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Title:

RAISEF: A Driver-Based Framework for Responsible AI Integrating Academic and Practical Perspectives

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Abstract:

The rapid proliferation of AI across industries presents unprecedented opportunities alongside significant ethical, societal, and regulatory challenges. This paper introduces RAISEF (Responsible AI System Evolution Framework), a novel lifecycle-based approach that bridges theoretical constructs with practical applications. By organizing 15 interdependent Responsible AI drivers into three pillars—Ethical Safeguards, Operational Integrity, and Societal Empowerment—RAISEF systematically addresses tensions such as privacy versus explainability and fairness versus robustness while promoting synergies for cohesive Responsible AI implementation. Unlike existing models, RAISEF advances the theoretical discourse by integrating cross-disciplinary insights from ethics, governance, sociology, and systems thinking while also offering actionable methodologies and toolkits tailored to diverse sectors and cultural contexts. Through hypothetical and empirical scenarios, this paper demonstrates how RAISEF adapts to emerging challenges like generative AI, autonomous systems, and global policy variations. By uniting theory and practice, RAISEF provides academics, policymakers, and practitioners with a comprehensive, globally adaptable framework for fostering ethical, sustainable, and trustworthy AI systems.

Keywords:

Responsible AI Ethics Framework AI Governance

Sustainability

Scholarly Quality

Overall Review: (score = 5)

Overall, the document introduces RAISEF, a comprehensive and well-organized framework for Responsible AI, integrating ethical, operational, and societal concerns across the AI lifecycle. The paper excels in spelling, grammar, academic style, and terminological consistency, contributing significantly to the literature with theoretical and practical implications. Its methodological rigor is commendable, though future empirical testing is required to validate practical applications. The paper's discussions are well-balanced, acknowledging limitations and highlighting potential challenges realistically while maintaining an optimistic view of its applicability. While the focus on comprehensive literature engagement supports its theoretical foundations, the practical implementation and reproducibility of results await further exploration. This balanced approach reinforces the potential significance of the RAISEF framework as a pivotal resource for scholars, policymakers, and practitioners in the field of AI ethics and governance, setting a high standard for future interdisciplinary research and cooperation.

Abstract Representativeness: (score = 5)

The abstract provides a comprehensive overview of the paper's purpose, methodology, and major findings, accurately reflecting the document's content. It effectively conveys the significance of the RAISEF framework and the key dimensions addressed. This alignment ensures the abstract prepares readers for the detailed discussion within the text.

Research Novelty: (score = 5)

The RAISEF framework introduced in the document represents a novel approach, integrating cross-disciplinary insights into AI governance and ethics. Its comprehensive lifecycle approach and emphasis on real-world applicability add significant originality to the field. The framework's adaptability across diverse sectors suggests a forward-thinking perspective that advances current academic discourse.

Theoretical Contribution: (score = 5)

The document makes a substantial theoretical contribution by synthesizing existing ethical, operational, and societal perspectives into a coherent framework. RAISEF provides a structured method for integrating these dimensions systematically over the AI lifecycle, bridging gaps in current literature and proposing pathways for future research. This synthesis indicates a noteworthy advancement of the field.

Methodological Rigor: (score = 4)

The paper outlines its methodology with a high degree of rigor, detailing how RAISEF was developed using interdisciplinary insights. The framework is supported by hypothetical and empirical scenarios that demonstrate its applicability and robustness. While the framework itself remains conceptual, its principles are well-articulated, laying the groundwork for future empirical validation.

Validity and Reliability of Results: (score = 4)

As the document primarily introduces a framework rather than presents empirical data, the

evaluation of results focuses on the logical coherence and theoretical validity of RAISEF. The clear presentation of hypothetical applications and scenarios supports the credibility of the findings, though empirical testing is suggested as a future step to ascertain reliability and practical impact.

