

coopertunes

0.2.0

Generated by Doxygen 1.9.1

1 Namespace Index	1
1.1 Namespace List	1
2 Hierarchical Index	3
2.1 Class Hierarchy	3
3 Class Index	5
3.1 Class List	5
4 File Index	7
4.1 File List	7
5 Namespace Documentation	9
5.1 coopertunes Namespace Reference	9
5.2 coopertunes.datasets Namespace Reference	9
5.3 coopertunes.datasets.AudioDataset Namespace Reference	9
5.3.1 Function Documentation	10
5.3.1.1 files_to_list()	10
5.4 coopertunes.datasets.GANSynthDataset Namespace Reference	10
5.5 coopertunes.datasets.MelDataset Namespace Reference	10
5.6 coopertunes.datasets.MidiDataset Namespace Reference	10
5.7 coopertunes.datatools Namespace Reference	10
5.8 coopertunes.datatools.config Namespace Reference	10
5.8.1 Variable Documentation	11
5.8.1.1 DATA_NAMES	11
5.9 coopertunes.datatools.downloaders Namespace Reference	11
5.9.1 Function Documentation	11
5.9.1.1 download_classic_piano()	11
5.9.1.2 download_dataset()	11
5.9.1.3 download_file()	12
5.9.1.4 get_datatype_dataset_downloaders()	12
5.10 coopertunes.datatools.miditools Namespace Reference	12
5.10.1 Detailed Description	13
5.10.2 Variable Documentation	13
5.10.2.1 BEAT_LENGTH	13
5.10.2.2 c	13
5.10.2.3 cs	13
5.10.2.4 DEFAULT_LOADING_PROGRAMS	13
5.10.2.5 DEFAULT_NORMALIZATION_BASELINE	13
5.10.2.6 DEFAULT_NOTE_DENSITY_BINS	13
5.10.2.7 DEFAULT_NOTE_LENGTH	14
5.10.2.8 DEFAULT_PITCH_RANGE	14
5.10.2.9 DEFAULT_RESOLUTION	14
5.10.2.10 DEFAULT_SAVING_PROGRAM	14

5.10.2.11	DEFAULT_TEMPO	14
5.10.2.12	DEFAULT_TIME_SHIFT_BINS	14
5.10.2.13	DEFAULT_VELOCITY	14
5.10.2.14	DEFAULT_VELOCITY_RANGE	14
5.10.2.15	DEFAULT_VELOCITY_STEPS	15
5.10.2.16	DEFAULT_WINDOW_SIZE	15
5.10.2.17	es	15
5.10.2.18	MIN_NOTE_LENGTH	15
5.10.2.19	path	15
5.10.2.20	USE_VELOCITY	15
5.11	coopertunes.datatools.process Namespace Reference	15
5.11.1	Function Documentation	16
5.11.1.1	get_preprocessing()	16
5.11.1.2	preprocess_classic_piano()	16
5.11.1.3	preprocess_midi2sequence()	16
5.11.1.4	preprocess_wav2spectrogram()	16
5.11.2	Variable Documentation	17
5.11.2.1	midi_root	17
5.11.2.2	num_workers	17
5.11.2.3	save_dir	17
5.12	coopertunes.distributed Namespace Reference	17
5.12.1	Function Documentation	17
5.12.1.1	fix_unset_envs()	17
5.12.1.2	get_free_port()	18
5.12.1.3	get_world_size()	18
5.12.1.4	global_leader_only()	18
5.12.1.5	global_rank()	18
5.12.1.6	is_global_leader()	18
5.12.1.7	is_local_leader()	18
5.12.1.8	local_leader_only()	18
5.12.1.9	local_rank()	19
5.13	coopertunes.hparams Namespace Reference	19
5.13.1	Function Documentation	19
5.13.1.1	get_hparams()	19
5.14	coopertunes.hparams.Audio2Mel Namespace Reference	19
5.15	coopertunes.hparams.GANSynth Namespace Reference	19
5.16	coopertunes.hparams.hparams Namespace Reference	20
5.17	coopertunes.hparams.MelGan Namespace Reference	20
5.18	coopertunes.hparams.MelSpecVAE Namespace Reference	20
5.19	coopertunes.hparams.MelSpecVQVAE Namespace Reference	20
5.20	coopertunes.hparams.PerformanceRNN Namespace Reference	20
5.21	coopertunes.logger Namespace Reference	20

