ADAMS

Advanced **D**ata mining **A**nd **M**achine learning **S**ystem

Module: adams-ufdl-image

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Contents

Chapter 1

UFDL

UFDL, or user-friendly deep-learning, enables users with little or no deep-learning expertise to maintain datasets for deep-learning tasks such as image classification and object detection and also build deep-learnings models using these.

This ADAMS module focuses on image processing tasks.

Chapter 2

Flow

In addition to the core UFDL components, you also have the following ones available. These are used in the management flow *adams-ufdl-image-manage_image_classification_datasets.flow*, which can be used for administrating image classification datasets.

The following conversions are available:

- *ReportToUFDLAnnotations* – converts an ADAMS report to UFDL annotations
- *UFDLAnnotationsToReport* – converts UFDL annotations to an ADAMS report
- *UFDLExtractImageNameFromFile* – converts a file name into an image name used in datasets
- *UFDLImageClassificationDatasetFilesToSpreadSheet* – outputs all the files in an image classification dataset as spreadsheet
- *UFDLImageClassificationDatasetToListItem* – converts a UFDL ImageClassificationDataset to a list item string.
- *UFDLImageClassificationDatasetToSpreadSheet* – turns an image classification dataset into a spreadsheet
- *UFDLImageSegmentationDatasetFilesToSpreadSheet* – outputs all the files in an image segmentation dataset as spreadsheet
- *UFDLImageSegmentationDatasetToListItem* – converts a UFDL ImageSegmentationDataset to a list item string.
- *UFDLImageSegmentationDatasetToSpreadSheet* – turns an image segmentation dataset into a spreadsheet
- *UFDLObjectDetectionDatasetFilesToSpreadSheet* – outputs all the files in an object detection dataset as spreadsheet
- *UFDLObjectDetectionDatasetToListItem* – converts a UFDL ObjectDetectionDataset to a list item string.
- *UFDLObjectDetectionDatasetToSpreadSheet* – turns an object detection dataset into a spreadsheet

2.1 Actions

The following sink actions can be used:

- *DownloadImageClassificationDataset* – downloads an image classification dataset
- *DownloadImageSegmentationDataset* – downloads an image segmentation dataset
- *DownloadObjectDetectionDataset* – downloads an object detection dataset

The following source actions can be used:

- *CreateImageClassificationDataset* – creates an image classification dataset
- *CreateImageSegmentationDataset* – creates an image segmentation dataset
- *CreateObjectDetectionDataset* – creates an object detection dataset
- *ListImageClassificationDatasets* – lists image classification datasets
- *ListImageSegmentationDatasets* – lists image segmentation datasets
- *ListObjectDetectionDatasets* – lists object detection datasets

The following transformer actions can be used:

- *AddImageClassificationCategoriesForFile* – adds categories to images of an image classification dataset
- *AddImageClassificationFile* – adds images to an image classification dataset
- *AddImageSegmentationFile* – adds images to an image segmentation dataset
- *AddObjectDetectionFile* – adds an image (and its optional annnotations) to an object detection dataset
- *ClearImageClassificationDataset* – removes meta-data and annotations from an image classification dataset (via PK or name).
- *ClearImageSegmentationDataset* – removes meta-data and annotations from an image segmentation dataset (via PK or name).
- *ClearObjectDetectionDataset* – removes meta-data and annotations from an object detection dataset (via PK or name).
- *CopyImageClassificationDataset* – copies the image classification dataset (new version or name)
- *CopyImageSegmentationDataset* – copies the image segmentation dataset (new version or name)
- *CopyObjectDetectionDataset* – copies the object detection dataset (new version or name)
- *DeleteImageClassificationCategoriesForFile* – removes categories from images of an image classification dataset
- *DeleteImageClassificationDataset* – removes the specified image classification dataset
- *DeleteImageClassificationFile* – removes the specified image from an image classification dataset
- *DeleteImageSegmentationDataset* – removes the specified image segmentation dataset
- *DeleteImageSegmentationFile* – removes the specified image from an image segmentation dataset
- *DeleteObjectDetectionDataset* – removes the specified object detection dataset
- *DeleteObjectDetectionFile* – removes the specified image from an object detection dataset

