

# Ethical Risks, Concerns, and Practices of Affective Computing



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## 1. Introduction

- AI is progressing fast, raising concerns
- Ethical safeguards are needed
- Rules and regulations are being prepared [1]
- Affective computing is particularly sensitive
- Affective computing community has already taken action to ensure ethical practice [2]
- This study aims at investigating the ethical considerations of our community

## 2. Affective Computing Typology

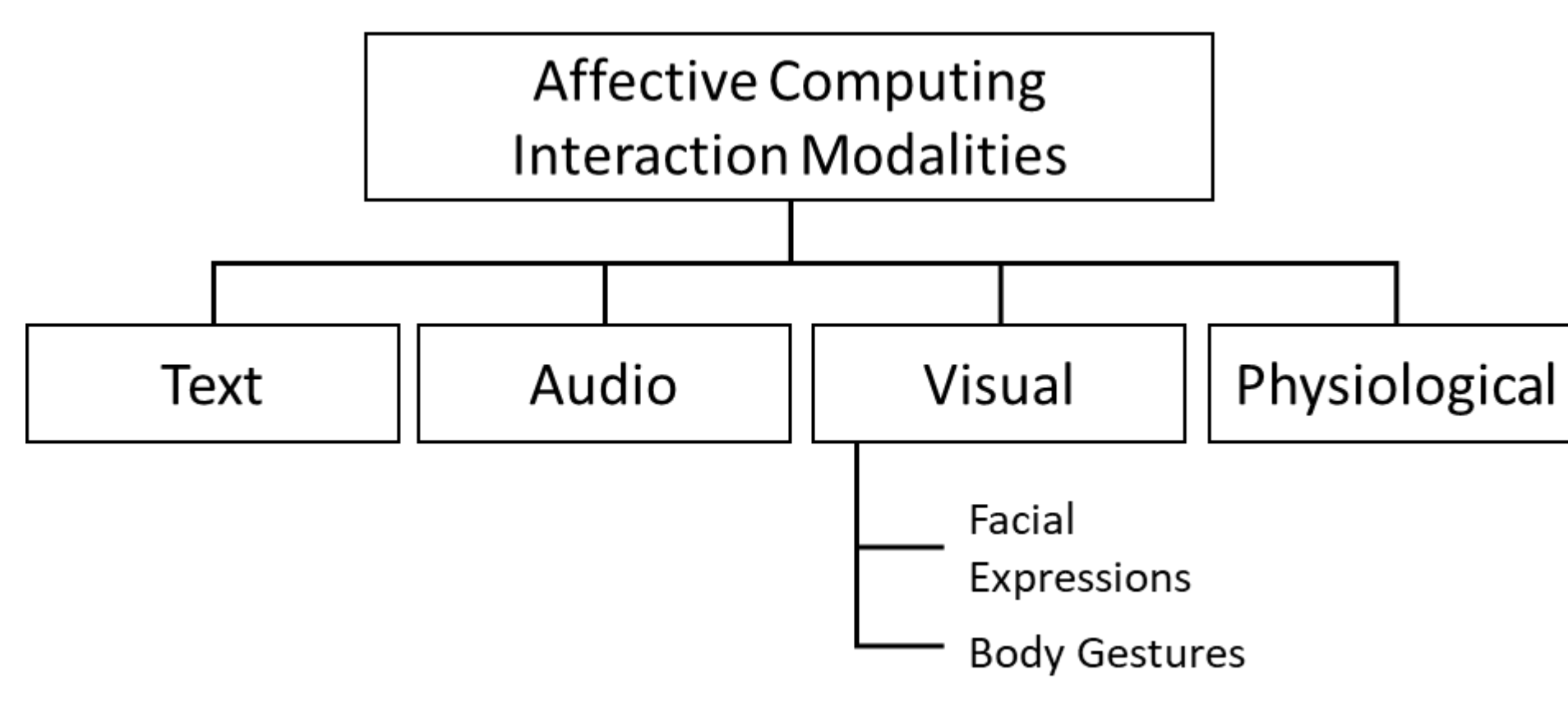


Figure 1. Typology of affective computing interaction modalities [3]