Depth of Analysis: (score = 5)

The paper offers a comprehensive exploration of the Responsible AI drivers across societal, operational, and ethical dimensions. Each driver's role and interplay within the AI lifecycle is explored in detail, providing a thorough analysis that contextualizes RAISEF. This depth effectively addresses complex issues and supports robust conclusions, though empirical validation is acknowledged as necessary for further reinforcement.

Critical Engagement with Literature: (score = 5)

The document engages critically with an extensive range of academic and policy-related literature, integrating diverse sources to substantiate the RAISEF framework. It demonstrates a strong command of current debates and pivot points within the domain of AI ethics and governance, effectively using literature to highlight gaps and justify the framework's development.

Significance of Findings: (score = 5)

The introduction of RAISEF has significant potential implications for AI development and governance. Its comprehensive and globally adaptable framework addresses critical needs for ethical and responsible AI systems in rapidly evolving sectors. While practical implementation remains forthcoming, the conceptual insights it offers are poised to influence both academic thought and policy.

Ethical Considerations: (score = 5)

Ethical considerations are addressed comprehensively within the framework, with a focus on inclusivity, accountability, and fairness, among other drivers. The document discusses necessary compliance with ethical standards, underscoring RAISEF's alignment with societal values and emphasizing transparency and participation as ethical imperatives.

Transparency and Reproducibility: (score = 3)

Though the RAISEF framework is well-documented, the paper acknowledges that empirical testing is needed to validate its principles. Transparency is addressed through detailed methodology descriptions and open suggestions for future research. However, reproducibility is inherently limited until real-world applications and data validation become available.

Strength of Conclusions: (score = 5)

The conclusions are well-supported by a detailed and methodical discussion across the text. They emphasize the important contributions of RAISEF and suggest pragmatic steps for empirical testing. While the framework's potential is clearly articulated, the conclusions acknowledge the existing need for empirical validation to consolidate claims.

Balance of Discussion: (score = 5)

The discussion effectively acknowledges potential challenges and limitations within the RAISEF framework, such as the necessity of empirical testing and considerations of cultural

adaptability. Alternative perspectives and critiques from the broader academic literature are incorporated, supporting a balanced evaluation. This adds credibility and depth to the document's impact.

Audience Appropriateness: (score = 5)

The paper is appropriately targeted at an academic audience familiar with AI and ethics. It employs complex concepts and terminology suitable for readers within this domain, ensuring that the depth and sophistication align with expectations for scholarly discourse. Although dense in places, the document maintains accessibility for its intended readers.

Mechanical Quality

Spelling and Grammar: (score = 5)

The document exhibits a high standard of spelling, punctuation, and grammar throughout. There are no noticeable errors, demonstrating a careful proofreading process. The absence of significant grammatical issues facilitates smooth reading, ensuring that the reader's focus remains on the content. Sentence structures are varied and complex, reflecting a scholarly tone but remaining easy to follow.

Academic Style and Tone: (score = 5)

The academic style is consistently formal and objective, adhering well to scholarly standards. The document employs precise terminology and avoids colloquial language, enhancing its credibility within the academic community. The neutral tone and careful selection of words contribute to a professional and authoritative voice, suitable for the intended audience of academics, policymakers, and professionals in AI governance.

Organization and Structure: (score = 5)

The document is well-organized and logically structured, with clearly defined sections and headings. The sequence of sections aligns with typical academic presentation, beginning with an introduction, followed by detailed discussions, and concluding with findings and recommendations. Appendices provide additional depth and case studies that enhance understanding. This coherent organization aids in navigating the content effectively.

Clarity of Expression: (score = 4)

The clarity of expression is generally high, with ideas communicated in a straightforward and direct manner. Technical terms are explained sufficiently for the targeted academic audience. However, dense sections may require careful reading, which is typical for complex academic subjects. Despite this, the overall articulation of concepts allows for clear understanding of the framework and its applications.

Consistency of Terminology: (score = 5)

The document consistently uses specialized terminology related to AI and ethics. Terms like 'bias mitigation,' 'fairness,' and 'sustainability' are used accurately and applied uniformly across different sections, ensuring that there is no confusion regarding their meaning. This consistency supports the reader's comprehension and reinforces the paper's authority in the subject matter.