5.21.1 Detailed Description	20
5.22 coopertunes.models Namespace Reference	21
5.22.1 Function Documentation	21
5.22.1.1 get_model()	21
5.23 coopertunes.models.Audio2Mel Namespace Reference	21
5.24 coopertunes.models.GANSynth Namespace Reference	21
5.24.1 Detailed Description	21
5.25 coopertunes.models.MelGan Namespace Reference	22
5.25.1 Function Documentation	22
5.25.1.1 weights_init()	22
5.25.1.2 WNConv1d()	22
5.25.1.3 WNConvTranspose1d()	22
5.26 coopertunes.models.MelSpecVAE Namespace Reference	22
5.27 coopertunes.models.MelSpecVQVAE Namespace Reference	23
5.28 coopertunes.models.model Namespace Reference	23
5.29 coopertunes.models.PerformanceRNN Namespace Reference	23
5.29.1 Detailed Description	23
5.30 coopertunes.supervisors Namespace Reference	23
5.31 coopertunes.supervisors.Audio2Mel Namespace Reference	23
5.32 coopertunes.supervisors.GANSynth Namespace Reference	24
5.33 coopertunes.supervisors.MelGan Namespace Reference	24
5.33.1 Variable Documentation	24
5.33.1.1 audio2mel_hparams	24
5.33.1.2 mel_hparams	24
5.33.1.3 melGanAudio2mel	24
5.33.1.4 melGanDiscriminator	25
5.33.1.5 melGanGgenerator	25
5.33.1.6 supervisor	25
5.34 coopertunes.supervisors.MelSpecVAE Namespace Reference	25
5.34.1 Variable Documentation	25
5.34.1.1 backend	25
5.34.1.2 init_method	26
5.34.1.3 mel_hparams	26
5.34.1.4 mel_spec_vae	26
5.34.1.5 rank	26
5.34.1.6 vae_supervisor	26
5.34.1.7 world_size	26
5.35 coopertunes.supervisors.MelSpecVQVAE Namespace Reference	26
5.35.1 Variable Documentation	27
5.35.1.1 backend	27
5.35.1.2 init_method	27
5.35.1.3 mel_hparams	27

5.35.1.4 mel_spec_vae	27
5.35.1.5 rank	27
5.35.1.6 vae_supervisor	28
5.35.1.7 world_size	28
5.36 coopertunes.supervisors.PerformanceRNN Namespace Reference	28
5.36.1 Variable Documentation	28
5.36.1.1 device	28
5.36.1.2 hparams	28
5.36.1.3 model	29
5.36.1.4 supervisor	29
5.37 coopertunes.utils Namespace Reference	29
5.37.1 Detailed Description	30
5.37.2 Function Documentation	30
5.37.2.1 calc_n_params()	30
5.37.2.2 compute_gradient_norm()	30
5.37.2.3 convert_audios2mels()	30
5.37.2.4 convert_audios2mels_h()	30
5.37.2.5 convert_mels2audios()	31
5.37.2.6 convert_mels2audios_h()	31
5.37.2.7 dconv_same_padding()	31
5.37.2.8 dict2params()	31
5.37.2.9 event_indeces_to_midi_file()	31
5.37.2.10 find_files_by_extensions()	32
5.37.2.11 get_default_device()	32
5.37.2.12 log_debug()	32
5.37.2.13 log_error()	32
5.37.2.14 log_info()	32
5.37.2.15 log_warning()	32
5.37.2.16 normalize_audio()	33
5.37.2.17 params2dict()	33
5.37.2.18 plot_audio()	33
5.37.2.19 plot_mel()	33
5.37.2.20 save_sample()	33
5.37.2.21 set_seed()	34
5.37.2.22 setup_cuda_debug()	34
5.37.2.23 transposition()	34
5.37.3 Variable Documentation	34
5.37.3.1 AUDIO_EXTENSIONS	34
5.37.3.2 L	34
5.37.3.3 MIDI_EXTENSIONS	34
5.37.3.4 propagate	34

