OPTIMIZATION OF AI IN MONITORING AND STRESS MANAGEMENT FOR WORKERS IN THE DIGITAL ERA

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ABSTRACT Digital transformation in the workplace has brought significant changes to the way workers carry out their activities. On one hand, digitalization increases efficiency, but on the other hand, it also creates psychological pressure that leads to increased stress, chronic fatigue, and burnout. Based on research in Malaysia, the average work-related stress score is 62.8%. Among them are medical personnel (68.8%) and those working in urban areas (70.4%). Unfortunately, many organizations do not have an integrated and data-driven mental health monitoring system. This community service activity aims to assist partners in Malaysia in understanding, implementing, and utilizing AI technology for monitoring and managing worker stress. The activities are conducted online in four stages: an online survey of workers to identify stress levels, the creation of a simple AI platform, training on the use of AI for stress detection based on digital behavior input, and evaluation through a post-program survey to refine the system based on partner feedback. The results of this activity show an increase of more than 80% of workers understanding digital literacy, particularly the use of AI for stress management. Through digital behavior, AI analyzes workers' stress levels and provides follow-up recommendations for those in need. Through this service, workers can utilize AI from various platforms to reduce stress levels.

KEYWORDS: *Artificial Intelligence; Work Stress; Workers; Mental Health.*

1. INTRODUCTION

The digital era has brought significant transformations to the world of work. Workers now have to adapt to the demands of rapidly evolving technology, communication without time limits, and the pressure to always be productive. This transition brings positive impacts in terms of efficiency, but it also causes an increase in psychological burden, chronic stress, and even burnout (emotional exhaustion due to continuous work pressure). (Vázquez *et al.*, 2024) Work-related

stress, if not managed properly, will decrease productivity, increase the risk of mental and physical illnesses, and create an unhealthy work environment. (Sutrisno *et al.*, 2023)

Based on data from the World Health Organization (WHO, 2022), work-related stress is the main cause of presenteeism, which is physical presence but not optimal cognitively and emotionally. (García-Iglesias *et al.*, 2023) Based on research in Malaysia, the average work-related stress score is 62.8%, including medical staff (68.8%) and those working in urban areas (70.4%). Of course, those who receive support at their workplace have lower work-related stress levels compared to those who do not receive any support. (Shahrudin, Nik-Nasir and Mohamed-Yassin, 2025) Unfortunately, many organizations do not yet have an integrated and data-driven mental health monitoring system.

Artificial Intelligence (AI) is an artificial intelligence that offers innovative solutions to monitor workers' mental conditions in real-time and early detect stress levels through symptoms inputted by the workers. (Jangid, 2024) Through digital behavior, AI measures workers' stress levels and provides further recommendations if needed. Several studies have proven the effectiveness of this approach by developing AI-based stress detection systems. (Putri, 2023)(Putri, Sukmaningsih and Mukaromah, 2024)(Pamungkas *et al.*, 2025) Based on this background, this community service activity aims to assist partners in Malaysia in understanding, implementing, and utilizing AI technology for monitoring and managing worker stress.

2. METHOD

The method of implementing this community service activity is designed to provide education, practical training, and assistance to 40 workers so that they better understand AI and are able to apply it to detect stress levels. Before this community service, the workers did not understand that AI is one of the solutions offered for stress management. We hope that this service will enable the workers to comprehend and utilize AI for stress management. The implementation of the service will be conducted online via Zoom Meeting on Sunday, June 22, 2025, from 08:00 AM to 12:00 PM Western Indonesia Time. The method of implementing the community service activities is divided into four main stages, namely:

1. Initial identification and analysis

   We conduct an online survey for workers to determine their stress levels, taking into account their work habits and their readiness to use AI-based technology. This is done one day before the face-to-face meeting takes place.
2. The creation of a simple AI platform

We are developing or adapting a system that can monitor stress through digital behavior. The creation of this AI platform takes approximately 1 month to develop.

