An Approach Driven Ranking System for Risky Gaits

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Highlights

- We developed a system to prevent falls by ranking risky gaits.

- Interval-valued intuitionistic fuzzy sets are used to model experts knowledge.

- Gaits are evaluated and optimistic, pessimistic and neutral rankings are provided.

- A new measure score helps in ranking risk of falling of the subjects.

- Entropy measure incorporating hesitancy factor is extended to interval valued region.

Abstract

With the increase of fall incidents in emergency cases and expenditures in the <u>healthcare sector</u>, fall prevention has become a very important study. The aim of this paper is to develop a ranking system to capture the risky gaits to aid in the reduction of fall incidents. With this, an approach driven framework under the interval-valued intuitionistic fuzzy environment is developed for decision making. The proposed framework is validated by experimental data and is seen to be

effective and reliable. It is applied to risky gaits and a ranking is obtained based on the mindset one chooses. Technically, we also extended the <u>entropy measure</u> to incorporate the hesitancy factor to interval-valued region where a new measuring function is introduced. We believe that the proposed system will provide a better support for rehabilitation arrangements.

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Keywords

Fall prevention; Risky gait; Interval-valued intuitionistic fuzzy sets; Entropy; Measured membership score; Ranking

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