6 Class Documentation	35
6.1 Audio2Mel Class Reference	35
6.1.1 Constructor & Destructor Documentation	36
6.1.1.1 <code>__init__()</code>	36
6.1.2 Member Function Documentation	36
6.1.2.1 <code>forward()</code>	36
6.1.2.2 <code>inference()</code>	36
6.1.3 Member Data Documentation	36
6.1.3.1 <code>hop_length</code>	37
6.1.3.2 <code>n_fft</code>	37
6.1.3.3 <code>n_mel_channels</code>	37
6.1.3.4 <code>sampling_rate</code>	37
6.1.3.5 <code>win_length</code>	37
6.2 Audio2MelHParams Class Reference	38
6.2.1 Constructor & Destructor Documentation	39
6.2.1.1 <code>__init__()</code>	39
6.2.2 Member Data Documentation	39
6.2.2.1 <code>hop_length</code>	39
6.2.2.2 <code>mel_fmax</code>	39
6.2.2.3 <code>mel_fmin</code>	39
6.2.2.4 <code>n_fft</code>	39
6.2.2.5 <code>n_mel_channels</code>	40
6.2.2.6 <code>sampling_rate</code>	40
6.2.2.7 <code>win_length</code>	40
6.3 Audio2MelSupervisor Class Reference	40
6.3.1 Constructor & Destructor Documentation	40
6.3.1.1 <code>__init__()</code>	40
6.3.2 Member Function Documentation	41
6.3.2.1 <code>convert()</code>	41
6.3.3 Member Data Documentation	41
6.3.3.1 <code>device</code>	41
6.3.3.2 <code>hparams</code>	41
6.3.3.3 <code>model</code>	41
6.4 AudioDataset Class Reference	42
6.4.1 Detailed Description	42
6.4.2 Constructor & Destructor Documentation	43
6.4.2.1 <code>__init__()</code>	43
6.4.3 Member Function Documentation	43
6.4.3.1 <code>__getitem__()</code>	43
6.4.3.2 <code>__len__()</code>	43
6.4.3.3 <code>load_wav_to_torch()</code>	43
6.4.4 Member Data Documentation	43

6.4.4.1 audio_files	44
6.4.4.2 augment	44
6.4.4.3 sampling_rate	44
6.4.4.4 segment_length	44
6.5 Control Class Reference	44
6.5.1 Constructor & Destructor Documentation	44
6.5.1.1 __init__()	45
6.5.2 Member Function Documentation	45
6.5.2.1 __repr__()	45
6.5.2.2 to_array()	45
6.5.3 Member Data Documentation	45
6.5.3.1 note_density	45
6.5.3.2 pitch_histogram	45
6.6 ControlSeq Class Reference	46
6.6.1 Constructor & Destructor Documentation	46
6.6.1.1 __init__()	46
6.6.2 Member Function Documentation	46
6.6.2.1 dim()	46
6.6.2.2 feat_dims()	47
6.6.2.3 feat_ranges()	47
6.6.2.4 from_event_seq()	47
6.6.2.5 recover_compressed_array()	47
6.6.2.6 to_compressed_array()	47
6.6.3 Member Data Documentation	47
6.6.3.1 controls	47
6.6.3.2 note_density_bins	47
6.6.3.3 window_size	48
6.7 DataType Class Reference	48
6.7.1 Member Data Documentation	48
6.7.1.1 AUDIO	49
6.7.1.2 MIDI	49
6.8 Discriminator Class Reference	49
6.8.1 Constructor & Destructor Documentation	50
6.8.1.1 __init__()	50
6.8.2 Member Function Documentation	50
6.8.2.1 forward()	50
6.8.3 Member Data Documentation	50
6.8.3.1 activation_function	50
6.8.3.2 block0	51
6.8.3.3 block1	51
6.8.3.4 block2	51
6.8.3.5 block3	51

6.8.3.6 block4	51
6.8.3.7 block5	51
6.8.3.8 block6	51
6.8.3.9 discriminator_output	51
6.8.3.10 pitch_classifier	52
6.9 DiscriminatorHParams Class Reference	52
6.9.1 Constructor & Destructor Documentation	52
6.9.1.1 __init__()	52
6.9.2 Member Data Documentation	52
6.9.2.1 betas	52
6.9.2.2 block_conv_filters	53
6.9.2.3 block_conv_kernel	53
6.9.2.4 block_downsample_factor	53
6.9.2.5 leaky_relu_slope	53
6.9.2.6 linear_in_size	53
6.9.2.7 lr	53
6.9.2.8 pitch_dim	53
6.10 Event Class Reference	54
6.10.1 Constructor & Destructor Documentation	54
6.10.1.1 __init__()	54
6.10.2 Member Function Documentation	54
6.10.2.1 __repr__()	54
6.10.3 Member Data Documentation	54
6.10.3.1 time	54
6.10.3.2 type	55
6.10.3.3 value	55
6.11 EventSeq Class Reference	55
6.11.1 Constructor & Destructor Documentation	55
6.11.1.1 __init__()	56
6.11.2 Member Function Documentation	56
6.11.2.1 dim()	56
6.11.2.2 feat_dims()	56
6.11.2.3 feat_ranges()	56
6.11.2.4 from_array()	56
6.11.2.5 from_note_seq()	56
6.11.2.6 get_velocity_bins()	56
6.11.2.7 to_array()	57
6.11.2.8 to_note_seq()	57
6.11.3 Member Data Documentation	57
6.11.3.1 events	57
6.11.3.2 pitch_range	57
6.11.3.3 time_shift_bins	57