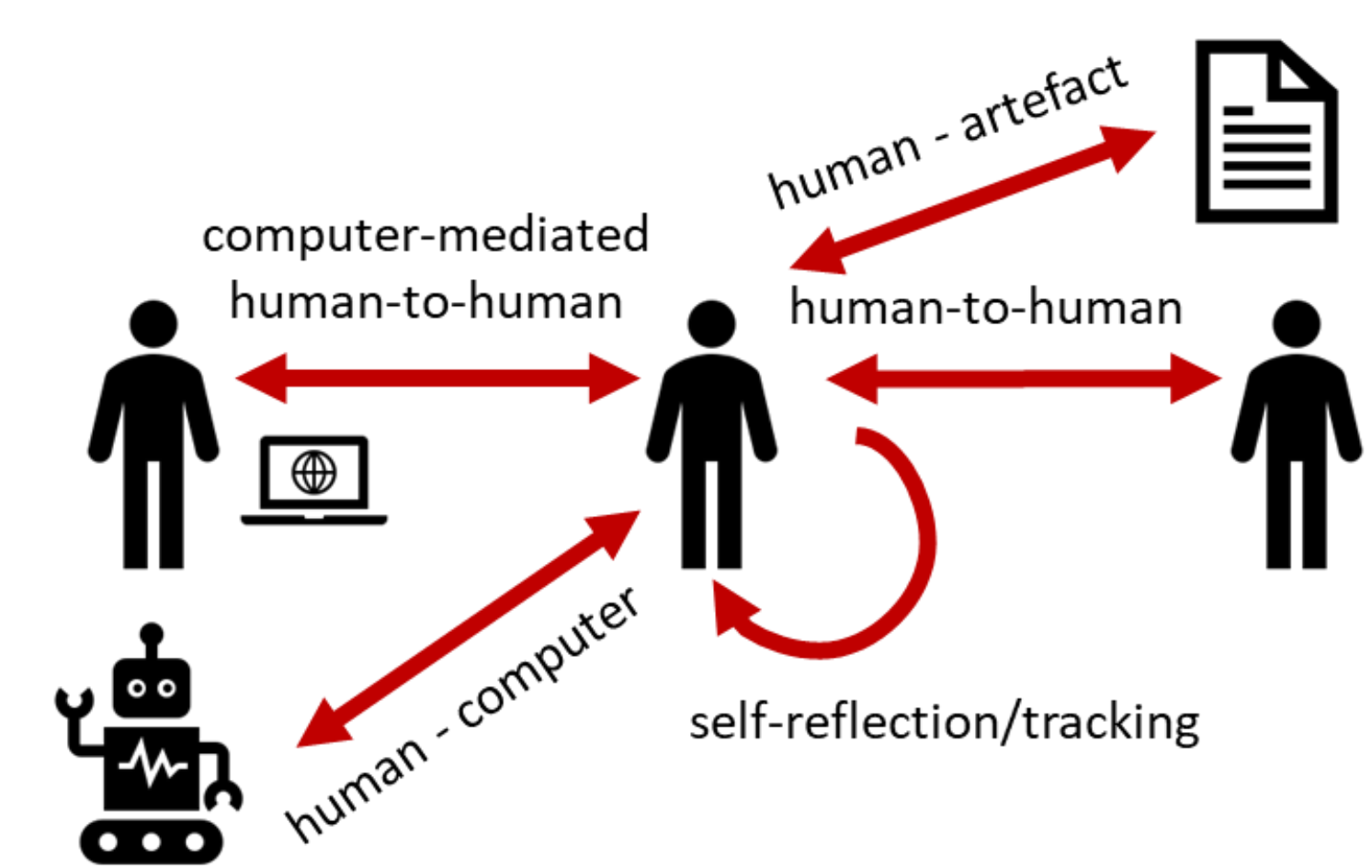


Figure 2. Typology of communication channels enhanced by affective computing

## 3. Research Questions

- RQ1:** What are the ethical risks and concerns reported by affective computing researchers?
- RQ2:** What are approaches proposed by affective computing researchers to mitigate these risks?
- RQ3:** What is the potential impact of the regulations (e.g., The AI Act) on different types and applications of affective computing?

## 4. Research Method

- Data:** Ethical impact statements, N=70
- Goal:** To identify reported limitations, risks, and mitigation strategies
- Method:** Thematic analysis
- Code groups:** *study-related, data-related, application-related*

## 5. Descriptives

Categories	STUDY	DATA	APPLICATION
Themes	<ul style="list-style-type: none"><li>Human subjects</li><li>Study design</li><li>Environmental impact</li></ul>	<ul style="list-style-type: none"><li>Data quality</li><li>Nature of data</li><li>Open data</li></ul>	<ul style="list-style-type: none"><li>Application</li></ul>

