The 3×2A Framework for Human–AI Coevolution

Metrics, Direction, Diagnosis, and Strategy

Valeriu Ungureanu

Moldova State University

Smart Diaspora, 2025
Cluj-Napoca

Contact: valeriu.ungureanu@usm.md

Overview



1. Introduction
2. Framework
3. Conclusions

Talk roadmap



1. Introduction
2. Framework
3. Conclusions

Motivation & Objective

- **Motivation:** GenAI is transforming labor, governance, education, and knowledge, reshaping the fabric of human and societal life.
- **Gap:** Fragmented guidance persists, marked by misalignment between ethics and practice, and between analysis and evaluation.
- **Objective:** To propose an integrated framework aligning *Strategy, Diagnosis, Orientation, and Metrics* for coherent human–AI synergy.
- **Contribution:** A unifying framework of six interdependent axes 3×2A.

$$1 + 1 > 2$$

The Synergy Imperative in the GenAI Era

The Core Axes of the 3×2A Framework



Six interdependent axes

- Automation ↔ Augmentation
- Alliance ↔ Alignment
- Adaptation ↔ Accountability

These axes delineate the conceptual space for balanced and synergistic human–AI coevolution.

Core Thesis 1: Dual Mechanisms of Impact

Automation × Augmentation

- GenAI transforms productivity and redefines roles simultaneously.

Core Thesis 1: Dual Mechanisms of Impact

Automation × Augmentation

- GenAI transforms productivity and redefines roles simultaneously.
- **JPMorgan (COiN):** reduced contract review time from 360,000 hours annually to seconds (2025) [1].

Core Thesis 1: Dual Mechanisms of Impact

Automation × Augmentation

- GenAI transforms productivity and redefines roles simultaneously.
- **JPMorgan (COiN):** reduced contract review time from 360,000 hours annually to seconds (2025) [1].
- **Lancet study, NEJM AI:** AI assistance improved diagnostic accuracy and reduced perceived liability by 25–35%, demonstrating tangible augmentation of radiologists' performance (2023, 2025) [2, 3].

Core Thesis 1: Dual Mechanisms of Impact

Automation × Augmentation

- GenAI transforms productivity and redefines roles simultaneously.
- **JPMorgan (COiN):** reduced contract review time from 360,000 hours annually to seconds (2025) [1].
- **Lancet study, NEJM AI:** AI assistance improved diagnostic accuracy and reduced perceived liability by 25–35%, demonstrating tangible augmentation of radiologists' performance (2023, 2025) [2, 3].
- These are not stories of replacement; they are stories of reinforcement — where human insight meets machine efficiency.

Core Thesis 1: Dual Mechanisms of Impact

Automation × Augmentation

- GenAI transforms productivity and redefines roles simultaneously.
- **JPMorgan (COiN):** reduced contract review time from 360,000 hours annually to seconds (2025) [1].
- **Lancet study, NEJM AI:** AI assistance improved diagnostic accuracy and reduced perceived liability by 25–35%, demonstrating tangible augmentation of radiologists' performance (2023, 2025) [2, 3].
- These are not stories of replacement; they are stories of reinforcement — where human insight meets machine efficiency.
- Humans curate, not just create: we interpret, contextualize, and refine what AI produces.

Core Thesis 1: Dual Mechanisms of Impact

Automation × Augmentation

- GenAI transforms productivity and redefines roles simultaneously.
- **JPMorgan (COiN):** reduced contract review time from 360,000 hours annually to seconds (2025) [1].
- **Lancet study, NEJM AI:** AI assistance improved diagnostic accuracy and reduced perceived liability by 25–35%, demonstrating tangible augmentation of radiologists' performance (2023, 2025) [2, 3].
- These are not stories of replacement; they are stories of reinforcement — where human insight meets machine efficiency.
- Humans curate, not just create: we interpret, contextualize, and refine what AI produces.
- **Essence of augmentation:** it amplifies the human mind rather than displacing it.

