Submission 5 | Final report

Hi Using PINNs to solve Differential Equations, as the project comes to the end, its time for the final submission.

Please create a report for your project (can be of the capstone or submission 3).

Deadline extended to first week of December (we'll let you know the exact date soon).

Note: The JAX assignment Submission 4 is ungraded and need not be submitted to us.

Form link: https://forms.gle/dVGxMAHK5WuZY8gXA

Report format and other details:

1. Introduction: Explain the problem that you are solving with the PINN, including an overview of the differential equation and its importance.
2. Mathematical Formulation
    1. Define the Differential Equation: Clearly state the differential equation(s) being solved, including initial and boundary conditions.
    2. Analytical or Traditional Methods (if applicable): Briefly describe traditional approaches to solving this equation (matlab solvers if used) to provide context on the PINN's approach.
    3. Assumptions: Note any assumptions or simplifications made in the mathematical model.
3. PINN design
    1. Neural Network Architecture: Describe the neural network structure used, including the number of layers, neurons per layer, activation functions, and any other specific architectural choices.
    2. Training Process: Describe the training approach, including the optimizer used, learning rate, number of epochs, and other relevant training parameters.
4. Implementation
    1. Tools and Libraries Used: List the software libraries and tools used in the project (e.g., TensorFlow, PyTorch).
    2. Code Description: Briefly outline each major section of the code and how it contributes to the solution (e.g., data preparation, model training, evaluation).
    3. Challenges Encountered: Discuss any specific challenges faced during implementation and how you overcame them.
5. Results
    1. Present the results obtained by the PINN and compare them with analytical or benchmarked solutions if available. Include graphs to illustrate the results.

6. Conclusion
    1. Interpret the results and explain their significance. Discuss how well the PINN performed relative to expectations and any traditional methods if applicable.
    2. Identify limitations in the model, training process, or results.
    3. Future Improvements: Suggest any potential improvements for better accuracy or efficiency, such as modifications to the network architecture or loss function.