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ITAI 2376: Deep Learning in Artificial Intelligence

February 09, 2024

**Lab 02 Conclusion**

This code provided a hands-on experience building and training a simple neural network for binary classification on a simulated dataset. It covered key concepts like neural network architecture, activation functions, initialization strategies, loss functions, and optimization methods.

Challenges

* Understanding complex concepts: Grasping the nuances of loss functions, optimization algorithms, and their impact on training performance required careful attention and practice.
* Visualization and intuition: While the code provided numerical outputs, visualizing the data and processes could enhance the understanding of how the network learns and makes predictions.
* Choosing hyperparameters: Selecting optimal values for learning rate, number of epochs, and other hyperparameters involved experimentation and evaluation to achieve desired performance.

Solutions and Takeaways

* Interactive tutorials and visualizations: Exploring online resources with interactive visualizations and explanations helped solidify the understanding of the concepts.
* Experimentation and documentation: Experimenting with different hyperparameters and documenting the results allowed for comparison and optimization.
* Debugging and troubleshooting: Encountering and resolving errors during training provided valuable insights into identifying and fixing common issues.

Overall, this code offered a valuable learning experience by providing a practical understanding of the fundamental building blocks of neural networks and the training process.