




# Interactive Human-guided Dimensionality Reduction using Landmark Positioning – Supplemental Material

T. Cech<sup>1</sup> , C. Raue<sup>2</sup>, F. Sadrieh<sup>2</sup>, W. Scheibel<sup>2</sup>  and J. Döllner<sup>1</sup> 

<sup>1</sup>Digital Engineering Faculty, University of Potsdam, Germany

<sup>2</sup>Hasso Plattner Institute, Digital Engineering Faculty, University of Potsdam, Germany

## 1. Implementation

For replication and further testing, we published our code at [CR1337/human-guided-dimension-reduction](https://github.com/CR1337/human-guided-dimension-reduction).

## 2. Supplemental Figures

In [Figure 1](#) and [Figure 2](#) we showcase example layouts for our other two datasets. Here, we can also see that a bad movement of Landmarks can lead to a decrease in all quality metrics.

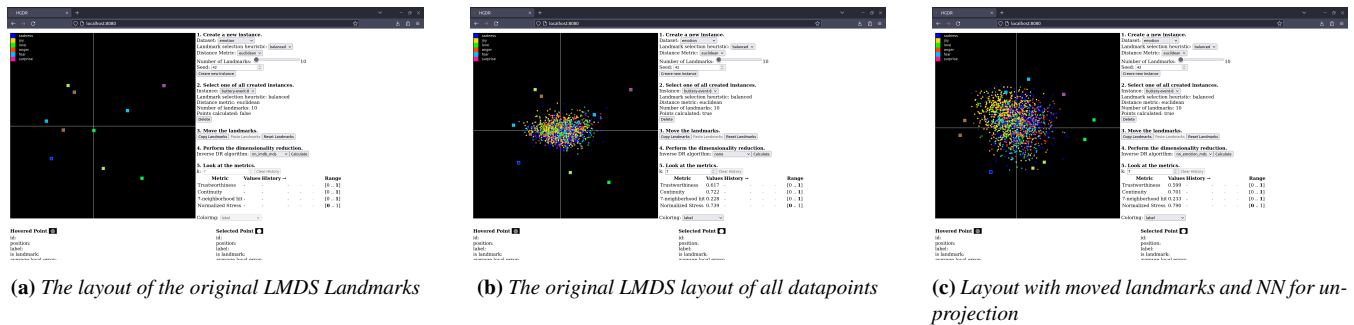


Figure 1: An example for the emotion dataset

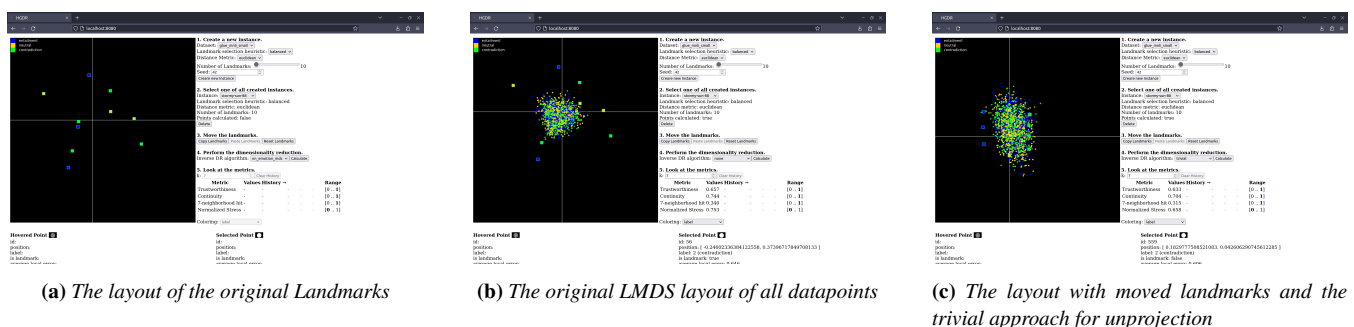


Figure 2: An example for our held-out dataset glue-mni

**Table 1:** Loss of different models, based on their trained task (rows) performing inverse MDS on different unseen test datasets (columns). The suffixes  $_e$  and  $_c$  indicate Euclidian distance and Cosine similarity as distance, respectively.

Dataset	imdb $_e$	imdb $_c$	emotion $_e$	emotion $_c$	mli $_e$	mli $_c$
imdb $_e$	0.011	0.259	0.029	0.116	0.049	0.063
imdb $_c$	0.239	0.015	0.395	0.044	0.479	0.077
emotion $_e$	0.033	0.407	0.008	0.216	0.009	0.139
emotion $_c$	0.105	0.046	0.21	0.013	0.271	0.016

### 3. Details about the Neural Network

Our neural network parameters as well as the optimization details are available under [CR1337/human-guided-dimension-reduction](https://github.com/CR1337/human-guided-dimension-reduction) in the util and volumes subdirectory. Table 1 showcases that the test loss for unprojecting data points according to the technique of Espadoto et al. [EAS\*23] is small as long as the distance function chosen in the high-dimensional and low-dimensional space is kept constant.

### References

- [EAS\*23] ESPADOTO M., APPLEBY G., SUH A., CASHMAN D., LI M., SCHEIDEGGER C., ANDERSON E. W., CHANG R., TELEA A. C.: UnProjection: Leveraging inverse-projections for visual analytics of high-dimensional data. *IEEE Transactions on Visualization and Computer Graphics* 29, 2 (2023), 1559–1572. doi:10.1109/TVCG.2021.3125576. 2