EPIC KITCHENS-100 Dataset

EPIC-KITCHENS-100 is the largest dataset in first-person (egocentric) vision; itself an extension of the EPIC-KITCHENS-55 dataset (formally known as EPIC-KITCHENS-2018).

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Citing

When using the dataset, kindly reference:

```
@ARTICLE{Damen2020RESCALING,
   title={Rescaling Egocentric Vision},
   author={Damen, Dima and Doughty, Hazel and Farinella, Giovanni Maria  and and Furnari, Antonino
           and Ma, Jian and Kazakos, Evangelos and Moltisanti, Davide and Munro, Jonathan
           and Perrett, Toby and Price, Will and Wray, Michael},
           journal   = {CoRR},
           volume    = {abs/2006.13256},
           year      = {2020},
           ee        = {http://arxiv.org/abs/2006.13256},
}
```

Erratum

Important: We have recently detected an error in our pre-extracted RGB and Optical flow frames for two videos in our dataset. This does not affect the videos themselves or any of the annotations in this github. However, if you've been using our pre-extracted frames, we below detail how you can fix the error at your end, until we publish replacement frames for downloading.

Download the videos `P01_109.MP4` and `P27_103.MP4`. Then set up a directory like so:

```
$ mkdir -p rgb/{P01_109,P27_103}
$ mkdir -p flow/{P01_109,P27_103}
$ mkdir videos
$ mv /path/to/{P01_109,P27_103}.MP4 videos
```

You will need docker setup on your machine to extract the frames and flow.

RGB

```
$ docker run --gpus "device=0" \
```

```
     -it \
     --rm \
     -v "$PWD:/workspace" \
     willprice/nvidia-ffmpeg \
     -hwaccel cuvid \
     -c:v hevc_cuvid \
     -i /workspace/videos/P27_103.MP4 \
     -vf 'scale_npp=-2:256:interp_algo=super,hwdownload,format=nv12' \
     -qscale:v 4 \
     -r 50 /workspace/rgb/P27_103/frame_%010d.jpg

$ docker run --gpus "device=0" \
     -it \
     --rm \
     -v "$PWD:/workspace" \
     willprice/nvidia-ffmpeg \
     -hwaccel cuvid \
     -c:v hevc_cuvid \
     -i /workspace/videos/P01_109.MP4 \
     -vf 'scale_npp=-2:256:interp_algo=super,hwdownload,format=nv12' \
     -qscale:v 4 \
     -r 50 /workspace/rgb/P01_109/frame_%010d.jpg
```

Flow

```
$ docker run --gpus "device=0" \
     -it \
     --rm \
     -v "$PWD/rgb/P01_109:/input" \
     -v "$PWD/flow/P01_109:/output" \
     willprice/furnari-flow \
     frame_%010d.jpg -g 0 -s 1 -d 1 -b 8

$ docker run --gpus "device=0" \
     -it \
     --rm \
     -v "$PWD/rgb/P27_103:/input" \
     -v "$PWD/flow/P27_103:/output" \
     willprice/furnari-flow \
     frame_%010d.jpg -g 0 -s 1 -d 1 -b 8
```

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Dataset Details

The EPIC-KITCHENS-100 dataset is an extension of the EPIC-KITCHENS-55 dataset. Videos are distinguished as follows:

- `PXX_YY.MP4` videos originate from EPIC-KITCHENS-55.
- `PXX_1YY.MP4` videos originate from the extension collected for EPIC-KITCHENS-100 (thus represent new videos).

The dataset currently has 6 active benchmarks:

- Action Recognition
- Weakly Supervised Action Recognition
- Action Detection
- Action Anticipation
- Unsupervised Domain Adaptation
- Multi-Instance Retrieval

We provide csv files for the train/val/test sets of each benchmark detailed below for ease of use, see Important Files for more information.

Ground truth is provided for action segments as action/verb/noun labels along with the start and end times of the segment.

We also provide automatic annotations in the form of object masks and hand/object BBoxes. See automatic annotations for more details.

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Quick Start

Here you can download the annotation files for all of the challenges. For more information on each challenge, please see the paper here. A download script is provided for the videos, RGB Frames and Flow frames here.