3. Socialization and training.

   The material on work stress and the advantages of AI in monitoring stress for workers was presented. Following the presentation, we conducted an online training session for workers, focusing on the application of AI technology through the platform we developed. This socialization and training were conducted for 40 workers in Malaysia, lasting 4 hours from 08:00 to 12:00 Western Indonesia Time.

4. Evaluation and follow-up

   We measure the effectiveness of the intervention through post-program surveys and refine the system based on partner feedback.

3. RESULT AND DISCUSSION

This community service program successfully achieved its main objective, which is to enhance the understanding and application of artificial intelligence (AI) technology for monitoring and managing stress in the workplace digitally. The implementation of this activity was carried out through structured stages that included problem identification, training, technology implementation, and evaluation and follow-up.

1. Analysis of conditions before service

   We conducted an initial online survey among workers in Malaysia who served as activity partners before the service began. The initial survey results revealed that 74% of participants were experiencing moderate to high levels of stress. Several identified contributing factors include multitasking work demands, the blurring of boundaries between work and personal life, social isolation due to remote work, and lack of time for self-care. Additionally, the survey also revealed that 90% have never used technology to monitor their mental condition. Their level of digital literacy varies, with most only understanding basic use of digital devices but not yet familiar with AI applications for mental health. Partners also mentioned that an integrated stress monitoring system is not yet available in their work environment.

2. Implementation and community participation

   During the implementation of the service, the participation of partner communities was very active. They participated in training sessions and workshops and voluntarily engaged in simulations using the AI platform and provided feedback on the developed system. The participants engaged in discussions about data usage ethics, personal information security, and the effectiveness of AI approaches in detecting burnout. The methods used, such as case studies

and demonstrations of stress detection chatbots like "Viki" and "Woebot," allowed participants to understand the real benefits of AI implementation. In this activity, participants were also given an overview of the importance of work-life balance in the digital era.

