**Week 1-2 (Oct 8th - Oct 22nd): Research and Find Data**

**1.1 Research What Others Have Done (Literature Review)**

* **Goal: Understand how other people have used neural networks for managing memberships.**
* **What to do:**
  + **Look for articles and papers online that explain how neural networks are used in customer data, loyalty programs, or similar topics.**
  + **Use Google Scholar or websites like IEEE Xplore to find papers.**
  + **Write a short summary (about 5-7 pages) of what other people have done and where your project can add something new.**

**1.2 Decide What Data You Need**

* **Goal: Figure out what kind of data your neural network will need.**
* **What to do:**
  + **Think about what kind of information you need, like customer details, transactions, or membership activity.**
  + **Decide if you can get real data from businesses, or if you need to create fake (synthetic) data for testing.**
  + **Check if there are any rules about using customer data, like privacy laws.**

**What to Finish:**

* **Write your literature review (5-7 pages).**
* **Make a list of the data you need for your project.**

**Week 3-4 (Oct 23rd - Nov 5th): Collect and Clean Data**

**2.1 Get the Data**

* **Goal: Collect the data you need for your project.**
* **What to do:**
  + **Contact businesses or organizations to ask if they can share data with you. Make sure the data is anonymous (no personal details).**
  + **If you can’t get real data, find public datasets or create your own fake data.**

**2.2 Clean and Prepare the Data**

* **Goal: Make sure your data is ready to use.**
* **What to do:**
  + **Remove any bad or missing data.**
  + **Fix any mistakes or differences in the data (for example, if dates are in different formats).**
  + **Split the data into training data (for teaching the neural network) and test data (for checking how well it works).**

**What to Finish:**

* **Get the data you need.**
* **Prepare the data so it’s clean and ready for modeling.**

**Week 5-6 (Nov 6th - Nov 19th): Build the Neural Network**

**3.1 Design the Neural Network**

* **Goal: Plan how the neural network will work.**
* **What to do:**
  + **Decide what kind of neural network to use. Some options are:**
    - **Feedforward Neural Networks (basic type).**
    - **Convolutional Neural Networks (often used for images).**
    - **Recurrent Neural Networks (good for data with sequences like time).**
  + **Plan how many layers your network will have, how many “neurons” in each layer, and what activation functions (like ReLU or Sigmoid) to use.**

**3.2 Write the Code for Your Neural Network**

* **Goal: Write the code for your neural network model.**
* **What to do:**
  + **Use programming tools like TensorFlow or PyTorch to build the neural network.**
  + **Make sure your code is organized and easy to understand.**
  + **Be ready to change your design later based on how the model works.**

**What to Finish:**

* **Finish designing your neural network.**
* **Write the code to create your neural network.**

**Week 7 (Nov 20th - Nov 26th): Train and Test the Neural Network**

**4.1 Train the Neural Network**

* **Goal: Teach the neural network using your data.**
* **What to do:**
  + **Use the training data to help the neural network learn.**
  + **Monitor the training process and look at metrics like accuracy or loss (how far off the predictions are).**
  + **Use “early stopping” if the model seems to stop improving to avoid overtraining.**

**4.2 Test the Neural Network**

* **Goal: Check how well the neural network performs.**
* **What to do:**
  + **Use the test data to evaluate how well the neural network predicts outcomes.**
  + **Calculate how accurate the predictions are, and look at other metrics (like precision, recall, or F1-score).**
  + **Compare the results with your initial hypothesis.**

**What to Finish:**

* **Finish training the neural network.**
* **Write a report that explains how well the neural network performed.**

**Week 8 (Nov 27th - Dec 3rd): Analyze and Improve the Model**

**5.1 Understand the Results**

* **Goal: Look at what your results mean.**
* **What to do:**
  + **Compare how well the neural network performed against your original expectations.**
  + **Discuss what went well and what didn’t.**
  + **Think about how your model helps solve the problem of unified membership management.**

**5.2 Improve the Model (Optional)**

* **Goal: Make the model better if needed.**
* **What to do:**
  + **Try changing the model’s hyperparameters (like learning rate or batch size) to see if performance improves.**
  + **Use different techniques like cross-validation to fine-tune the model.**
  + **Retrain and test the model if needed.**

**What to Finish:**

* **Write a summary of the results.**
* **Improve the model if necessary and document the changes.**

**Week 9 (Dec 4th - Dec 10th): Write the Thesis**

**6.1 Write the Thesis**

* **Goal: Write your thesis paper, explaining everything you did.**
* **What to do:**
  + **Write all sections of the thesis, including:**
    - **Introduction: What problem you are solving and why it’s important.**
    - **Literature Review: What others have done and how your project is different.**
    - **Methods: How you designed and built your neural network.**
    - **Results: What you found after training and testing the model.**
    - **Discussion: What the results mean and any improvements you made.**
    - **Conclusion: Summarize the key findings and what they mean for the future.**
  + **Include diagrams and charts to show your model and results.**

**6.2 Get Feedback**

* **Goal: Make sure your thesis is clear and well-written.**
* **What to do:**
  + **Share your thesis draft with your supervisor or peers.**
  + **Fix any issues or mistakes based on their feedback.**

**What to Finish:**

* **Complete the first draft of your thesis.**
* **Make changes based on feedback from others.**

**Week 10 (Dec 11th - Dec 13th): Final Review and Submission**

**7.1 Final Check and Proofread**

* **Goal: Make sure your thesis is perfect.**
* **What to do:**
  + **Check your thesis for spelling, grammar, and formatting errors.**
  + **Make sure all citations and references are correct.**

**7.2 Submit Your Thesis**

* **Goal: Submit your thesis on time.**
* **What to do:**
  + **Check the submission requirements and make sure everything is included.**
  + **Submit your thesis and any additional materials (like your code).**

**What to Finish:**

* **Submit your final thesis to your university or department.**

**Next Steps:**

1. **Start the Literature Review:**
   * **Begin reading articles and papers to understand how neural networks are used in membership systems.**
2. **Collect and Prepare Data:**
   * **Look for datasets or create synthetic data if needed.**
3. **Schedule Regular Meetings:**
   * **Set up meetings with your supervisor to discuss your progress.**