

SAS[®] Viya[®] 3.5 Natural Language Processing and Computer Vision Exam

Loading and Exploring Data

Import documents for analysis

- Convert documents for analysis
- Explore and prepare a document
- Troubleshoot Language encoding issues (ASCII, UTF-8, etc.)
- Given a scenario, ensure minimal loss of information when converting documents from proprietary formats to SAS supported formats

Create and explore a project in SAS Visual Text Analytics

- Identify the SAS Visual Text Analytics default pipeline
- Explore the Documents Table
- Identify and define key features of the term table
- Given a scenario, appropriately assign text and category roles
- Export score code to score new data sets

Load and prepare image data

- Load labeled image data (labelLevels, loadImages)
- Enrich image data
- Prepare data for modeling

Identifying Text Patterns Using Natural Language Processing Techniques

Use the Concepts and Text Parsing Nodes to extract Terms and Concepts

- Use lists to include or exclude or combine terms (i.e. start, stop, synonym)
- Explain why Concepts are useful
- Explain predefined Concepts
- Define custom Concepts for a project
- Modify the Term Table and explain the impact on the pipeline
- Explain the impact of concepts on the pipeline
- View document matches and similarity scores

- Explore the term map (identify various components)

Write Concept Rules

- Given a scenario, use LITI to write a rule to achieve a goal (i.e. CATEGORY, CLASSIFIER, CONCEPT, C_CONCEPT, CONCEPT_RULE, NO_BREAK, PREDICATE_RULE, REGEX, etc.)
- Given a LITI rule, explain the how it influences scoring documents.
- Given a LITI rule, explain the how it impacts the term table.
- Identify and correct common syntax errors

Use the Topics Node to extract machine-generated topics

- Given a scenario, appropriately adjust term density
- Given a scenario, appropriately adjust document density
- Promote a topic to a category
- Split and merge topics
- Edit Topic Properties
- Create Custom Topics

Use rules to identify documents belonging to specific categories

- Analyze categorization results (F-Measure, precision, recall, misclassification)
- Edit and enhance predefined rules with defined concepts.
- Explain Categories Results (diagnostic counts, diagnostic metrics, categories score code)
- View Document matches and sentiment score
- Explain sentiment level scoring

Write Category rules

- Given a scenario, create and run appropriate Boolean rules to achieve a goal.
- Given a rule, explain how it impacts document categorization.

Use a Recurrent Neural Network (RNN) to recognize patterns

- Build a Basic RNN
- Build a Bi-directional RNN
- Build a Specialized (GRU, LSTM) RNN

Identifying Image Patterns Using Computer Vision Techniques

Use convolutional layers in a Convolutional Neural Network (CNN)

- Explain the use of kernel filters in a CNN
- Explain the feature map in a CNN (i.e. size)
- Detail equivariance to translation
- Define hyperparameters (width, height and stride)
- Detail number of weights

Use padding in a Convolutional Neural Network

- Detail the impact of padding on the feature map size
- Use padding to accommodate skip-layer connections
- Given a scenario, use padding to accomplish a goal

Use pooling in a Convolutional Neural Network

- Detail the impact of pooling on the invariance of the CNN
- Define summary functions used in pooling layers
- Explain the use of filters in a CNN
- Given a scenario, determine if using pooling is appropriate.

Use fully connected layers in a Convolutional Neural Network

- Given specific action calls, define number of parameters (trainable, estimated, etc.)
- Order FC layers correctly in building a CNN
- Define activation functions used in Fc layers

Use output layers in a Convolutional Neural Network

- Specify activation function for the output layer
- Define types of error functions

Tune the Hyperparameters of a Convolutional Neural Network

- Tune a deep learning model using the Hyperband method

Score new image data

- Weights & batch size

Explain the impact of various architectural designs

- Use residual connections
- Use concatenation connections
- Define requirements for skip layer connections
- Use one-by-one convolutions
- Use Spatial Exploration techniques

- Define blocks
- Use cardinality techniques in the network structure

Use regularization techniques

- Explain batch normalization
- Use batch normalization to improve model generalization and learning
- Explain dropout
- Use dropout to improve model generalization

Note: All 18 main objectives will be tested on every exam. The 71 expanded objectives are provided for additional explanation and define the entire domain that could be tested.