6.11.3.4 velocity_range	57
6.11.3.5 velocity_steps	57
6.12 GANSynthDataset Class Reference	58
6.12.1 Detailed Description	58
6.12.2 Constructor & Destructor Documentation	59
6.12.2.1 __init__()	59
6.12.3 Member Function Documentation	59
6.12.3.1 __getitem__()	59
6.12.3.2 __len__()	59
6.12.4 Member Data Documentation	59
6.12.4.1 filepaths	59
6.12.4.2 metadata	59
6.13 GANSynthHParams Class Reference	60
6.13.1 Constructor & Destructor Documentation	61
6.13.1.1 __init__()	61
6.13.2 Member Data Documentation	61
6.13.2.1 discriminator	61
6.13.2.2 epochs	61
6.13.2.3 generator	61
6.13.2.4 train_data_dir	61
6.14 GANSynthSupervisor Class Reference	62
6.14.1 Detailed Description	62
6.14.2 Constructor & Destructor Documentation	62
6.14.2.1 __init__()	62
6.14.3 Member Function Documentation	62
6.14.3.1 train()	62
6.14.4 Member Data Documentation	63
6.14.4.1 device	63
6.14.4.2 discriminator	63
6.14.4.3 discriminator_optimizer	63
6.14.4.4 epoch	63
6.14.4.5 generator	63
6.14.4.6 generator_optimizer	63
6.14.4.7 hparams	63
6.14.4.8 step	64
6.14.4.9 train_loader	64
6.15 Generator Class Reference	64
6.15.1 Constructor & Destructor Documentation	65
6.15.1.1 __init__()	65
6.15.2 Member Function Documentation	65
6.15.2.1 forward()	65
6.15.3 Member Data Documentation	65

6.15.3.1 activation_function	65
6.15.3.2 block0	66
6.15.3.3 block1	66
6.15.3.4 block2	66
6.15.3.5 block3	66
6.15.3.6 block4	66
6.15.3.7 block5	66
6.15.3.8 block6	66
6.16 GeneratorHPParams Class Reference	67
6.16.1 Constructor & Destructor Documentation	67
6.16.1.1 __init__()	67
6.16.2 Member Data Documentation	67
6.16.2.1 betas	67
6.16.2.2 block_dconv_filters	67
6.16.2.3 block_dconv_kernel	68
6.16.2.4 block_upsample_factor	68
6.16.2.5 eps	68
6.16.2.6 first_dconv_kernel	68
6.16.2.7 latent_dim	68
6.16.2.8 leaky_relu_slope	68
6.16.2.9 lr	68
6.16.2.10 pitch_dim	69
6.17 HParams Class Reference	69
6.17.1 Detailed Description	70
6.17.2 Constructor & Destructor Documentation	70
6.17.2.1 __init__()	70
6.17.3 Member Function Documentation	70
6.17.3.1 __repr__()	70
6.17.3.2 dumps_to_file()	70
6.17.3.3 update()	71
6.17.4 Member Data Documentation	71
6.17.4.1 checkpoints_dir	71
6.17.4.2 logs_dir	71
6.17.4.3 train_data_dirs	71
6.17.4.4 valid_data_dirs	71
6.18 Logger Class Reference	71
6.18.1 Detailed Description	72
6.18.2 Constructor & Destructor Documentation	72
6.18.2.1 __init__()	72
6.18.3 Member Function Documentation	72
6.18.3.1 get_summary_writer()	72
6.18.3.2 log_running_vals_to_tb()	72

