


Chapter 17

The Role of Multi-Modal Sentiment Analysis in Optimizing Leadership Communication

Ashish Khosla

Shoolini University, India

Gaurav Gupta

 <https://orcid.org/0000-0002-5192-4428>

Shoolini University, India

ABSTRACT

Leadership involves more than words, and good communication can help achieve any goal. Effectiveness depends. To understand, multi-modal sentiment analysis uses multiple data sources. This strategy provides insights to improve machine learning modelling. This study optimises leadership communication via visual, auditory, and spoken sentiment analysis. Visual analysis examines facial expressions and body language; vocal analysis studies speech, emotion tones, linguistic cues, and fluency. Machine learning and natural language processing boost leadership communication emotional awareness in three key areas with multi-modal sentiment analysis. Leadership training using multi-modal sentiment analysis and real-time feedback improves empathy and communication. Highlighting multi-modal leadership communication highlighted this growing technology and technique's data integration, interpretability, and scalability problems.

DOI: 10.4018/979-8-3693-4147-6.ch017

Copyright © 2025, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

1. INTRODUCTION

Effective leadership communication is crucial for organizational success, influencing team dynamics, decision-making, and overall performance. Multi-modal sentiment analysis, which integrates visual, auditory, and spoken data, offers a novel approach to enhancing leadership communication by providing a comprehensive understanding of emotional cues. This chapter explores the potential of this approach in optimizing leadership strategies and fostering more empathetic and effective leadership.

The art of influencing and guiding individuals or groups toward achieving common goals is a fundamental quality of leadership. The ability to inspire, motivate, and direct others to make them understand their full potential and nudge them to give their best to the organization is the ultimate involvement of effective leadership (Gardner, 1999). The role of leadership extends beyond the general assumptions of supervising others, it requires a strategic vision, logical decision-making, conflict resolution, and adaptation of a positive organizational culture (Northouse, 2021). Delivering this quality of leadership requires communication, which is a critical component that serves as the leaders provide their visions, expectations, and feedback. In the context of leadership, the impact of effective communication skills will elevate the goal with higher team performance, increased employee satisfaction, and improved outcomes (Conger & Kanungo, 1988). Leaders can benefit from insights about team morals, emotional response, and engagement level, which is the very basic concept of Sentiment analysis (SA) (Commerce, 2009). A computational technique used to identify and extract subjective information from text, speech, or visual data is referred to as SA, also called opinion mining (Liu et al., 2016). The general logic behind SA is to analyze and classify emotions and opinions as positive, negative, and neutral by involving emerging technologies such as natural language processing (NLP), machine learning (ML), and computational linguistics (CL) (Pak & Paroubek, 2010). There are vast applications ways of SA, ranging from simple customer feedback analysis to political campaign strategies and healthcare insights (Tsytarau & Palpanas, 2012). In the context of leadership, SA can be instrumental in optimizing communication by analyzing feedback from various communication channels (Dos Santos & Gatti, 2014).

The traditional approach of employing SA for analyzing leadership communication mostly relies on single-modality data such as text, written materials or speech. This approach cannot fully provide understanding about the complex emotional states and interactions. Even if this approach provides valuable insights, they have a high probability of missing critical non-verbal and paralinguistic cues that contribute significantly to understanding the complex nature of communication optimization. Multi-modal sentiment analysis (MMSA) addresses the limitations

30 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/the-role-of-multi-modal-sentiment-analysis-in-optimizing-leadership-communication/359652

Related Content

Mobile Security in Low-Income Households' Businesses: A Measure of Financial Inclusion

Bibi Zaheenah Chummun (2019). *Cyber Law, Privacy, and Security: Concepts, Methodologies, Tools, and Applications* (pp. 576-595).

www.irma-international.org/chapter/mobile-security-in-low-income-households-businesses/228746

Generation Y and Internet Privacy: Implication for Commercialization of Social Networking Services

Zdenek Smutny, Vaclav Janoscik and Radim Cermak (2019). *Cyber Law, Privacy, and Security: Concepts, Methodologies, Tools, and Applications* (pp. 978-1002).

www.irma-international.org/chapter/generation-y-and-internet-privacy/228765

Artificial Intelligence in Different Business Domains: Ethical Concerns

B. Sam Paul and A. Anuradha (2024). *Exploring the Ethical Implications of Generative AI* (pp. 13-33).

www.irma-international.org/chapter/artificial-intelligence-in-different-business-domains/343696

The Ethics of AI and IoT in Healthcare: Navigating Cybersecurity Risks and Ensuring Data Protection

Sagar Sidana, Parul Chaudhary, Amrita Ticku, Nitasha Rathore, Anurag Sinha, Ashutosh Keshri, Biresh Kumar, Neetu Singh, Abhiraj Sinha and Neeraj Raj (2025). *Ethical Dimensions of AI Development* (pp. 347-368).

www.irma-international.org/chapter/the-ethics-of-ai-and-iot-in-healthcare/359651

Use of Artificial Intelligence in Social Sciences for Improving Problem Solving

T. Venkat Narayana Rao, Damacharla Tejaswini, C. Swetha and Sangers Bhavana (2026). *The Ethical Landscape of AI: Global Issues and Solutions* (pp. 367-382).

www.irma-international.org/chapter/use-of-artificial-intelligence-in-social-sciences-for-improving-problem-solving/399872