Action Recognition Challenge

1. Download the videos/RGB/Flow frames here with the following command:

```
python epic_downloader.py --videos --rgb-frames --flow-frames
```

2. Download the Action Recognition train/val/test files.
3. Enjoy the EPIC-KITCHENS-100 dataset in your favourite action recognition model, see the paper for details on the models we used for this baseline. Models trained on EPIC-KITCHENS-55 can be found here as a starting point.

Weakly Supervised Action Recognition Challenge

1. Download the videos/RGB/Flow frames here with the following command:

```
python epic_downloader.py --videos --rgb-frames --flow-frames
```

2. This challenge uses the Action Recognition files, download the train/val/test files.
3. The weakly supervised challenge uses the narration timestamp, not the the start/end times of the action. Therefore a simple baseline would be to modify an action recognition model to use the surrounding 5s worth of frames. See the paper for details on the models we used for this baseline.

Action Detection Challenge

1. Download the videos/RGB/Flow frames here with the following command:

```
python epic_downloader.py --videos --rgb-frames --flow-frames
```

2. This challenge uses the Action Recognition files, download the train/val/test files.
3. Train an action proposal network on the EPIC-KITCHENS-100 train set, for example this model. This model predicts action-agnostic segments which still need to be classified.
4. Use your favourite action recognition model to classify the proposals (example models).

Action Anticipation Challenge

1. Download the videos/RGB/Flow frames here with the following command:

```
python epic_downloader.py --videos --rgb-frames --flow-frames
```

2. This challenge uses the Action Recognition files, download the train/val/test files.
3. A simple baseline for this task is to train an action recognition model (example models here) on the 5 seconds that precede an action with a 1 second gap. For example, an action that starts at 20.00s in a video would see frames between 14.00s and 19.00s.

Unsupervised Domain Adaptation Challenge

The unsupervised domain adaptation challenge tests how models can cope with similar data collected 2 years later on the task of action recognition.

1. Download the videos/RGB/Flow frames here with the following command:

```
python epic_downloader.py --videos --rgb-frames --flow-frames --domain-adaptation
```

2. Download the Unsupervised Domain Adaptation source train/target train/source_test/target test/source val/target val files.
3. Extract video features (for all six splits) using an off-the-shelf model trained on **EPIC-KITCHENS-55** (example model).
4. A simple baseline is using a domain discriminator (prediciting whether a video came from the source, EPIC-KITCHENS-55, or the target, EPIC-KITCHENS-100) to align the two domains. See the paper for details on the models we used for this baseline.

IMPORTANT NOTE ON HYPER-PARAMETER TUNING. As the target domain is unlabelled, the training splits cannot be used for hyper-parameter tuning. You must use the validation splits to choose hyper-parameters. The procedure for hyper-parameter tuning and training is as follows:

1. Train your model on source val with unlabelled data from target val.
2. Evaluate your model on target val using the labels provided (these labels should not be used during training).
3. Select hyper-parameters based on the performance on target val.
4. Re-train your model on source train/target train with selected hyper-parameters.
5. Evaluate the re-trained model on target test to produce action predictions for the challenge leaderboard.

It is optional but highly ecouraged to evalute the performance on source_test to compare source domain performances.

Multi-Instance Retrieval Challenge

NOTE *30/09/2020* There was an error in the creation of the sentence files for the retrieval challenge. Please download the new sentence dataframes.

1. Download the videos/RGB/Flow frames here with the following command:

```
python epic_downloader.py --videos --rgb-frames --flow-frames --action-retrieval
```

2. Download the Multi-Instance Retrieval train/test files.
3. Extract video features (for both the train and test set) using an off-the-shelf model trained on **EPIC-KITCHENS-55** (example model).
4. Extract word2vec features for the captions from both the train and test set (example models).
5. Enjoy the EPIC-KITCHENS-100 dataset in your favourite video retrieval model, see the paper for details on the models we used for this baseline.

