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**AI for Supporting Dispatchers' Mental Health: Proof-of-Concept for Stress  
Detection Based on Emotional State**

Dispatchers (also referred to as emergency telecommunicators) are critical first responders who navigate high-pressure situations to ensure effective emergency response capabilities. Studies reveal that dispatchers frequently experience elevated levels of stress due to factors such as time-sensitive decision-making and insufficient organizational support, contributing to mental health challenges. While advancements in artificial intelligence (AI) have demonstrated potential in emergency services, there is limited research applying AI tools to analyze the emotional well-being of dispatchers. Furthermore, there is a lack of discussion regarding potential biases and the adaptations that may be necessary for the successful implementation of such an approach. This study develops an AI-driven approach using natural language processing (NLP) to analyze stress through emotion detection, from audio recordings, laying the groundwork for future applications with dispatchers. Specifically, we compare five classifiers trained on publicly available emotional speech datasets (used as a proxy for emergency communications) in English and Spanish to explore their potential for aiding future mental health support for dispatchers. We find that the classifiers dealing with neutral and calm emotions are the highest performing and have the potential to align with real-world dispatcher scenarios, making it promising for practical adoption of this approach to detect emotional states for mental health initiatives. Through speech-based emotion detection, this AI driven approach offers a pathway toward understanding cognitive-affective states (or what one is thinking and feeling) in emergency telecommunications by capturing the emotional component and laying the foundation for future systems that could explore decision-making during calls. Overall, we demonstrate the potential of AI to support mental health in this high-pressure profession, contribute practical, industry-informed insights on bias and considerations surrounding real-world implementation, and promote early intervention and well-being for dispatchers.

**Presentation Theme:** AI in Emergency Management.

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