- *GetImageClassificationCategories* – retrieves the map of image/categories for a dataset
- *GetImageClassificationCategoriesForImage* – retrieves the categories of an image from a dataset
- *GetImageClassificationFile* – retrieves a file from an image classification dataset via its name
- *GetImageClassificationMetadata* – retrieves the metadata for an image classification dataset
- *GetImageClassificationMetadataForImage* – retrieves the metadata for an image of an image classification dataset via its name
- *GetImageSegmentationFile* – retrieves a file from an image segmentation dataset via its name
- *GetImageSegmentationLabels* – retrieves the labels of an image segmentation dataset
- *GetImageSegmentationLayer* – retrieves the layer mask of an image from an image segmentation dataset
- *GetImageSegmentationMetadata* – retrieves the metadata for an image segmentation dataset
- *GetImageSegmentationMetadataForImage* – retrieves the metadata for an image of an image segmentation dataset via its name
- *GetObjectDetectionFile* – retrieves a file from an object detection dataset via its name
- *GetObjectDetectionLabels* – retrieves the labels present in an object detection dataset
- *GetObjectDetectionMetadata* – retrieves the metadata for an object detection dataset
- *GetObjectDetectionMetadataForImage* – retrieves the metadata for an image of an object detection dataset via its name
- *GetObjectDetectionAnnotations* – obtains all the annotations from an object detection dataset
- *GetObjectDetectionAnnotationsForImage* – obtains the annotations of an image from an object detection dataset
- *ListImageClassificationFiles* – lists all the images in an image classification dataset
- *ListImageSegmentationFiles* – lists all the images in an image segmentation dataset
- *ListObjectDetectionFiles* – lists all the images in an object detection dataset
- *LoadImageClassificationDataset* – loads an image classification dataset (via PK)
- *LoadImageSegmentationDataset* – loads an image segmentation dataset (via PK)
- *LoadObjectDetectionDataset* – loads an object detection dataset (via PK)
- *MergeImageClassificationDatasets* – for merging two image classification datasets.
- *MergeImageSegmentationDatasets* – for merging two image segmentation datasets.
- *MergeObjectDetectionDatasets* – for merging two object detection datasets.

- *ReinstateImageClassificationDataset* – reinstates ("undeletes") an image classification dataset.
- *ReinstateImageSegmentationDataset* – reinstates ("undeletes") an image segmentation dataset.
- *ReinstateObjectDetectionDataset* – reinstates ("undeletes") an object detection dataset.
- *SetImageClassificationMetadataForImage* – sets the metadata of an image in an image classification dataset
- *SetImageSegmentationLabels* – sets the labels of an image segmentation dataset
- *SetImageSegmentationLayer* – sets the layer mask for an image in an image segmentation dataset
- *SetImageSegmentationMetadataForImage* – sets the metadata of an image in an image segmentation dataset
- *SetObjectDetectionAnnotationsForImage* – sets the annotations of an image in an object detection dataset
- *SetObjectDetectionFileTypeForImage* – sets the file type/dimensions of an image/video in an object detection dataset
- *SetObjectDetectionMetadataForImage* – sets the metadata of an image in an object detection dataset
- *UpdateImageClassificationDataset* – updates the properties of an image classification dataset
- *UpdateImageSegmentationDataset* – updates the properties of an image segmentation dataset
- *UpdateObjectDetectionDataset* – updates the properties of an object detection dataset

2.2 EnterManyValues extensions

The following extensions of value definitions used by the *EnterManyValues* source make it easier for users to select PKs:

- *UFDLImageClassificationDatasetChooser* – for selecting one or more image classification datasets
- *UFDLImageClassificationDatasetList* – for selecting an image classification dataset
- *UFDLImageSegmentationDatasetChooser* – for selecting one or more image segmentation datasets
- *UFDLImageSegmentationDatasetList* – for selecting an image segmentation dataset
- *UFDLObjectDetectionDatasetChooser* – for selecting one or more object detection datasets
- *UFDLObjectDetectionDatasetList* – for selecting an object detection dataset

Bibliography

[1] *ADAMS* – Advanced Data mining and Machine learning System
`https://adams.cms.waikato.ac.nz/`