Rubric for Neural Networks and Deep Learning:

	Mastery **30 to > 27 points**	**Approaching Mastery** **27 to > 24 points**	**Progressing** **24 to > 21 points**	**Emerging** **21 to > 0 points**	**Incomplete**
Deliverable 1: Data Preprocessing for a Neural Network Model	The Deliverable Fulfills "Approaching Mastery" Required Criteria (25 pt) and meets this requirement: ✓ The numerical values have been standardized using the StandardScaler (5 pt)	The Deliverable Fulfills "Progressing" Required Criteria (20 pt) and meets this requirement: ✓ The preprocessed data is split into training and testing datasets (5 pt) AND has this: ✓ Code is written to standardize the numerical values using the StandardScaler (2 pt)	The Deliverable Fulfills "Emerging" Required Criteria (15 pt) and meets this requirement: ✓ The preprocessed data is split into features and target arrays (5 pt) AND has these: ✓ Code is written to split the preprocessed data into training and testing datasets (2 pt) ✓ Code is written to standardize the numerical values using the StandardScaler (2 pt)	REQUIRED: The Deliverable does the following: ✓ The EIN and NAME columns have been dropped (5 pt) ✓ Columns with than 10 unique values have been group together (5 pt) ✓ The categorical variables have been encoded using one-hot encoding (5 pt) AND has these: ✓ Code is written to split the preprocessed data into features and target arrays (2 pt) ✓ Code is written to split the preprocessed data into training and testing datasets (2 pt) ✓ Code is written to standardize the numerical values using the StandardScaler (2 pt)	No submission was received -OR- Submission was empty or blank -OR- Submission contains evidence of academic dishonesty
	Mastery **20 to > 19 points**	**Approaching Mastery** **19 to > 17 points**	**Progressing** **17 to > 14 points**	**Emerging** **14 to > 0 points**	
Deliverable 2: Compile, Train and Evaluate the Model	The Deliverable Fulfills Progressing" Required Criteria (15 pt) and meets these requirements: ✓ The model's weights are saved every 5 epochs (2.5 pt) ✓ The results are saved to an HDF5 file (2.5 pt)	The Deliverable Fulfills "Progressing" Required Criteria (15 pt). AND does this: ✓ The model's weights are saved every 5 epochs (2.5 pt) ✓Code is written to save the results to an HDF5 file, but there is an error (1.5 pt)	The Deliverable Fulfills "Emerging" Required Criteria (10 pt) and meets this requirement: ✓ There is an output of the model's loss and accuracy (5 pt) AND does these: ✓ Code is written to save the model's weights every 5 epochs but has errors (1 pt)	REQUIRED: The Deliverable does the following: ✓ The number of layers, number of neurons per layer, and activation function are defined (2.5 pt) ✓ An output layer with an activation function is created (2.5 pt) ✓ There is an output of the structure of the model (5 pt)	

		OR does this: ✓ Code is written to save the model's weights every 5 epochs but has errors (1.5 pt) ✓ The results are saved to an HDF5 file (2.5 pt)	✓Code is written to save the results to an HDF5 file, but there is an error (1 pt)	AND does these: ✓ Code is written to create an output of the model's loss and accuracy (2 pt) ✓ Code is written to save the model's weights every 5 epochs but has errors (1 pt) ✓Code is written to save the results to an HDF5 file, but there is an error (1 pt)	
	Mastery **20 to > 17 points**	**Approaching Mastery** **17 to > 14 points**	**Progressing** **14 to > 12 points**	**Emerging** **12 to > 0 points**	
Deliverable 3: Optimize the Model	Student produces model that demonstrates predictive accuracy over 75%: OR The student's solution contains working code that attempts to increase model performance at least THREE times using the following steps: ✓ Noisy variables are removed from features (2.5 pt) ✓ Additional neurons are added to the hidden layers (2.5 pt) ✓ Additional hidden layers are added (5 pt) ✓ The activation function of hidden layers or output layers is changed for optimization (5 pt) AND: ✓ The model's weights are saved every 5 epochs (2.5 pt) ✓ The results are saved to an HDF5 file (2.5 pt)	The student's solution contains working code that attempts to increase model performance at least TWO times using the following steps: ✓ Leaving out noisy variables from features (2.5 pt) ✓ Additional neurons are added to the hidden layers (2.5 pt) ✓ Adds additional hidden layers to the model (3 pt) ✓ Changes the activation function of hidden layers or output layers (4 pt) AND: ✓ The model's weights are saved every 5 epochs (2.5 pt) ✓ The results are saved to an HDF5 file (2.5 pt)	The student's solution contains working code that attempts to increase model performance at least ONE time using the following steps: ✓ Leaving out noisy variables from features (2 pt) ✓ Additional neurons are added to the hidden layers (2 pt) ✓ Adds additional hidden layers to the model (2 pt) ✓ Changes the activation function of hidden layers or output layers (3 pt) AND: ✓ The model's weights are saved every 5 epochs (2.5 pt) ✓ The results are saved to an HDF5 file (2.5 pt)	Student attempts to produce working code that produces the following steps: ✓ Leaving out noisy variables from features (1.5 pt) ✓ Additional neurons are added to the hidden layers (1.5 pt) ✓ Adds additional hidden layers to the model (2 pt) ✓ Changes the activation function of hidden layers or output layers (2 pt) AND: ✓ The model's weights are saved every 5 epochs (2.5 pt) ✓ The results are saved to an HDF5 file (2.5 pt)	

	Mastery **6 points to > 5 points**	**Approaching Mastery** **5 to > 4 points**	**Progressing** **4 to > 3 points**	**Emerging** **3 to > 0 points**	
Deliverable 4: Structure, Organization, and Formatting	The written analysis has ALL of the following: ✓ There is a title, and there are multiple sections (2 pt) ✓ Each section has a heading and subheading (2 pt) ✓ The images are formatted and displayed correctly (2 pt)	The written analysis has ALL of the following: ✓ There is a title, and there are multiple sections (2 pt) ✓ Each section has a heading and subheading (2 pt) ✓ The images are formatted and displayed correctly, with one or two minor errors (1 pt)	The written analysis has ALL of the following: ✓ There is a title, and there are multiple sections (2 pt) AND ONE of the following: ✓ Each section may have a heading and subheading (2 pt) ✓ The images are formatted and displayed correctly, with one or two minor errors (1 pt)	The written analysis has ALL of the following: ✓ There is a title (1 pt) ✓ There may be a subheading for a section (1 pt) ✓ There are no headings for each section, but there are three sections (1 pt)	
	Mastery **24 to > 21 points**	**Approaching Mastery** **21 to > 18 points**	**Progressing** **18 to > 16 points**	**Emerging** **16 to > 0 points**	
Deliverable 4: Analysis	✓ The purpose is well defined (4 pt). ✓ ALL SIX questions are answered (15 pt) ✓ The results are summarized, and there is a recommendation on using a different model to solve the classification problem, with a justification (5 pt)	✓ The purpose is well defined (4 pt). ✓ FIVE of the SIX questions are answered (13 pt). ✓ The results are summarized, and there is a recommendation on using a different model to solve the classification problem, but there is no justification (4 pt)	✓ The purpose is well defined (4 pt). ✓ FOUR of the SIX questions are answered (12 pt). ✓ The results are summarized, but there is no recommendation on using a different model to solve the classification problem (2 pt)	✓ The purpose is well defined (4 pt). ✓ THREE of the SIX questions are answered (10 pt). ✓ The results are summarized, but there is no recommendation on using a different model to solve the classification problem (2 pt)	