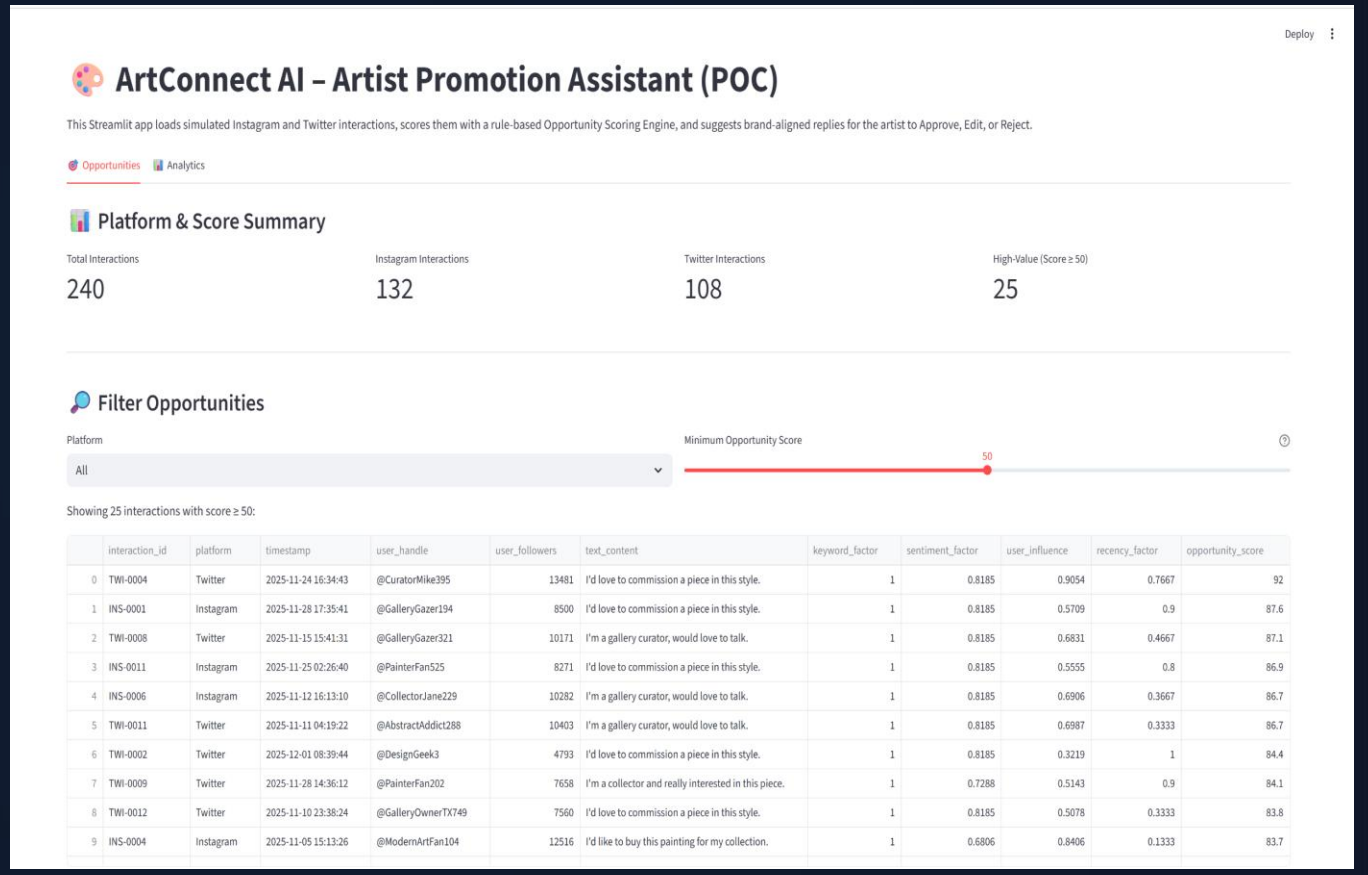
- **Drafting:** AI drafts potential replies but cannot post.
- **Review:** Artist reviews all AI-generated outputs in the dashboard.
- **Control:** Artist has full power to Edit, Approve, or Reject.
- **Safety:** Nothing is posted automatically.
- **Ethics:** Guarantees compliance and preserves the artist's voice.