Core Thesis 2: The Collaborative Continuum

Alliance × Alignment

- We are moving from **control** to **partnership**. It's no longer about giving orders to a machine, but about building a shared cognitive space.

Core Thesis 2: The Collaborative Continuum

Alliance × Alignment

- We are moving from **control** to **partnership**. It's no longer about giving orders to a machine, but about building a shared cognitive space.
- *Trust, transparency, and explainability* form the foundation of this collaboration.

Core Thesis 2: The Collaborative Continuum

Alliance × Alignment

- We are moving from **control** to **partnership**. It's no longer about giving orders to a machine, but about building a shared cognitive space.
- *Trust, transparency, and explainability* form the foundation of this collaboration.
- Humans bring judgment, ethics, and intuition; AI brings computation, memory, and scalability.

Core Thesis 2: The Collaborative Continuum

Alliance × Alignment

- We are moving from **control** to **partnership**. It's no longer about giving orders to a machine, but about building a shared cognitive space.
- *Trust, transparency, and explainability* form the foundation of this collaboration.
- Humans bring judgment, ethics, and intuition; AI brings computation, memory, and scalability.
- **Alignment — that's the key.** Alignment is not about control, but about coherence: AI systems must understand our intent and operate according to our values.

Core Thesis 2: The Collaborative Continuum

Alliance × Alignment

- We are moving from **control** to **partnership**. It's no longer about giving orders to a machine, but about building a shared cognitive space.
- *Trust, transparency, and explainability* form the foundation of this collaboration.
- Humans bring judgment, ethics, and intuition; AI brings computation, memory, and scalability.
- **Alignment — that's the key.** Alignment is not about control, but about coherence: AI systems must understand our intent and operate according to our values.
- Without alignment, power becomes chaos. With it, we build synergy.

Core Thesis 3: Adaptation as the Critical Variable

Adaptation × Accountability

- This axis is where technology meets humanity most directly.

Core Thesis 3: Adaptation as the Critical Variable

Adaptation × Accountability

- This axis is where technology meets humanity most directly.
- *Adaptation* means cultivating meta-skills — critical thinking, creativity, and flexibility — to thrive in a rapidly evolving landscape.

Core Thesis 3: Adaptation as the Critical Variable

Adaptation × Accountability

- This axis is where technology meets humanity most directly.
- *Adaptation* means cultivating meta-skills — critical thinking, creativity, and flexibility — to thrive in a rapidly evolving landscape.
- Organizations must design workflows that seamlessly blend human and machine capabilities.

Core Thesis 3: Adaptation as the Critical Variable

Adaptation × Accountability

- This axis is where technology meets humanity most directly.
- *Adaptation* means cultivating meta-skills — critical thinking, creativity, and flexibility — to thrive in a rapidly evolving landscape.
- Organizations must design workflows that seamlessly blend human and machine capabilities.
- Policymakers must shift from reactive to adaptive governance — enabling modular credentials and responsive regulations.

Core Thesis 3: Adaptation as the Critical Variable

Adaptation × Accountability

- This axis is where technology meets humanity most directly.
- *Adaptation* means cultivating meta-skills — critical thinking, creativity, and flexibility — to thrive in a rapidly evolving landscape.
- Organizations must design workflows that seamlessly blend human and machine capabilities.
- Policymakers must shift from reactive to adaptive governance — enabling modular credentials and responsive regulations.
- **But adaptation without accountability is just survival.**

Core Thesis 3: Adaptation as the Critical Variable

Adaptation × Accountability

- This axis is where technology meets humanity most directly.
- *Adaptation* means cultivating meta-skills — critical thinking, creativity, and flexibility — to thrive in a rapidly evolving landscape.
- Organizations must design workflows that seamlessly blend human and machine capabilities.
- Policymakers must shift from reactive to adaptive governance — enabling modular credentials and responsive regulations.
- **But adaptation without accountability is just survival.**
- *Accountability* ensures that as we evolve, we do so responsibly — ethically, transparently, and with respect for human dignity.

