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# ASSIGNMENT #6

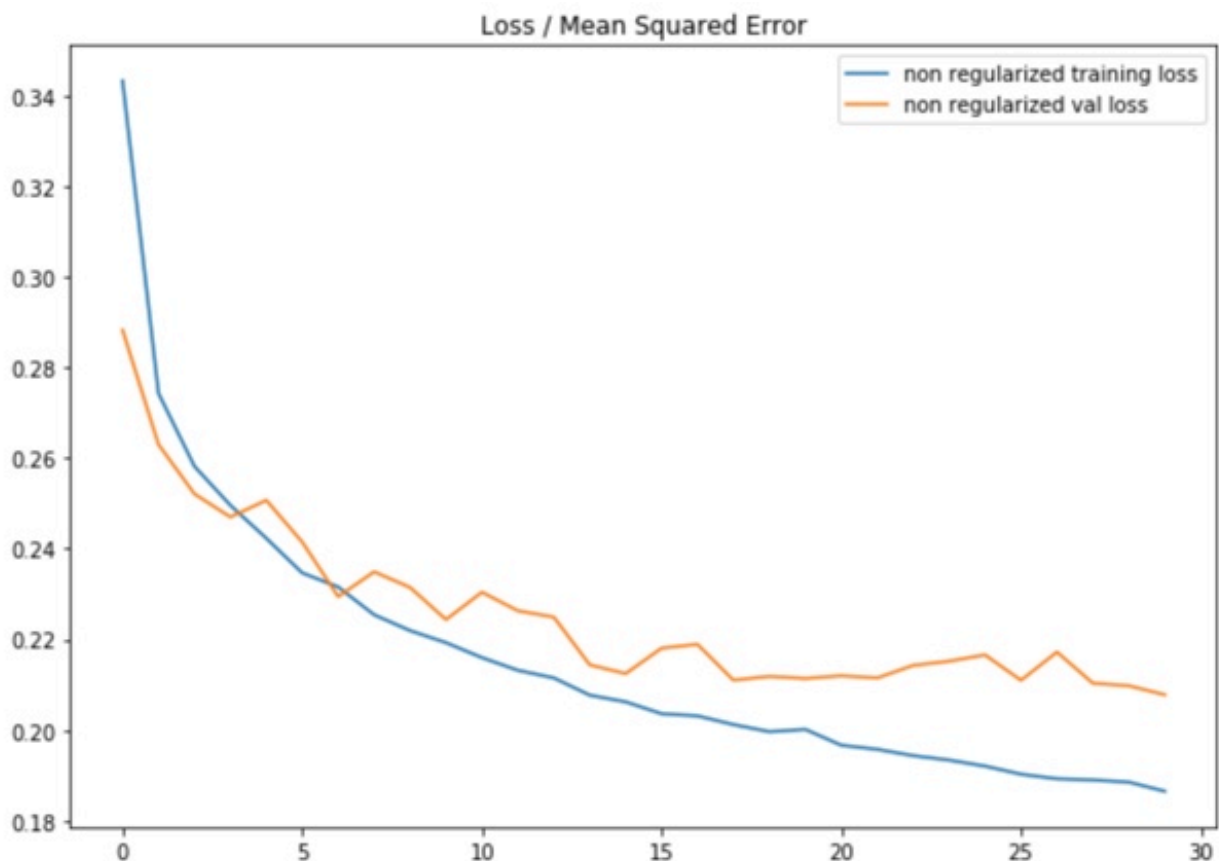
## Regularization Techniques

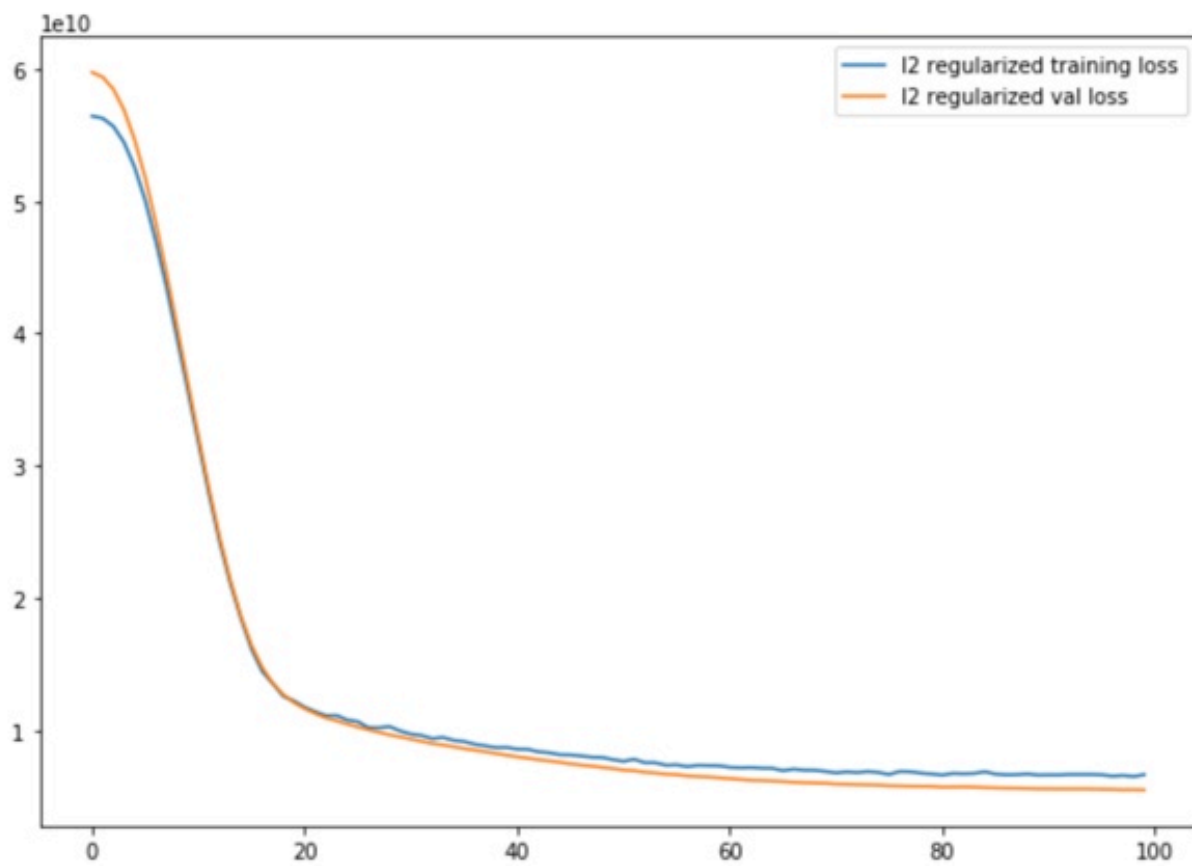
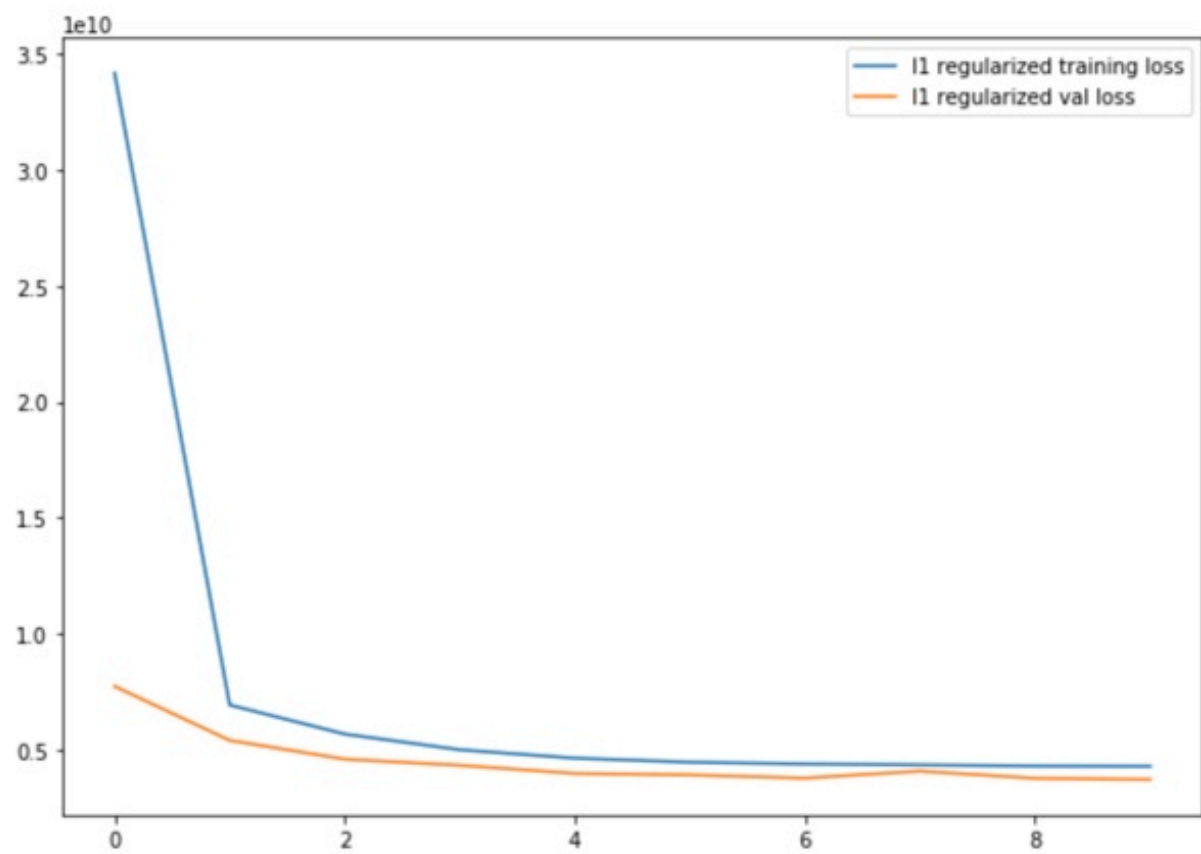
Tara Rasti - November 12, 2020

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### Regularization

Because of complexity of the neural networks they are more prone to overfitting. Regularization is a technique which makes slight modifications to the learning algorithm such that the model generalizes better. This in turn improves the model's performance on the unseen data as well. As we can see from the charts below, compared to non regularized model there is an improvement in the gap between train loss and validation loss in l1 and l2 regularized models.





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As we can see from the plots above the difference between training and validation loss has been decreased which shows that regularization techniques can prevent overfitting.

## **Data Augmentation**

Data Augmentation is a valuable tool for machine learning as it has long been known that more information results in greater accuracy of neural networks even if the quality of data is low. Through various strategies such as cropping, rotating, and flipping, a developer can expand an existing dataset in order to train an AI model on more examples.

Because data augmentation increases our training dataset it prevents the model from overfitting.

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