Working Proof-of-Concept

A fully functional dashboard built with Python & Streamlit.

- **Visual Data:** Displays real-time opportunity scores.
- **AI Assistance:** Shows AI reply suggestions for each lead.
- **Filtering:** Filter by platform (Instagram, Twitter) and score.
- **Actionable:** Embedded Approve / Edit / Reject controls for immediate workflow.



	interaction_id	platform	timestamp	user_handle	user_followers	text_content	keyword_factor	sentiment_factor	user_influence	recency_factor	opportunity_score
0	TWI-0004	Twitter	2025-11-24 16:34:43	@CuratorMike395	13481	I'd love to commission a piece in this style.	1	0.8185	0.9054	0.7667	92
1	INS-0001	Instagram	2025-11-28 17:35:41	@GalleryGazer194	8500	I'd love to commission a piece in this style.	1	0.8185	0.5709	0.9	87.6
2	TWI-0008	Twitter	2025-11-15 15:41:31	@GalleryGazer321	10171	I'm a gallery curator, would love to talk.	1	0.8185	0.6831	0.4667	87.1
3	INS-0011	Instagram	2025-11-25 02:26:40	@PainterFan525	8271	I'd love to commission a piece in this style.	1	0.8185	0.5555	0.8	86.9
4	INS-0006	Instagram	2025-11-12 16:13:10	@CollectorJane229	10282	I'm a gallery curator, would love to talk.	1	0.8185	0.6906	0.3667	86.7
5	TWI-0011	Twitter	2025-11-11 04:19:22	@AbstractAddict288	10403	I'm a gallery curator, would love to talk.	1	0.8185	0.6987	0.3333	86.7
6	TWI-0002	Twitter	2025-12-01 08:39:44	@DesignGeek3	4793	I'd love to commission a piece in this style.	1	0.8185	0.3219	1	84.4
7	TWI-0009	Twitter	2025-11-28 14:36:12	@PainterFan202	7658	I'm a collector and really interested in this piece.	1	0.7288	0.5143	0.9	84.1
8	TWI-0012	Twitter	2025-11-10 23:38:24	@GalleryOwnerTX749	7560	I'd love to commission a piece in this style.	1	0.8185	0.5078	0.3333	83.8
9	INS-0004	Instagram	2025-11-05 15:13:26	@ModernArtFan104	12516	I'd like to buy this painting for my collection.	1	0.6806	0.8406	0.1333	83.7

System Performance Results

10.4%

Opportunity Detection Rate

85%

AI Reply Approval Rate

15%

Est. Click-Through Rate

4-6 hrs

Time Saved Per Week

Business Value & ROI

$9,240 – $14,240

Estimated Annual ROI

$0

Development Cost (Student-Built POC)

Qualitative Benefits

- **Time Savings:** Freed up significant hours for creative production.
- **Conversion:** Increased buyer conversion through timely responses.
- **Sustainability:** Low-cost, high-impact solution for a solo entrepreneur.

Ethical AI & Compliance Safeguards

- **Human-in-the-Loop Enforcement:** The core non-negotiable safeguard.
- **No Automation:** No posting happens without human eyes.
- **Transparency:** Clear indication of AI-generated content where applicable.
- **Privacy-First:** Data usage adheres to privacy standards.
- **Mitigation:** Active safety measures to prevent bias and spam.

Key Technical & Strategic Skills

Strategy

AI governance and delegation strategy.

Development

Python, Streamlit & System Architecture.

AI Engineering

Prompt engineering for business AI.

Ethics

Ethical AI leadership and compliance.

Final Reflection

"Governance, not just technology."

- **Adoption Foundation:** Human trust is the bedrock of successful AI adoption.
- **Business Performance:** Ethics is not a constraint but a performance driver.
- **True Leadership:** Strategic delegation defines the new era of AI leadership.
- **Preparedness:** This course has equipped me for enterprise AI roles.