The Six Axes of the 3×2A Framework

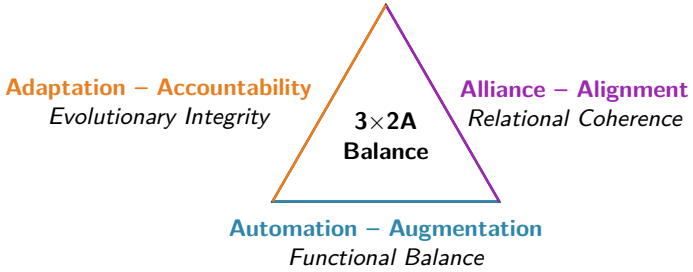
How each pair contributes to a balanced and synergistic human–AI coevolution

- **Automation – Augmentation** → *Functional Balance*: Automation drives efficiency; Augmentation amplifies human cognition and creativity.
- **Alliance – Alignment** → *Relational Coherence*: Alliance fosters trust and collaboration; Alignment ensures ethical and goal consistency.
- **Adaptation – Accountability** → *Evolutionary Integrity*: Adaptation supports learning and resilience; Accountability upholds transparency and responsibility.

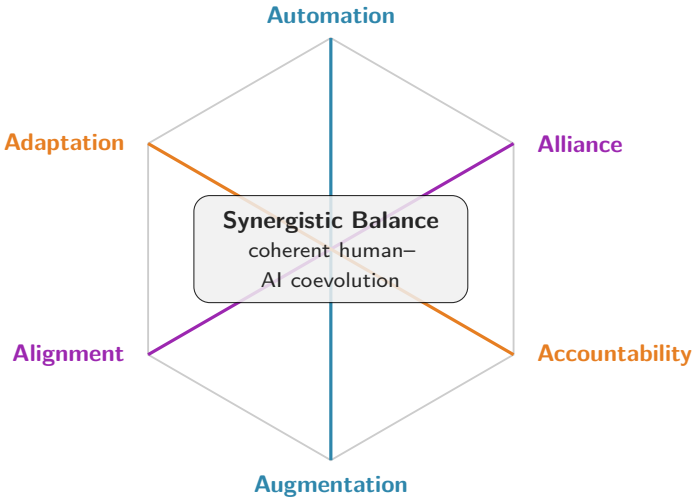
Summary

Each pair balances instrumental, relational, and ethical dimensions, sustaining coherent human–AI evolution.

3×2A Axes: Triadic Synthesis



3×2A Axes: Hexagonal Synergy Map



Talk roadmap



1. Introduction
2. Framework
3. Conclusions

3×2A Framework: Functional Analogies

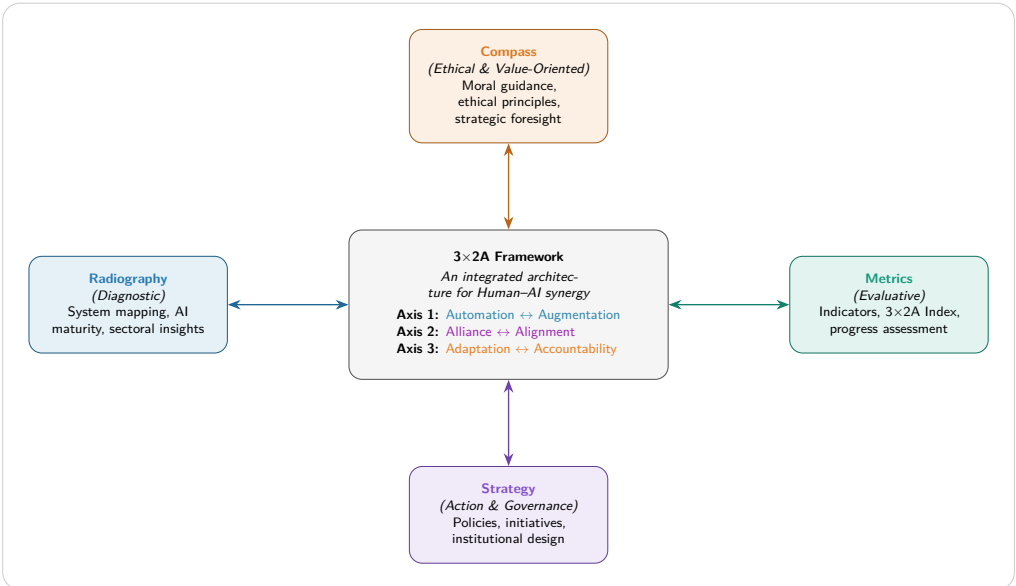
Four complementary dimensions of human–AI synergy