Formatting and Referencing Accuracy: (score = 5)

Citations and references conform to academic standards, with proper attribution given to sources throughout the document. The formatting is consistent with the typical expectations for academic papers, including the use of in-text citations and a comprehensive reference list. Figures and tables are well-labeled and integrated seamlessly within the text, contributing to the document's overall readability and professionalism.

Figures, Tables and Visual Aids: (score = 5)

The document includes several figures and tables that are relevant and well-integrated into the discussion. They are clearly labeled and effectively used to illustrate key points, such as the categorization of Responsible AI drivers and lifecycle phases. These visual aids are helpful in enhancing comprehension of complex frameworks discussed in the text.

Standard Summary

Objective:

The primary objective of the paper is to introduce RAISEF, a comprehensive framework intended to systematically bridge ethical considerations with practical applications of AI across various industries. It aims to address the pressing ethical and regulatory challenges currently faced due to the rapid proliferation of AI technologies. By organizing 15 interdependent drivers into three main pillars—Ethical Safeguards, Operational Integrity, and Societal Empowerment—the authors seek to offer a structured approach that aligns AI development with societal values and ethics. This framework not only emphasizes the need for principles such as fairness, accountability, and transparency but also provides actionable methodologies tailored to specific cultural and sectoral contexts. Given the continual evolution of AI technologies—including generative models and autonomous systems—the authors aim to ensure that RAISEF remains adaptive to emerging challenges while fostering ethical AI deployment in diverse environments. The implications of RAISEF extend to academics, practitioners, and policymakers, emphasizing the necessity of a cohesive, interdisciplinary approach to promote sustainable and trustworthy AI systems that benefit humanity.

Theories:

RAISEF integrates multiple theoretical perspectives from diverse fields such as ethics, sociology, governance, and systems thinking. The framework positions itself as a sociotechnical system, recognizing the interplay between social and technical dimensions in AI development and implementation. A significant emphasis is placed on the necessity of including ethical safeguards that adhere to human rights and societal values in the design and deployment of AI systems. The theory of responsible innovation underpins RAISEF, promoting the idea that innovation must consider societal implications and ethical aspects. Furthermore, the framework reflects principles of systems theory, focusing on the interdependencies and dynamic interactions among various drivers throughout the AI lifecycle. This approach underscores the importance of adaptability and learning in complex systems, which is vital for addressing the nuanced challenges presented by technological advancements. By synthesizing insights from diverse theories, RAISEF offers a robust analytical foundation for evaluating the responsibilities and impacts of AI technologies.

Hypothesis:

The authors propose the hypothesis that the effective implementation of Responsible AI

practices requires a comprehensive framework that considers the interrelationships among key drivers such as fairness, accountability, privacy, and transparency throughout the AI lifecycle. This hypothesis suggests that existing frameworks, which often treat these drivers in isolation, fail to adequately address the complexities and tensions inherent in real-world AI applications. By hypothesizing that a lifecycle-based approach, exemplified by RAISEF, can harmonize these tensions, the authors aim to demonstrate how such an integrated perspective can enhance ethical AI development. The framework is expected to illustrate that by understanding the dynamics between these drivers, organizations can better navigate regulatory challenges and societal expectations while fostering trust and accountability in their AI systems. This hypothesis is tested through empirical scenarios and practical methodologies that reflect the real-world challenges faced by practitioners in the implementation of AI technologies.

Themes:

Key themes covered in this paper revolve around the ethical implications of AI, the necessity for accountability in AI systems, and the importance of inclusiveness in AI development. The theme of Responsible AI serves as the central focus, underscoring the need for ethical governance frameworks that can adapt to technological advancements while addressing societal implications. An emphasis is placed on the interplay between fairness and privacy, exploring the tensions that arise when implementing AI technologies in sensitive domains. Additionally, the framework addresses the critical need for transparency and trust in fostering public confidence in AI applications. The theme of interdisciplinary collaboration is also prominent, emphasizing the importance of integrating knowledge from diverse fields to enhance the effectiveness of Responsible AI practices. Through these themes, RAISEF aims to offer insights on how ethical considerations can be systematically embedded in the AI development lifecycle, promoting a holistic approach to technology implementation.

