Conference Paper Review

**Paper ID**: 003

**Title**: Neural CDEs as a Solution to Irregular HER Data in 30-Day Unplanned Heart Failure Readmission Prediction\*

**Author(s)**: Ryan Missel

**Reviewer's Recommendations:**

1. **Writing**
   * Well written
2. **Novelty**
   * Original
3. **Suitability**
   * Very related
4. **Reviewer's Expertise**
   * Passing interests
5. **Recommendation**
   * Absolute accept

**Reviewer's detailed comments: strength, weakness, suggestion**

1. **Comments for the Authors:**
   1. **Strengths**

The Abstract is very well written and covers all the research's objectives, contributions, and significance in a well-organized structure. The motivation for the CDE method proposed is explained well. Likewise, the code and detailed specifications have been provided for reproducing the results.

Also, the limitations and contributions in the previous related works have been explained clearly in detail. The detailed descriptions of the data source and dataset have been given. Furthermore, the modifications and filtering, and process involved to produce the final dataset have been well justified.

The features have been well defined and categorized accordingly into demographics, time series, chronic with justified explanations, and figures provided. Likewise, the selection of features like insurance type has been explained well by showing the correlation of insurance type to readmission prediction due to early discharge. Biasness and imbalance in the data also have been analyzed.

Moreover, a wide variety of models have been explained and evaluated with examples, including the feature representation of each model and its steps.

Results are well tabulated and explained, with a comparison between different models. Additional points and future works to address the current limitations have been well written.

* 1. **Weaknesses and Suggestions**

The use of acronyms in the title should be removed. The first two sentences of the Introduction section are the same as the Abstract. In many portions, tables, and description in different pages.

A suggestion is to mention a single line summary of the paper instead of mentioning the reference numbers alone, in the last paragraph of section 1.2.

A figure for feature representation for the CDE model, like other models, could make the explanation easier.

Page number with author name was a little misleading, especially in the last page (references)

1. **Comments for the Program Committee (will be kept confidential and NOT released to the authors)**

The paper is well written and contains a detailed explanation for all the methods and solutions. Likewise, it has made significant contributions by proposing neural CDE to predict heart failure patients' readmission. This is the best paper among all the papers I have reviewed.