The 3×2A Framework unfolds through four *functional analogies*, each embodying a core dimension of human–AI synergy.

- **Metrics — Quantitative Evaluation:** defines indicators and the 3×2A Quotient to measure progress and coevolution in human–AI ecosystems.
- **Compass — Ethical Orientation:** guides moral direction and value alignment, ensuring principled and responsible human–AI interaction.
- **Radiography — Diagnostic Insight:** reveals system maturity, highlighting strengths, vulnerabilities, and readiness across domains.
- **Strategy — Anticipatory Governance:** turns ethical and diagnostic insights into forward actions, fostering adaptive and accountable governance.

Bidirectional feedback loops interlink all components to the core, ensuring continuous learning, adaptation, and coherence.

3×2A Framework — Central Architecture



3×2A Index — Metrics Overview

From qualitative balance to quantitative insight

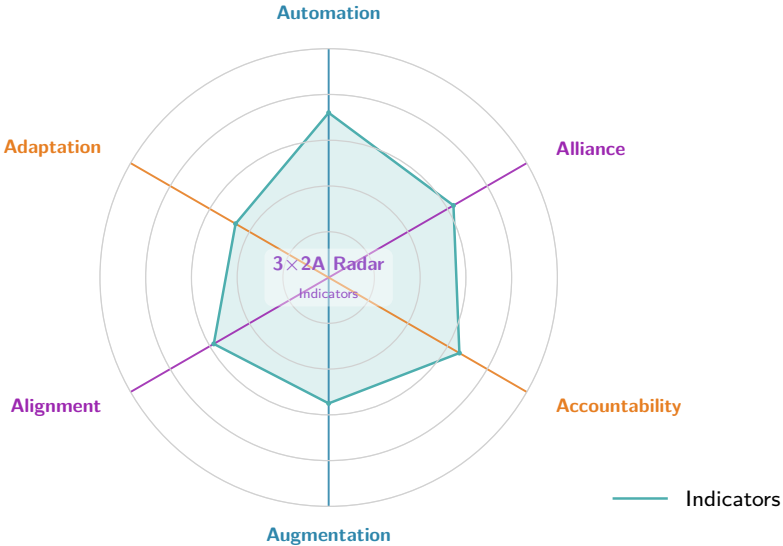
- **Purpose:** unified, multi-axis index capturing functional, relational, and ethical progress.
- **Design:** composite indicators normalized to $[0, 1]$ and aggregated per axis and overall.
- **Parity:** balanced weighting to prevent dominance of any single dimension.

Axis	Example KPI	Type	Measurement
Automation↔Augment.	Human time saved per task	Out.	median minutes/task
Automation↔Augment.	Assist quality gain	Out.	Δ accuracy (%) vs. baseline
Alliance↔Alignment	Goal coherence	Proc.	spec-match score $[0, 1]$
Alliance↔Alignment	Incident frequency	Risk	misalignments / 1k interactions
Adaptation↔Account.	Drift detection latency	Proc.	hours to detect
Adaptation↔Account.	Audit coverage	Gov.	% artifacts with lineage

Normalization: domain-specific robust scaling; *Aggregation:* weighted mean with axis-parity constraints.

