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Vachan V Y

Education

BMS Institute of Technology and Management Bengaluru, India
Bachelor of Engineering in Computer Science and Engineering 2023 - 2027 *(expected)*

Projects

Neuroforge

- Implemented neural network forward and backward propagation from scratch using basic tensor methods.
- Implemented BatchNorm, LayerNorm, and Dropout from scratch.
- Did experiments on scaling neural networks and analyzed how each component affects performance by plotting some graphs

Diffusion Transformers

- Built a Diffusion Transformer from scratch in PyTorch.
- Implemented the training loop with checkpointing, gradient accumulation, and mixed precision training.
- Trained on CelebA and MNIST datasets, capable of generating images of people and handwritten digits.

GPT

- Implemented a GPT model from scratch in JAX.
- Trained a 15 million parameter transformer model on the Tiny Stories dataset (3 GB text data), capable of generating stories.

Transfusion

- Implemented "Predict the Next Token and Diffuse Images with One Multi-Modal Model" paper, it is a Multi-Modal Transformer

Reinforcement Learning (On-going)

- Implemented foundational algorithms from the book "Reinforcement Learning An Introduction" by Sutton and Barto in PyTorch
- Implemented a DQN and trained it to play the Pong game.
- Implemented Proximal Policy Optimization (PPO) algorithm and trained it on lunar lander environment
- Implemented Deep Deterministic Policy Gradient (DDPG) algorithm and trained it on pendulum environment
- Implemented Soft Actor-Critic (SAC) algorithm and trained it on Inverted Double Pendulum environment

Skills

Programming Languages: `Python`, `C`, `Rust`.
Deep Learning Libraries: `PyTorch`, `JAX`, `TensorFlow`, `Keras`.
Languages: English, Kannada, Hindi.