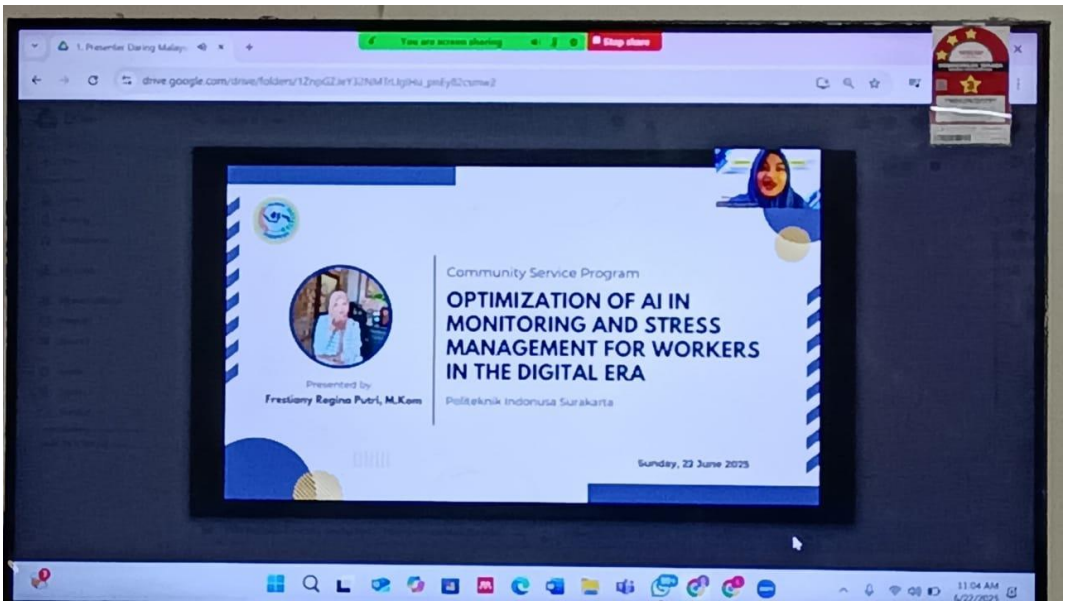

Figure 1. Presentation of Material

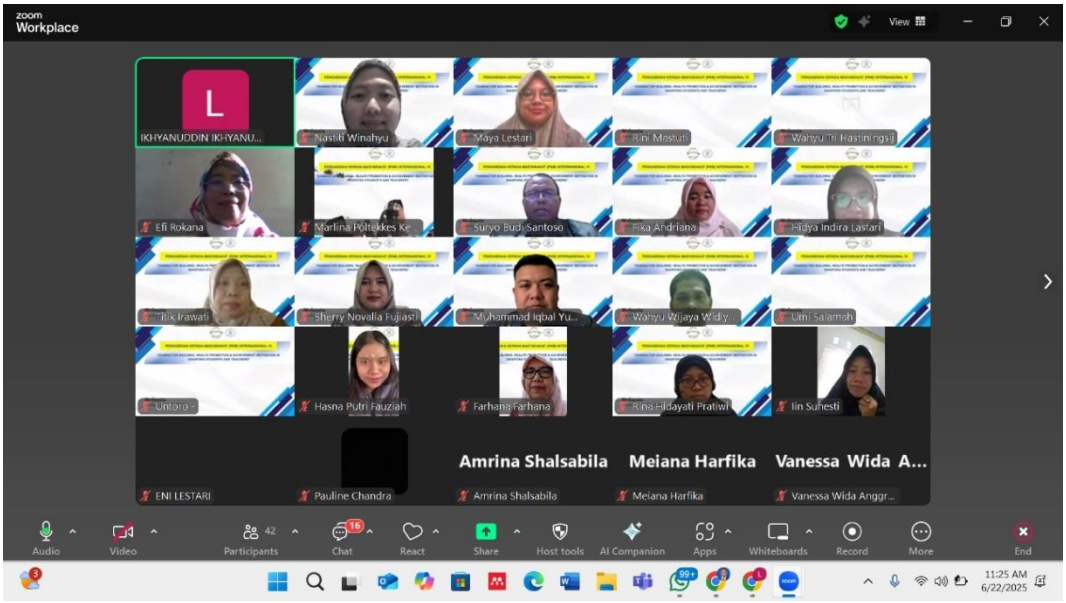

Figure 2. Service Participants

3. Analysis of Conditions After the Program

Post-activity evaluation was conducted through a participant satisfaction survey. The evaluation results show a significant increase in participants' understanding of the relationship between work stress and productivity, as well as an increased awareness of the importance of regularly monitoring mental health conditions. After the service was conducted, it was found that 83% of the participants stated that they gained new insights into the role of AI in the field

of mental health, and more than 70% expressed readiness to adopt some of the introduced technologies.

From the partner's side, there is a willingness to explore the integration of a stress monitoring system into the organization's internal management system as part of a long-term employee wellness program.

4. Impact on the community and adoption of innovation

The direct impact felt by the partner community includes an increase in understanding of concepts and technical skills in using AI-based technology, heightened awareness of the importance of systemic support in employee mental health management, and a trigger for behavioral changes to independently implement stress management strategies using recommendations from the AI system. In terms of innovation adoption, some participants suggested that their organizations could provide an internal AI-based platform for early stress detection and integrate it with the HRD system. Partners from Malaysia also expressed interest in developing further collaboration in the form of training programs.

4. CONCLUSION

This community service program has successfully achieved its main goal of community empowerment, particularly in enhancing digital literacy, understanding mental health, and the ability to apply artificial intelligence (AI) technology in the context of work stress monitoring. With a total of 40 participants from Malaysia, this activity has made a tangible contribution to raising awareness and readiness for the adoption of AI-based technology in an increasingly digitalized work environment. The empowerment methods applied include initial surveys, the development of a simple AI-based system, interactive online training and technology simulations, as well as evaluations that prove these activities align with the problems, needs, and challenges faced by partners. Issues such as high stress levels, the lack of a reliable mental health monitoring system, and low digital literacy can be appropriately addressed through an educational, collaborative, and practical solution-based approach.