Types: Proc.=Process, Out.=Outcome, Gov.=Governance

3×2A Metrics Radar



Compass — Ethical Orientation

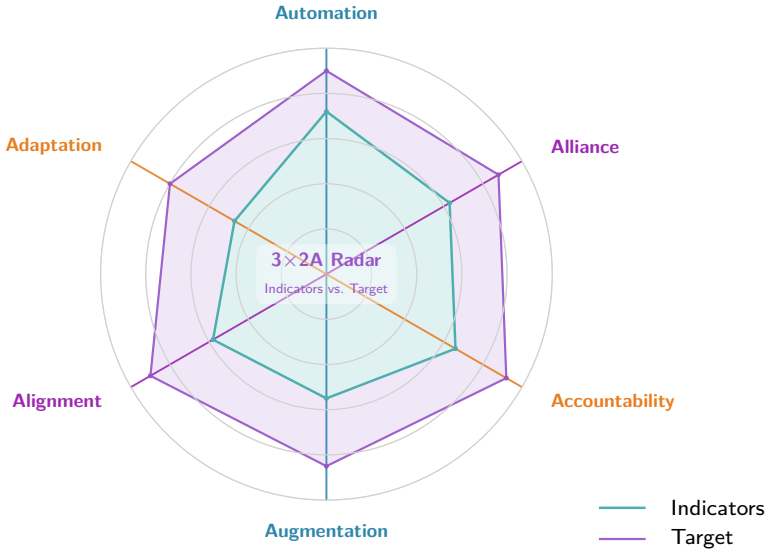
Ethical guidance across 3×2A axes

- **Purpose:** turn ethical intent into guardrails for automation, collaboration, and accountability.
- **Approach:** encode values as run-time policies, thresholds, and ownership rules.
- **Integration:** links with Radiography (diagnosis), Metrics (evaluation), and Strategy (governance).

Axis	Ethical Focus	Type	Mechanism
Automation↔Augment.	Human agency & safety	Policy	human-in-loop; safe defaults
Automation↔Augment.	Harm minimization	Risk	sandboxing; escalation paths
Alliance↔Alignment	Transparency & consent	Gov.	model cards; decision lineage
Alliance↔Alignment	Goal/value alignment	Proc.	alignment protocols; spec prompts
Adaptation↔Account.	Accountability & auditability	Gov.	traceability logs; incident SLAs
Adaptation↔Account.	Fairness & inclusion	Policy	bias audits; domain thresholds

Normalization: domain-specific robust scaling; *Aggregation:* weighted mean with axis-parity constraints.

3×2A Radar — Current vs Target



Radiography — Diagnostic Insight

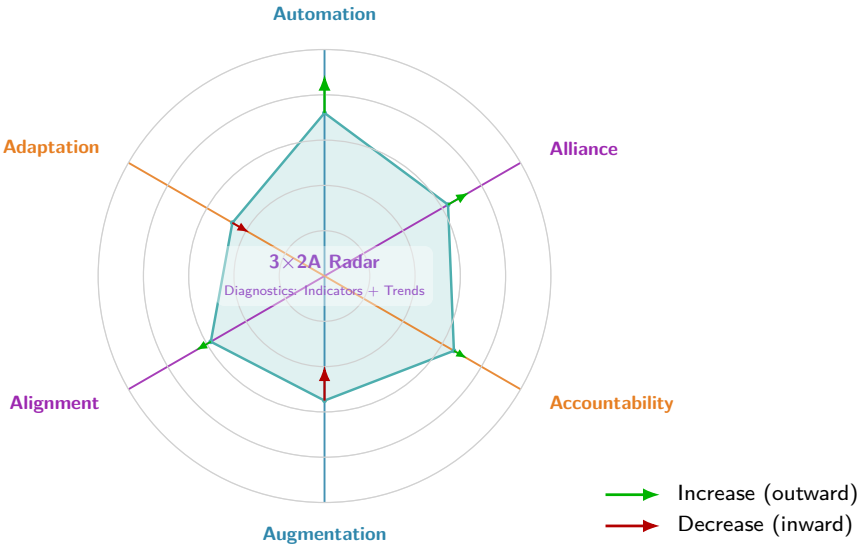
How we diagnose Human–AI coherence across 3×2A axes