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Important Files

For ease of use, download scripts are provided to download the videos and RGB/Flow frames. (see file downloads for more details). We direct the reader to RDSF for the full release of videos and RGB/Flow frames. We provide html and pdf alternatives to this README which are auto-generated.

- `README.md (this file)`
- `README.pdf`
- `README.html`
- `license.txt`
- `EPIC_100_train.csv` (info) (Pickle)
- `EPIC_100_validation.csv` (info) (Pickle)
- `EPIC_100_test_timestamps.csv` (info) (Pickle)
- `EPIC_100_noun_classes.csv` (info)
- `EPIC_100_verb_classes.csv` (info)

Additional Files

- `UDA_annotations/EPIC_100_uda_source_train.csv` (info) (Pickle)
- `UDA_annotations/EPIC_100_uda_source_test_timestamps.csv` (info) (Pickle)
- `UDA_annotations/EPIC_100_uda_target_train_timestamps.csv` (info) (Pickle)
- `UDA_annotations/EPIC_100_uda_target_test_timestamps.csv` (info) (Pickle)
- `UDA_annotations/EPIC_100_uda_source_val.csv` (info) (Pickle)
- `UDA_annotations/EPIC_100_uda_target_val.csv` (info) (Pickle)
- `retrieval_annotations/EPIC_100_retrieval_train.csv` (info) (Pickle)
- `retrieval_annotations/EPIC_100_retrieval_test.csv` (info) (Pickle)
- `retrieval_annotations/EPIC_100_retrieval_train_sentence.csv` (info) (Pickle)
- `retrieval_annotations/EPIC_100_retrieval_test_sentence.csv` (info) (Pickle)
- `EPIC_100_train_missing_timestamps_narrations.csv` (info)
- `EPIC_100_validation_missing_timestamps_narrations.csv` (info)
- `EPIC_100_unseen_participant_ids_test.csv` (info)
- `EPIC_100_unseen_participant_ids_validation.csv` (info)
- `EPIC_100_tail_verbs.csv` (info)

- EPIC_100_tail_nouns.csv (info)
- EPIC_100_video_info.csv (info)

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File Structure

EPIC_100_train.csv

This CSV file contains the action annotations for the training set and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P01_01_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_01	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:01.089	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.14	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:03.37	End time in HH:mm:ss.SS of the action segment.
start_frame	int	8	Start frame of the action.
stop_frame	int	202	End frame of the action.
narration	string	open door	Transcribed description of the English narration provided by the participant.
verb	string	open	Parsed verb from the narration.
verb_class	int	3	Numeric ID of the verb's class.
noun	string	door	First parsed noun from the narration.
noun_class	int	3	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[door]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[3]	Numeric ID of all of the parsed noun's classes.

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EPIC_100_validation.csv

This CSV file contains the action annotations for the validation set and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P01_01_11	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_11	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:00.560	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.00	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:01.89	End time in HH:mm:ss.SS of the action segment.
start_frame	int	1	Start frame of the action.
stop_frame	int	113	End frame of the action.
narration	string	take plate	Transcribed description of the English narration provided by the participant.

Column Name	Type	Example	Description
verb	string	take	Parsed verb from the narration.
verb_class	int	0	Numeric ID of the verb's class.
noun	string	plate	First parsed noun from the narration.
noun_class	int	2	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[plate]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[2]	Numeric ID of all of the parsed noun's classes.

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EPIC_100_test_timestamps.csv

This CSV file contains the action annotations for the testing set and contains 9 columns:

Column Name	Type	Example	Description
narration_id	string	P01_101_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_101	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:02.851	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:02.86	Start time in HH:mm:ss.SSS of the action segment.
stop_timestamp	string	00:00:03.87	End time in HH:mm:ss.SSS of the action segment.
start_frame	int	143	Start frame of the action.
stop_frame	int	193	End frame of the action.

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EPIC_100_noun_classes.csv

This CSV file contains information on the 300 noun classes and contains 4 columns.

Column Name	Type	Example	Description
id	int	222	Unique ID for the noun class.
key	string	label	Key used for the noun class (all keys are a member of their own class).
instances	list of string (1 or more)	"['label', 'sticker']"	All nouns within the class, including the key.
category	string	materials	Name of the higher-level noun category that this noun class belongs to.