The positive impacts felt by the partners include an increased understanding of the concept of work stress, readiness to adopt stress monitoring technology, and institutional openness to using technology to support employee well-being. Some participants have even begun to implement independent strategies such as the use of wearable devices and chatbots for personal needs, demonstrating the adoption of innovations at both the individual and organizational levels. For the next step in helping the community grow, it's important to keep providing regular training so that participants can keep getting better at using AI technology in a responsible way and then include

monitoring systems in company policies as part of a long-term employee support program. With cross-country support and collaboration as demonstrated in this program, technology-based community empowerment can become a sustainable solution that empowers workers to face the challenges of the digital era in a healthier and more productive manner.

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CONFLICT OF INTERESTS

The authors declare that there are no financial, professional, or personal conflicts of interest relevant to the implementation of this community service activity or the preparation of the scientific article submitted to IJCCH. None of the authors have employment relationships, consulting roles, share ownership, or involvement in organizations that could benefit directly from the publication of this article. Politeknik Indonusa Surakarta's community service activities mechanism fully supports this activity with internal institutional funds. There is no involvement of external funding institutions from the public sector, commercial sector, or non-profit organizations in the study design, activity implementation, data analysis, article writing, or the decision to submit this article to IJCCH. No author is currently serving or has ever served as a member of the editorial board of the IJCCH Journal. Furthermore, the authors have no affiliations with organizations or institutions that could influence the objectivity of the study's results.

REFERENCES

García-Iglesias, J.J. *et al.* (2023) 'Presenteeism and mental health of workers during the COVID-19 pandemic: a systematic review', *Frontiers in Public Health*, 11(September). Available at: https://doi.org/10.3389/fpubh.2023.1224332.

Jangid, A. (2024) 'AI and Employee Wellbeing How Artificial Intelligence Can Monitor and Improve Mental Health in The Workplace', *International Journal of Advanced Research (IJAR)*, 12(10), pp. 743–764. Available at: https://doi.org/10.21474/IJAR01/19693.

Pamungkas, A. *et al.* (2025) 'Implementation of K-Nearest Neighbor in Case-Based Reasoning for Mental Health Diagnosis Systems', 11(4), pp. 1109–1120. Available at: https://doi.org/10.15294/sji.v11i4.19912.

Putri, F.R. (2023) 'Sistem Berbasis Kasus untuk Konseling Remaja SMP dalam Menghadapi Era New Normal', *JATISI (Jurnal Teknik Informatika dan Sistem Informasi)*, 10(1). Available at: https://jurnal.mdp.ac.id/index.php/jatisi/article/view/3356.

Putri, F.R., Sukmaningsih, W.R. and Mukaromah, M. (2024) 'Artificial Intelligence's Role in Predictive Analytics for Patient', pp. 154–163.

Shahrudin, M.S., Nik-Nasir, N.M. and Mohamed-Yassin, M.S. (2025) 'Work-related stress and its associated factors among primary care doctors in Malaysia during the COVID-19 pandemic', *BMC Primary Care*, 26(1). Available at: https://doi.org/10.1186/s12875-024-02697-7.

Sutrisno *et al.* (2023) 'The Impact of Digital Technology on Employee Job Stress : A Business Psychology Review', *Jurnal Pendidikan Tambusai*, 7, pp. 3635–3638.

Vázquez, I.G. *et al.* (2024) 'Digitalisation and workers wellbeing : The impact of digital technologies on work-related psychosocial risks JRC Working Papers Series on Labour , Education and Technology 2024 / 03'.