- **Purpose:** Offer a diagnostic lens on human–AI coherence and interdependence.
- **Approach:** qualitative and quantitative mapping of relational dynamics across the 3×2A axes.
- **Integration:** outputs feed into the 3×2A Index for continuous monitoring and governance feedback.

Axis	Diagnostic Focus	Type	Indicative Method
Automation↔Augment	Workflow mapping, cognitive load analysis, human override frequency	Proc.	task-trace logs; response-time deltas
Automation↔Augment	Assistive reliability under uncertainty	Risk	stress tests; scenario perturbations
Alliance↔Alignment	Goal and intent consistency between user and model outputs	Proc.	spec-match score; semantic similarity index
Alliance↔Alignment	Misalignment pattern detection and relational drift	Risk	incident logs; correlation heatmaps
Adaptation↔Account	Responsiveness to contextual change and user feedback loops	Proc.	adaptive cycle time; context retention rate
Adaptation↔Account	Audit trail completeness and responsibility mapping	Gov.	traceability score; accountability matrix

Outcome: the radiographic layer turns hidden relational patterns into **actionable diagnostics**, guiding ethical and strategic recalibration.

3×2A Radar — Dynamic Diagnostics



Strategy — Action & Governance

Operationalizing Human–AI synergy across 3×2A axes

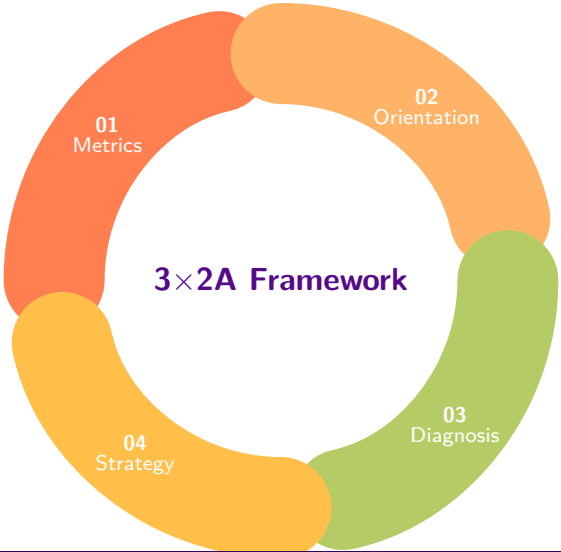
- **Purpose:** turn ethical and diagnostic insights into programs, standards, and governance tools.
- **Approach:** align policy, protocols, and accountability frameworks along the 3×2A axes.
- **Integration:** feed outcomes into the 3×2A Index to sustain adaptive governance.

Axis	Strategic Focus	Type	Implementation
Automation↔Augment.	Human-centered automation; creative augmentation systems	Policy	human-in-loop design; incentive schemes
Automation↔Augment.	Interoperability and safety standards	Gov.	audits; performance benchmarks
Alliance↔Alignment	Cross-disciplinary collaboration frameworks	Strategy	coordination boards; co-design protocols
Alliance↔Alignment	Continuous alignment review cycles	Policy	impact audits; feedback retraining
Adaptation↔Account.	Adaptive learning loops in institutions	Proc.	periodic updates; resilience guides
Adaptation↔Account.	Strong accountability and transparency regimes	Gov.	traceability logs; regulatory reporting

Outcome: Strategy translates diagnostics into **adaptive governance**, closing the 3×2A cycle of metrics, ethics, and action.

