

# View Reviews

## Paper ID

4257

## Paper Title

Network Learning approaches to study Happiness

## Track Name

Special track on AI for CompSust and Human well-being

## Reviewer #1

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### Questions

#### 3. Does the paper fit into the special track?

Yes. I think the analysis of happiness is important social goodness.

#### 4. General comments

##### Summary

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This paper uses multiple models, including multi-linear model and various neural networks to model the global happiness, and constructed and analyzed knowledge graph of the key factors of happiness to aid their modeling and future researches

##### Strengths

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1. Extensive researches on existing works are done, which gives reader a full aspect of researches in this area (although I think the related work should be better categorized and compared).
2. This paper uses multiple methods to model the happiness, and compared them by  $R^2$  index, which showed us the characteristics of these methods in terms of modeling non-linear datasets.
3. Using knowledge graph and using Bayesian network to simulate the network gives readers special insights of what affects happiness, and also helps reasoning the choice of model.

##### Weaknesses

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1. This paper lacks of technical depth and breadth. At its current form, it is more like a white paper, rather than a research article. Only a small data set (World Happiness Report) and simple methods is used, making the results less convincing.
2. Using  $R^2$  index to compare different models may not be enough. More detailed insights on different structures and characteristics of model may be needed.
3. Comparison of results to previous researches could be added to paper.

##### Remarks

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The authors could also consider if the analysis methods used in this paper (comparing different models using  $R^2$  index, exploring features using Bayesian network) is also applicable on other kind of data.

More analysis on the Bayesian network could be added to the paper. For example, the relation of  $R^2$  index to Bayesian network, and the explanation of these kind of relation.

## Questions

### 3. Does the paper fit into the special track?

The paper conducts a study on predicting happiness since it could be an important factor guiding policy decisions. A topic of the paper is relevant to the track.

### 4. General comments

I recommend a rejection for the following reasons

1. The paper does not characterize their final data set. It would be important to know, say, how is perception of corruption distributed, (perhaps) with a choropleth map. A thorough characterization of the data set would help the readers to understand the paper better.
2. The organization of the paper is not judicious. The paper spends 3 pages out of the allotted 7 pages in related work and references while omitting important details such as the characterization of the data.
3. I am not convinced with the data set construction. The data construction process seems flawed. How much can the 'Life Ladder' value change in 2 years? Is it possible that the high performance stems from nearly identical life ladder value for the same country for the consecutive two years with similar feature values?
4. It is not mentioned how many features were initially there. How many countries had missing data for what time period to justify focus on just 2 years. Also, how does the prediction system perform with countries that had sharp changes in the life ladder value, or a countries that experienced major political regime changes? The paper fails to provide any such insight. It is not important to provide new ML technique for a paper to get accepted. But, I feel it is very important to provide a thorough analysis of the problem, data, and a reasonably detailed interpretation of the results.

## Questions

### 3. Does the paper fit into the special track?

Yes, this work focuses on the concept of "Happiness" which is totally fit to the special track.

### 4. General comments

This work proposes a machine learning model to predict the concept of "Happiness" by a certain limited amount of features. The authors employ the General Regression Neural Network (GRNN) as the predictor and use Bayesian Networks to reveal the latent relations between features and take into account the role of interactions between them while promoting happiness in a country. This work studies an important as well as intriguing concept and especially timely, however I have several concerns about it:

The definition of the problem, the used features, and the employed methods are all adopted from previous works and I am concerned about the novelty in the aforementioned since we are mostly witnessing exploitation of previously developed techniques in this work.

One of the main disadvantages of GRNN is that its size can grow very large, which would make it computationally costly; although, in this work, it is fed by a rather small amount of data that might prevent this drawback. However, my main concern is why the authors do not attempt to compare their model's performance with state of the art predictor models and deep learning techniques when the size of their data is not very huge. In addition, I suggest providing complexity analysis for the experiments.

All in all, I think the absence of comparison to other novel baselines cannot be neglected in this work and the experimental section is weak in that respect.