Figure 5. Categories and themes identified in thematic analysis

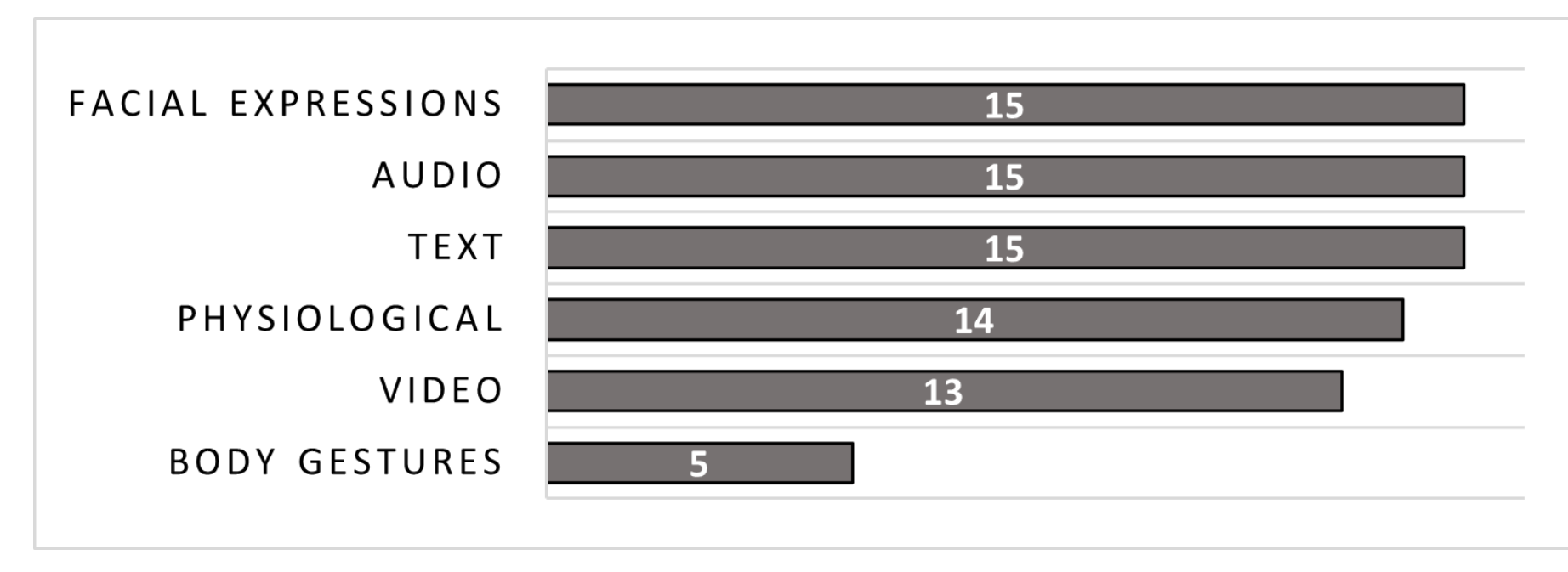


Figure 3. Number of papers addressing different interaction modalities

## 6. Main Findings

	THEMES	CODES		
		LIMITATIONS	RISKS	MITIGATION
STUDY	HUMAN SUBJECTS	⇄ Participant selection and compensation (3)	⇄ Limited oversight (2) ⇄ Harm to participants (2)	⇄ Involve IRB(26) ⇄ Apply informed consent (22) ⇄ Participants can drop-out at will (4) ⇄ Transparent reporting (2)
	STUDY DESIGN	⇄ Context-specific (2)	⇄ Results are not generalizable (6) ⇄ Reduced construct validity (2)	⇄ Improve the study (5) → Conduct more research (4) → Improve the performance (3)
	ENVIRONMENTAL IMPACT		⇄ Environmental Impact (5)	⇄ Examine and report environmental impact (2) ⇄ Train small models (1) ⇄ Use pretrained models (1) ⇄ Avoid over-personalization of models (1)
DATA	DATA QUALITY	⇄ Small sample size (10) ⇄ Sample is not representative (4) → Demographics (4) → Limited set of emotions (1) ⇄ Data imbalance (2)	⇄ Results are not generalizable (6) ⇄ Discrimination (3) ⇄ Biases (24) [4] ⇄ Reduced accuracy (3)	⇄ Improve the data (10) → Collect more data (7) → Collect more diverse data (4) → Apply sampling strategies (2) → Balance data (3) → Examine the biases (4) → Use multiple datasets (2)
	NATURE OF DATA		⇄ Sensitive data (5) → Healthcare/mental → Offensive content ⇄ Private data (14) ⇄ Personally identifiable data (1) ⇄ Unauthorized access to the data (2) ⇄ Unclear IP rights and licensing (2)	⇄ Anonymization/De-identification (22)  ⇄ Setup data protection policy (2) ⇄ Establish data protection measures (2)
	OPEN DATA	⇄ Private/unavailable research data (2)	⇄ Reproducibility is hindered ⇄ Misuse of data	⇄ Make research data available (5) ⇄ License the published datasets (2) ⇄ Establish EULA for published datasets (2) ⇄ Identify and address failure consequences (1) ⇄ Provide transparent information to user (2)
APPLICATION	APPLICATION	⇄ Limited stakeholder involvement (2) ⇄ Critical domains and application fields → Healthcare (20) → Education (4) → Social services (9) → Law enforcement and border control (0) → Workplace (2)	⇄ Harmful applications (18) → Surveillance → Deception → Manipulation → Restrict autonomy ⇄ Societal adverse impact (2) → Limit fundamental rights → Controversial subjects ⇄ Failure consequences (1)	