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EPIC_100_verb_classes.csv

This CSV file contains information on the 97 verb classes and contains 4 columns.

Column Name	Type	Example	Description
id	int	79	Unique ID for the verb class.
key	string	let-go	Key used for the verb class (all keys are a member of their own class).
instances	list of string (1 or more)	"['let', 'let-go']"	All verbs within the class, including the key.
category	string	leave	Name of the higher-level verb category that this verb class belongs to.

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EPIC_100_uda_source_train.csv

This CSV file contains the action annotations for the **source training set** used for **Unsupervised Domain Adaptation** and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P01_01_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_01	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:01.089	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.14	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:03.37	End time in HH:mm:ss.SS of the action segment.
start_frame	int	8	Start frame of the action.
stop_frame	int	202	End frame of the action.
narration	string	open door	Transcribed description of the English narration provided by the participant.
verb	string	open	Parsed verb from the narration.
verb_class	int	3	Numeric ID of the verb's class.
noun	string	door	First parsed noun from the narration.
noun_class	int	3	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[door]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[3]	Numeric ID of all of the parsed noun's classes.

Note that this file contains only videos from EPIC-KITCHENS-55 which is used as the source domain.

See here for more details on the unsupervised domain adaptation challenge.

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EPIC_100_uda_source_test_timestamps.csv

This CSV file contains the action annotations for the **source testing set** used for **Unsupervised Domain Adaptation** and contains 9 columns:

Column Name	Type	Example	Description
narration_id	string	P01_11_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_11	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:00.560	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.00	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:01.89	End time in HH:mm:ss.SS of the action segment.
start_frame	int	1	Start frame of the action.
stop_frame	int	113	End frame of the action.

Note that this file contains only videos from EPIC-KITCHENS-55 which is used as the source domain.

See here for more details on the unsupervised domain adaptation challenge.

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EPIC_100_uda_target_train_timestamps.csv

This CSV file contains the action annotations for the **target training set** used for **Unsupervised Domain Adaptation** and contains 9 columns:

Column Name	Type	Example	Description
narration_id	string	P01_102_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_102	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:01.100	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.54	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:02.23	End time in HH:mm:ss.SS of the action segment.
start_frame	int	27	Start frame of the action.
stop_frame	int	111	End frame of the action.

Note that this file contains only videos from EPIC-KITCHENS-100 which is used as the target domain.

See here for more details on the unsupervised domain adaptation challenge.

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EPIC_100_uda_target_test_timestamps.csv

This CSV file contains the action annotations for the **target testing set** used for **Unsupervised Domain Adaptation** and contains 9 columns:

Column Name	Type	Example	Description

Column Name	Type	Example	Description
narration_id	string	P01_101_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_101	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:02.851	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:02.86	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:03.87	End time in HH:mm:ss.SS of the action segment.
start_frame	int	143	Start frame of the action.
stop_frame	int	193	End frame of the action.

Note that this file contains only videos from EPIC-KITCHENS-100 which is used as the target domain.

See here for more details on the unsupervised domain adaptation challenge.

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EPIC_100_uda_source_val.csv

This CSV file contains the action annotations for the **source validation set** used for **Unsupervised Domain Adaptation** and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P03_02_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P03	ID of the participant (unique per participant).
video_id	string	P03_02	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:04.310	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:03.29	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:04.26	End time in HH:mm:ss.SS of the action segment.
start_frame	int	197	Start frame of the action.
stop_frame	int	255	End frame of the action.
narration	string	put lunch box	Transcribed description of the English narration provided by the participant.
verb	string	put	Parsed verb from the narration.
verb_class	int	1	Numeric ID of the verb's class.
noun	string	box:lunch	First parsed noun from the narration.
noun_class	int	23	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[box:lunch]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[23]	Numeric ID of all of the parsed noun's classes.

Note that this file contains only videos from EPIC-KITCHENS-55 which is used as the source domain for validation.

See here for more details on the unsupervised domain adaptation challenge.

