Portfolio Report

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A02

PyFlow vs Tensor Flow

Looking at real world applications helped me recognize their strengths even better. TensorFlow powers Google Translate and Airbnb's recommendation engine, while PyTorch drives Tesla's Autopilot and Meta's AI tools. In the end, I discovered that both are really powerful. If I'm constructing a serious production system, TensorFlow could be the way to go. However, PyTorch appears to be more user-friendly for learning, research, and experimentation. Knowing both gives me more flexibility and a stronger foundation as I progress in this line of work.

A03
Neural Network Zoo

This project gave not just a solid understanding of GANs, but also a deeper awareness of how various neural networks tackle different types of issues.

Key Takeaway: GANs generate data, while CNNs and RNNs focus on classification or prediction.

GANs are based on adversarial learning, which adds a layer of competition-driven progress over direct error correction. Training GANs is similar to taming a dragon—difficult, unpredictable, but extremely rewarding. Each network in the zoo has unique strengths and specialties. CNNs work quickly and precisely with images. LSTMs remember long-term dependence. Transformers are masters of attention. GANs can synthesize data and model the real world.

A05
Analyzing Arrival Through Lens of NLP

Watching Arrival caused me to reconsider what it means to "understand" language. Modern NLP has come a long way, but much of it still focuses on predicting words rather than understanding meaning. The film demonstrated how language is more than simply a tool for communicating; it influences how we think, remember, and even perceive time. It made me ponder if a machine can actually "understand" if it does not have the same experiences as humans.

Also, the ethical concerns struck a chord with me. Misunderstanding a single sentence ("offer weapon") nearly resulted in war. This is precisely why AI safety and explainability are so important in NLP— misinterpretation can have serious ramifications in fields such as healthcare, law, and international relations.

AI Agent Creation

The Research Assistant Agent successfully demonstrated the principles of intelligent system design, tool integration, and adaptive behavior. Despite operating within the constraints of public libraries and limited resources, the agent performed well in producing readable, structured reports from multiple data sources. Through input validation, error handling, and feedback reflection, the system provided consistent value and adaptability. With further development, this type of agent could become a powerful tool for academic research, professional knowledge work, and educational support.

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