Methodologies:

The methodologies employed in developing RAISEF are diverse, integrating both qualitative and quantitative approaches to ensure comprehensive insights into Responsible AI practices. The framework is grounded in empirical and hypothetical scenarios, enabling a practical understanding of how its principles can be operationalized across various sectors. The use of case studies illustrates real-world applications of the framework, allowing for a detailed exploration of the complexities and challenges associated with AI deployment. Furthermore, methodologies include the development of actionable toolkits and guidelines tailored to specific cultural contexts and industries, which can assist organizations in navigating ethical dilemmas effectively. The framework emphasizes continuous improvement through monitoring and feedback mechanisms, ensuring that implemented practices remain relevant and responsive to both technological changes and societal expectations. By combining academic rigor with practical applicability, RAISEF's methodologies enhance its feasibility and adaptability in addressing the needs of diverse stakeholders.

Analysis Tools:

RAISEF utilizes a set of analytical tools aimed at evaluating and implementing Responsible AI practices effectively. Key among these tools are frameworks for assessing the interdependencies and tensions between the identified drivers throughout the AI lifecycle.

These analytical approaches include priority frameworks that help identify critical leverage points for addressing ethical dilemmas in AI applications, particularly where tensions, such as fairness versus explainability, arise. Continuous feedback loops are also integrated as analytical mechanisms that facilitate real-time adjustments in AI systems, promoting dynamic learning and adaptation based on stakeholder input. Additionally, metrics for assessing the implementation of ethical practices, such as audits and performance evaluations, are hereby established, allowing organizations to measure their adherence to Responsible AI principles. The framework advocates for interdisciplinary collaboration, encouraging the adoption of diverse analytical perspectives from fields such as ethics, sociology, and technology assessment to ensure comprehensive evaluations.

Results:

The results presented in the paper emphasize the effectiveness of the RAISEF framework in addressing the complexities associated with Responsible AI practices across various industries. Through hypothetical case studies, the framework demonstrates its adaptability in navigating ethical dilemmas and regulatory challenges, promoting a cohesive approach to AI implementation. Notably, RAISEF showcases how organizations can integrate ethical safeguards into their operational frameworks, effectively managing tensions between fairness and privacy, as well as transparency and accountability. The analysis reveals that by employing a lifecycle-based approach, organizations can proactively identify and mitigate risks associated with algorithmic bias and transparency issues. Furthermore, the results highlight the framework's potential for enhancing public trust in AI systems through structured governance and stakeholder engagement. Overall, the findings underscore the significance of embedding ethical considerations throughout the AI development process, illustrating that RAISEF offers a viable and comprehensive approach to fostering ethical, responsible, and sustainable AI technologies.

Key Findings:

Key findings from the paper illustrate that the RAISEF framework effectively integrates ethical considerations into the lifecycle of AI systems, addressing pressing challenges associated with algorithmic bias and transparency. The research underscores how the structured organization of 15 interdependent drivers facilitates a dynamic understanding of their interactions, enabling organizations to better navigate the complexities of AI deployment. A crucial finding is that organizations employing RAISEF can enhance their operational integrity, promoting trust through accountability and transparency mechanisms. Furthermore, the paper reveals that RAISEF is adaptable to emerging challenges posed by advancements in AI technologies, such as generative models and autonomous systems. The framework also emphasizes the importance of inclusiveness in AI development, validating that diverse stakeholder engagement contributes significantly to fair and ethical outcomes. These findings affirm that RAISEF stands as a robust tool for advancing Responsible AI practices, providing actionable methodologies that align with societal values across various contexts.

