

## On the learning dynamics of neural networks

Sayak Paul

Deep Learning Associate at PyImageSearch

### Abstract

Neural networks have shown some unbelievable success over the years. A neural network is believed to be a universal function approximator meaning that even a single node of a network can learn any arbitrary function if left for training for a sufficient amount of time.

But these things need better explanation -

- Why can neural networks even achieve generalization? Or is it just memorization?
- How neural nets model uncertainty? Can these things be explained with information theory? Do mutual information between the subsequent layers influence this?

Throughout the session, I will be discussing several points to address the above questions from current research studies. Hopefully, this would give the audience a better perspective of the abstractions neural networks are known to model.



His subject of interest broadly lies in areas like Machine Learning Interpretability, Full-Stack Data Science.

### Speaker Publications:

1. “A Novel Transfer Learning-Based Missing Value Imputation on Discipline Diverse Real Test Datasets—A Comparative Study with Different Machine Learning Algorithms: Proceedings of IEMIS 2018, Volume 3”
2. “Automated Machine Learning with Auto-Keras”
3. “Simplifying Sentiment Analysis in Python”
4. “A Comparative Study of Different Ensemble Learning Techniques using Wisconsin Breast Cancer dataset”
5. “Essentials of Linear Regression in Python”

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### Biography:

Sayak is currently with PyImageSearch where he applies deep learning to solve real-world problems in computer vision and bring some of the solutions to edge devices.

Previously at DataCamp, Sayak developed projects for DataCamp Project namely Predicting Credit Card Approvals and Analyze International Debt Statistics. Prior to DataCamp, Sayak worked at TCS Research and Innovation (TRDDC) on Data Privacy. There, he was a part of TCS's critically acclaimed GDPR solution called Crystal Ball.