

Citation to the original paper

Kamal, S.A., Yin, C., Qian, B. et al. An interpretable risk prediction model for healthcare with pattern attention. BMC Med Inform Decis Mak 20, 307 (2020). <https://doi.org/10.1186/s12911-020-01331-7>

What is the general problem this work is trying to do?

The paper is trying to implement an interpretable model (PAVE) to predict the risks of certain diseases like sepsis and mortality prediction in hospital patients.

What is the new specific approach being taken in this work, and what is interesting or innovative about it, in your opinion?

Most existing models suffer from missing values that need to be imputed. This can cause imputation bias. These models can illustrate which medical events are conducive to the output results but are not able to give contributions of patterns among medical events. This work proposes a novel interpretable Pattern Attention model with Value Embedding (PAVE). Only the observed values are embedded into vectors, so it doesn't need to impute the missing values.

What are the specific hypotheses from the paper that you plan to verify in your reproduction study?

We plan to verify that using the PAVE outperforms existing models and whether this method can accurately output which patterns can cause high risks.

What are the additional ablations you plan to do, and why are they interesting?

It is difficult to gauge or comment on any interesting additional ablations we might consider at this point. We will have a better understanding of the code once we take a deep dive into the implementation details. Hence, we are leaving this section open to consider at a later stage.

State how you are assured that you have access to the appropriate data.

MIMIC-III database analyzed in the study is available on PhysioNet repository at <https://mimic.mit.edu/>

Discuss the computational feasibility of your proposed work.

It is not clearly described in the paper what training parameters and number of epochs were used. However, the dataset has less than 100,000 patient data and hence should be computationally feasible.

State whether you will re-use existing code (and provide a link to that code base) or whether you will implement yourself.

We plan to reuse the existing code as walkthrough, but we might refactor the code and make changes to better understand and implement the paper. The source code is provided for reproducing and is available at <https://github.com/yinchangchang/PAVE>.