Possible Limitations:

The paper acknowledges certain limitations associated with the RAISEF framework that merit consideration for future research. One primary limitation is the need for empirical validation in

operational environments; while the framework is theoretically robust, its effectiveness across diverse sectoral implementations has not been rigorously tested in practice. Additionally, the framework's adaptability to various cultural contexts requires further exploration to ensure that it provides equitable guidance in different regulatory landscapes. There is also recognition of potential challenges surrounding data privacy and security when implementing the framework, particularly in industries where sensitive information is involved. The authors highlight that integration of the diverse drivers may lead to trade-offs that necessitate careful balancing, and the framework does not yet fully address how best to resolve such inter-driver tensions in real-time. These limitations suggest that further interdisciplinary collaboration and methodological refinement are essential for enhancing RAISEF's applicability and effectiveness.

Future Implications:

Future implications of the RAISEF framework revolve around its potential for shaping ongoing research and development in the field of Responsible AI. As AI technologies continue to evolve, the framework anticipates adapting to address the unique ethical and operational challenges that arise with advancements such as generative AI and autonomous systems. There is an emphasis on the necessity of conducting empirical research to validate RAISEF's methodologies in various contexts, which will provide real-world insights into its effectiveness. The authors envision that integrating mechanisms for continuous learning and feedback into the framework will enhance its adaptability, allowing organizations to remain responsive to emerging regulatory changes and societal expectations. Moreover, future research could explore how RAISEF can contribute to establishing standardized practices for Responsible AI across industries. This adaptability and forward-thinking perspective position RAISEF as a foundational resource for promoting ethical AI development globally.

Key Ideas / Insights:

Lifecycle Approach of RAISEF

RAISEF's primary contribution lies in its lifecycle-oriented framework that integrates 15 key drivers distributed across three pillars: Ethical Safeguards, Operational Integrity, and Societal Empowerment. This structure allows for a comprehensive and systematic exploration of the interactions among these drivers throughout the AI lifecycle. Unlike existing frameworks that tend to emphasize specific aspects of Responsible AI, RAISEF articulates the dynamic interrelations between drivers, consequently addressing critical tensions. For example, the relationship between privacy and explainability highlights a common difficulty faced by practitioners: enhancing user privacy often comes at the cost of algorithmic transparency. By offering methodologies that consider these trade-offs, RAISEF promotes a balanced, nuanced understanding of Responsible AI, providing practical tools that facilitate ethical decision-making in technology development.

Integration of Cross-Disciplinary Insights

Another significant insight of RAISEF is its incorporation of diverse academic and practical perspectives in the design of Responsible AI systems. The framework emphasizes the need to synthesize knowledge from ethics, sociology, systems thinking, and governance to create adaptable solutions that reflect a range of cultural contexts. This multidimensional view not only broadens the theoretical landscape of Responsible AI but also roots it in real-world

application, encouraging practices that are sensitive to local norms and global standards. For example, the integration of fairness-aware algorithms with stakeholder engagement strategies demonstrates how RAISEF facilitates tailored, culturally relevant implementations of AI technologies, ensuring that they respond effectively to the unique challenges and values of different communities.

Addressing Emerging Challenges in AI

RAISEF is particularly notable for its deliberate focus on the evolving landscape of AI technologies, especially concerning generative models and autonomous systems. The framework identifies emerging risks associated with these technologies, such as algorithmic bias and transparency issues, and proposes targeted methodologies that can be adapted to address these challenges. For instance, as generative AI systems become increasingly prevalent, RAISEF emphasizes the importance of embedding ethical safeguards into their design and deployment. This proactive approach ensures that Responsible AI frameworks remain relevant and effective, providing stakeholders with robust guidelines to foster ethical innovation while minimizing potential harm. The framework's responsiveness to global policy variations also positions it as an essential tool for navigating the regulatory complexities that accompany these advancements.

Key Foundational Works:

N/A

Key or Seminal Citations:

Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach.

Floridi, L., & Taddeo, M. (2016). What is data ethics?

Amodei, D., Olah, C., Steinhardt, J., Christiano, P., Schulman, J., & Mané, D. (2016). Concrete problems in AI safety.

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