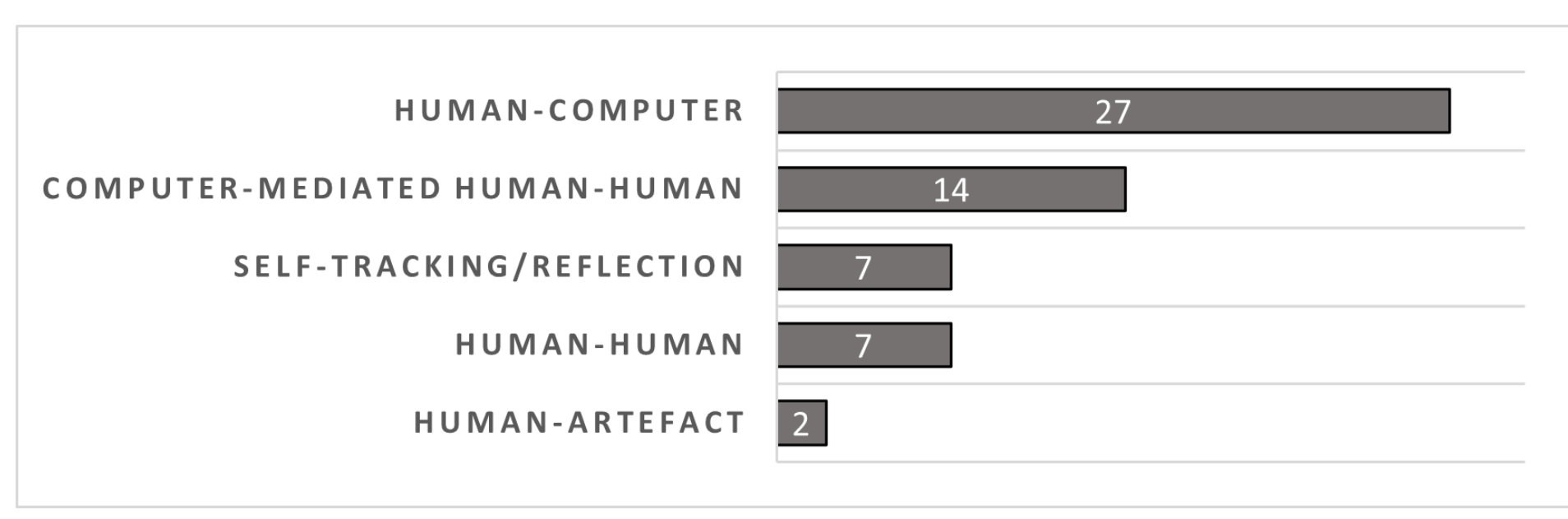


Figure 4. Number of studies addressing different types of communication channels

## 7. Conclusion

- Affective computing community has taken important steps to highlight ethical research.
- However, our findings indicate several gaps and non-standard ethical practices.
- We could benefit from more systematic guidelines for ethical research practice and reporting.

### Limitations

- This thematic analysis focuses only on the ethical impact statement sections, and not on the other sections of the paper.

### Future work

- We plan to prepare reports and open a communication dialogue between affective computing community and policymakers.
- We will extend our work to cover the leading journals of affective computing (e.g., IEEE Transactions of Affective Computing)

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## References

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- [2] D. Ong, J. Hernandez, R. Picard, et al., Writing an ethical impact statement for accii2023, <https://accii-conf.net/2023/wp-content/uploads/2023/03/instructions-ethicalstatement.pdf>, accessed 18-June-2023, 2023.
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