3×2A Governance Cycle

Metrics → Orientation → Diagnosis → Strategy



Design Principles — The 3×2A Ethos

Core values guiding Human–AI synergy

1. **Coherence** — one shared language linking science, policy, and practice.
2. **Balance** — automation serves augmentation, rather than replacing it.
3. **Accountability-by-design** — transparency and auditability built in.
4. **Adaptivity** — learn, recalibrate, and evolve with context.

These principles close the 3×2A framework — and open its path to application.

3×2A in Practice — Key Sectors

Concise overview: interventions and indicative metrics

Education

Co-tutors · *Integrity* · *Augmentation*

Metrics: learning gain · prompt literacy · fairness

Scientific Research

Synthesis · *Coding* · *Reproducibility*

Metrics: insight speed · replication · bias check

Healthcare

Documentation · *Imaging* · *Trials*

Metrics: accuracy · throughput · safety

Public Sector & Governance

Services · *Sandboxes* · *Policy*

Metrics: latency · transparency · accountability

Each domain applies the 3×2A logic — balancing automation, collaboration, and adaptive governance.

Talk roadmap



1. Introduction
2. Framework
3. Conclusions

Key Takeaways — 3×2A in Perspective

From framework to action

- The **3×2A Framework** integrates the normative, analytic, and evaluative lenses into one coherent model.
- **Cardinal axes** translate principles into practice — and metrics close the adaptive feedback loop.
- **Next step:** from sector pilots → integrated dashboard → policy toolkit for human–AI synergy.

A living framework — evolving through evidence, ethics, and collaboration.

- Advance the development of the quotients:
  $3 \times 2AQ = f(Au, Ag, Al, An, Ad, As)$, and the general
  $HAIQ = f(Au, Ag, Al, An, Ad, As, ...)$, as metrics for empirical validation and cross-domain assessment.
- Publish comprehensive **sectoral guidelines** spanning **Education**, **Healthcare**, **Scientific Research**, and emerging socio-technical domains.
- Launch an open-access **Community Evaluation & Replication Toolkit** to strengthen transparency, reproducibility, and collaborative innovation.



"AI won't replace humans, but humans using AI will replace those who don't."

Karim Lakhani, Harvard Business School (2024)

"The synergy imperative isn't technological — it's humanitarian.
We must co-design systems where AI elevates human dignity."

Dr. Fei-Fei Li, Stanford HAI (2025)

Synergy is not a luxury—it is the ethical foundation of coexistence

It guides the 3×2A Framework toward a coherent and sustainable human–AI symbiosis.

Thank you! | Questions, insights, and collaboration ideas welcome.

Bibliography

1. **JPMorgan COIN AI Case Study.** "How JPMorgan Uses COIN AI to Automate Contract Analysis and Revolutionize Legal Document Processing." *GoBeyond.AI*, Online resource, Nov. 1, 2025. `https://www.gobeyond.ai/ai-resources/case-studies/jpmorgan-coin-ai-contract-analysis-legal-docs`

2. Lång, K., Hofvind, S., Møllersen, K., et al. "Artificial intelligence–supported screen reading versus standard double reading in the Mammography Screening with Artificial Intelligence (MASAI) trial: a clinical safety analysis of a randomized, controlled, non-inferiority, single-blinded, screening-accuracy study." *The Lancet Oncology*, vol. 24, no. 8, pp. 936–944, 2023. DOI: 10.1016/S1470-2045(23)00298-X

3. Bernstein, M. H., Sheppard, B., Bruno, M. S., Lay, P. S., & Baird, G. L. "Randomized Study of the Impact of AI on Perceived Legal Liability for Radiologists." *NEJM AI*, vol. 2, no. 6, May 2025. DOI: 10.1056/AIoa2400785