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EPIC_100_uda_target_val.csv

This CSV file contains the action annotations for the **target validation set** used for **Unsupervised Domain Adaptation** and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P03_101_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P03	ID of the participant (unique per participant).
video_id	string	P03_101	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:02.877	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:02.60	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:03.86	End time in HH:mm:ss.SS of the action segment.
start_frame	int	130	Start frame of the action.
stop_frame	int	193	End frame of the action.
narration	string	turn on tap	Transcribed description of the English narration provided by the participant.
verb	string	turn-on	Parsed verb from the narration.
verb_class	int	6	Numeric ID of the verb's class.
noun	string	tap	First parsed noun from the narration.
noun_class	int	0	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[tap]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[23]	Numeric ID of all of the parsed noun's classes.

Note that this file contains only videos from EPIC-KITCHENS-100 which is used as the target domain for validation.

See here for more details on the unsupervised domain adaptation challenge.

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EPIC_100_retrieval_train.csv

This CSV file contains the action annotations for the **action retrieval** training set and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P01_01_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_01	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:01.089	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.14	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:03.37	End time in HH:mm:ss.SS of the action segment.
start_frame	int	8	Start frame of the action.
stop_frame	int	202	End frame of the action.

Column Name	Type	Example	Description
narration	string	open door	Transcribed description of the English narration provided by the participant.
verb	string	open	Parsed verb from the narration.
verb_class	int	3	Numeric ID of the verb's class.
noun	string	door	First parsed noun from the narration.
noun_class	int	3	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[door]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[3]	Numeric ID of all of the parsed noun's classes.

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EPIC_100_retrieval_train_sentence.csv

This CSV file contains the caption annotations for the **action retrieval** training set and contains 6 columns:

Column Name	Type	Example	Description
narration_id	string	P01_01_0	Unique ID for the caption (corresponding to the original action).
narration	string	open door	Transcribed description of the English narration provided by the participant.
verb_class	int	3	Numeric ID of the verb's class.
noun_classes	list of int (1 or more)	[3]	Numeric ID of the all noun classes in the narration.
verb	string	open	Parsed verb from the narration.
nouns	list of string (1 or more)	[door]	All parsed nouns in the narration.

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EPIC_100_retrieval_test.csv

This CSV file contains the action annotations for the **action retrieval** testing set and contains 15 columns:

Column Name	Type	Example	Description
narration_id	string	P01_11_0	Unique ID for the segment as a string with participant ID and video ID.
participant_id	int	P01	ID of the participant (unique per participant).
video_id	string	P01_11	ID of the video where the segment originated from (unique per video).
narration_timestamp	string	00:00:00.560	Timestamp of when the original narration was recorded in HH:mm:ss.SSS.
start_timestamp	string	00:00:00.00	Start time in HH:mm:ss.SS of the action segment.
stop_timestamp	string	00:00:01.89	End time in HH:mm:ss.SS of the action segment.
start_frame	int	8	Start frame of the action.
stop_frame	int	113	End frame of the action.
narration	string	take plate	Transcribed description of the English narration provided by the participant.
verb	string	take	Parsed verb from the narration.
verb_class	int	0	Numeric ID of the verb's class.

Column Name	Type	Example	Description
noun	string	plate	First parsed noun from the narration.
noun_class	int	2	Numeric ID of the first noun's class.
all_nouns	list of string (1 or more)	[plate]	List of all parsed nouns within the narration.
all_noun_classes	list of int (1 or more)	[2]	Numeric ID of all of the parsed noun's classes.

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EPIC_100_retrieval_test_sentence.csv

This CSV file contains the caption annotations for the **action retrieval** testing set and contains 2 columns:

Column Name	Type	Example	Description
narration_id	string	P01_11_0	Unique ID for the caption (corresponding to the original action).
narration	string	take plate	Transcribed description of the English narration provided by the participant.

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EPIC_100_train_missing_timestamps_narrations.csv

This CSV file contains the narration IDs of all EPIC-KITCHENS-55 videos in the training set which do not have a narration timestamp (see here for more details). This file has one column:

Column Name	Type	Example	Description
narration_id	string	P01_09_660	Unique ID for the segment as a string with participant ID and video ID.

