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Delta Coverage Analytics Solutions for Addressing Nursing Shortage

This analytics solutions system uses integrated, end-to-end predictive and prescriptive analytics to streamline real-time nurse deployment across large hospital networks, improving operational efficiency and reducing cost burdens.

Researchers at Purdue University and Indiana University have developed an analytics solutions system to address widespread nurse deployment and staffing issues. Hiring travel nurses has been the standard protocol to manage influxes of nursing shortages. However, this solution often results in a litany of overstaffing or understaffing issues, further contributing to inefficiencies and increased costs. Available healthcare management software systems provide workforce management solutions, but these suggestions do not adapt well to real-time, dynamic fluctuations intrinsic to hospital environments.

This analytics solutions system helps large hospital networks tackle widespread nursing shortages by offering integrated, end-to-end solutions to streamline nurse deployment. While other solutions may focus on scheduling nurse staffing within a unit or a hospital over daily shift, this technology instead integrates predictive and prescriptive analytics such as deep generative models and stochastic organization to optimize nurse deployment among hospitals over both weekly and daily timescales. The system is unique for its real-time adaptability, scalability, and noticeable improvement of the quality of patient care and leveled nurse workload. Furthermore, this technology helps alleviate the major cost burden placed on hospitals systems and improves overall operational efficiency.

Technology Validation:

The system was piloted at IU Health. Results showed a 13% reduction in understaffing and a 5% reduction in overstaffing. Estimated annual savings were found to be between $750,000 and $1.5 million. 250 fewer understaffed shifts were also observed per 10 deployed nurses.

Advantages:

Technology ID
2024-SHI-70432

Category
Artificial Intelligence & Machine Learning/Natural Language Processing & Generative AI

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View online

-Predicts and streamlines nurse deployments

-Reduces cost burden to hospital systems

-Minimizes reliance on travel nurses

-Improves quality of patient care

Applications:

-Large hospital systems

-Hospital staffing personnel

TRL: 7

Intellectual Property:

Provisional-Patent, 2024-01-24, United States

Utility Patent, 2025-01-23, United States

Keywords: nurse staffing solutions, healthcare workforce management, nurse deployment optimization, predictive analytics healthcare, hospital staffing, nursing shortages, travel nurse reduction, centralized scheduling, float pool optimization, real-time nurse staffing, AI technology, Computer Technology, decision optimization tool, decision support system, Healthcare, Medical/Health, nursing shortage