Personalized Healthcare with Artificial Intelligence: A Promising Future

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Abstract. Artificial Intelligence (AI) is transforming the landscape of personalized healthcare, offering promising tools for diagnosis, treatment, and patient management. This review surveys recent research in AI-driven healthcare, focusing on the methodologies used—such as deep learning and reinforcement learning—and the outcomes achieved. We highlight the strengths, limitations, and future potential of these approaches in precision medicine.

Keywords: Personalized Healthcare, Artificial Intelligence, Deep Learning, Reinforcement Learning, Precision Medicine

1 Introduction

2 Background and Motivation

3 AI Methodologies in Personalized Healthcare

3.1 Deep Learning Fundamentals

3.2 Reinforcement Learning Fundamentals

3.3 Deep Reinforcement Learning Integration

4 Comprehensive Literature Review and Analysis

4.1 AI for Disease Prediction and Risk Assessment

This section focuses on using AI to predict the likelihood of disease, patient response to treatment, or future health risks.

4.2 AI for Detection and Diagnosis

This section focuses on AI applications in identifying diseases or medical conditions from various types of data (images, signals, etc.).

4.3 AI for Personalized Treatment Optimization

This section highlights studies where AI is used to recommend or optimize treatment strategies, including medication dosing and therapy planning.

5 Comparative Analysis and Findings

6 Discussion

7 Challenges and Limitations

8 Future Directions

9 Conclusion

References