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EPIC_100_validation_missing_timestamps_narrations.csv

This CSV file contains the narration IDs of all EPIC-KITCHENS-55 videos in the validation set which do not have a narration timestamp (see here for more details). This file has one column:

Column Name	Type	Example	Description
narration_id	string	P02_12_293	Unique ID for the segment as a string with participant ID and video ID.

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EPIC_100_unseen_participant_ids.csv

This CSV file contains the list of participant IDs who are unseen during training for use in evaluating the unseen participant metrics.

We have two files for both the validation and test set:

- `EPIC_100_unseen_participant_ids_test.csv` - The unseen participants in the test set.
- `EPIC_100_unseen_participant_ids_validation.csv` - The unseen participants in the validation set.

Column Name	Type	Example	Description
`participant_id`	string	`P33`	ID of the participant (unique per participant).

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EPIC_100_tail_verbs.csv

This CSV file contains the list of verb classes which are considered part of the tail classes. These are the set of smallest classes (i.e. those with fewest instances) that account for 20% of the total number of instances in the training set.

Column Name	Type	Example	Description
`verb`	int	`10`	Numeric ID representing the verb class.

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EPIC_100_tail_nouns.csv

This CSV file contains the list of noun classes which are considered part of the tail classes. These are the set of smallest classes (i.e. those with fewest instances) that account for 20% of the total number of instances in the training set.

Column Name	Type	Example	Description
`noun`	int	`56`	Numeric ID representing the noun class.

EPIC_100_video_info.csv

This CSV file contains information about each video in the dataset.

Column Name	Type	Example	Description
`video_id`	str	`P01_01`	ID of the video.
`duration`	float	`201.134`	Duration of the video in seconds.
`fps`	float	`50.0`	FPS of the video.
`resolution`	str	`1920x1080`	Resolution of the video `width x height`.

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Additional Information

File Downloads

Due to the size of the dataset we provide a script for downloading parts of the dataset which can be found here. If you wish to download the extension only (i.e. you have already downloaded EPIC-KITCHENS-55) the following command can be run:

```
python epic_downloader.py --extension-only
```

If you wish to download the whole dataset, the following command can be run:

```
python epic_downloader.py
```

See the README for more information.

Automatic Annotations Download

We also provide automatic annotations in the form of object masks extracted through the use of MaskRCNN and hand-object BBoxes from ddshan/Hand_Object_Detector (CVPR 2020).

The masks can be downloaded from data.bris and a supporting library is available from this repo.

The hand-object bboxes can be downloaded from data.bris and a supporting library is available from this repo.

Differences to EPIC-Kitchen-55

Updated Annotations

Whilst videos from EPIC-KITCHENS-55 are used within EPIC-KITCHENS-100 some of the annotations have been modified to improve the quality of the annotations. Additionally, with EPIC-KITCHENS-100, the verb/noun classes have been updated to cover the annotations from the new videos. Because of this, the annotations from EPIC-KITCHENS-55 cannot be used for EPIC-KITCHENS-100.

Missing Narration Timestamps

Due to the differences in the annotation pipeline between EPIC-KITCHENS-100 and EPIC-KITCHENS-55, it was impossible to assign the narration timestamp to every action. Because of this, there are actions within EPIC_100_train.csv and EPIC_100_validation.csv which do not have timestamp narrations and are thus marked with NaN within the dataframes.

Pickle Files

We also provide pickle files for all of the main train/val/test csvs for ease of use. These files require python 3.5+ and pandas 1.0.0+ to read. The pickle files are automatically tagged with the commit hash and version for version control purposes which can be found in python using the following commands:

```
>>> import pandas as pd
>>> train = pd.read_pickle('EPIC_100_train.pkl')
>>> train._metadata
```

`{'commit_hash': 'ce7a0fb', 'version_number': '1.0.0'`

showing that this version of the `EPIC_100_train.pkl` came from commit hash ce7a0fb and version number 1.0.0.

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License

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Changelog

Please see the release history for the changelog.

Current Version 1.1.0.

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