6.18.3.3 update_running_vals()	73
6.18.4 Member Data Documentation	73
6.18.4.1 device	73
6.18.4.2 hparams	73
6.18.4.3 log_audio	73
6.18.4.4 model_name	73
6.19 MelDataset Class Reference	74
6.19.1 Constructor & Destructor Documentation	74
6.19.1.1 __init__()	75
6.19.2 Member Function Documentation	75
6.19.2.1 __getitem__()	75
6.19.2.2 __len__()	75
6.19.3 Member Data Documentation	75
6.19.3.1 data_dirs	75
6.19.3.2 filepaths	75
6.19.3.3 hparams	75
6.20 MelGanDiscriminator Class Reference	76
6.20.1 Constructor & Destructor Documentation	76
6.20.1.1 __init__()	77
6.20.2 Member Function Documentation	77
6.20.2.1 forward()	77
6.20.3 Member Data Documentation	77
6.20.3.1 downsample	77
6.20.3.2 model	77
6.21 MelGanGenerator Class Reference	78
6.21.1 Detailed Description	78
6.21.2 Constructor & Destructor Documentation	79
6.21.2.1 __init__()	79
6.21.3 Member Function Documentation	79
6.21.3.1 forward()	79
6.21.3.2 inference()	79
6.21.4 Member Data Documentation	79
6.21.4.1 hop_length	79
6.21.4.2 model	79
6.22 MelGanHParams Class Reference	80
6.22.1 Detailed Description	81
6.22.2 Constructor & Destructor Documentation	81
6.22.2.1 __init__()	81
6.22.3 Member Data Documentation	81
6.22.3.1 adam_betas	81
6.22.3.2 default_checkpoint	81
6.22.3.3 learning_rate	81

6.22.3.4 summary_path	81
6.23 MelGanNLayerDiscriminator Class Reference	82
6.23.1 Constructor & Destructor Documentation	82
6.23.1.1 __init__()	83
6.23.2 Member Function Documentation	83
6.23.2.1 forward()	83
6.23.3 Member Data Documentation	83
6.23.3.1 model	83
6.24 MelGanSupervisor Class Reference	83
6.24.1 Detailed Description	84
6.24.2 Constructor & Destructor Documentation	84
6.24.2.1 __init__()	84
6.24.3 Member Function Documentation	84
6.24.3.1 __call__()	84
6.24.3.2 eval()	85
6.24.3.3 load_pretrained()	85
6.24.3.4 test()	85
6.24.3.5 train()	85
6.24.4 Member Data Documentation	85
6.24.4.1 audio2mel	85
6.24.4.2 device	85
6.24.4.3 epoch	86
6.24.4.4 hparams	86
6.24.4.5 netD	86
6.24.4.6 netG	86
6.24.4.7 optD	86
6.24.4.8 optG	86
6.24.4.9 step	86
6.24.4.10 val_dl	87
6.25 MelSpecVAE Class Reference	87
6.25.1 Detailed Description	88
6.25.2 Constructor & Destructor Documentation	88
6.25.2.1 __init__()	88
6.25.3 Member Function Documentation	88
6.25.3.1 decode()	88
6.25.3.2 encode()	89
6.25.3.3 forward()	89
6.25.3.4 inference()	89
6.25.3.5 loss_function()	89
6.25.3.6 reparameterize()	89
6.25.4 Member Data Documentation	90
6.25.4.1 before_latent	90

6.25.4.2 decoder	90
6.25.4.3 decoder_input	90
6.25.4.4 encoder	90
6.25.4.5 fc_mu	90
6.25.4.6 fc_var	90
6.25.4.7 final_layer	90
6.25.4.8 kld_weight	91
6.25.4.9 last_filter	91
6.25.4.10 latent_dim	91
6.25.4.11 pool_factor	91
6.26 MelSpecVAEHPParams Class Reference	91
6.26.1 Constructor & Destructor Documentation	92
6.26.1.1 __init__()	92
6.26.2 Member Function Documentation	92
6.26.2.1 ds_cfg()	92
6.27 MelSpecVAESupervisor Class Reference	93
6.27.1 Detailed Description	93
6.27.2 Constructor & Destructor Documentation	93
6.27.2.1 __init__()	93
6.27.3 Member Function Documentation	93
6.27.3.1 eval()	93
6.27.3.2 train()	94
6.27.4 Member Data Documentation	94
6.27.4.1 device	94
6.27.4.2 engines	94
6.27.4.3 epoch	94
6.27.4.4 hparams	94
6.27.4.5 model	94
6.27.4.6 step	94
6.27.4.7 val_dl	95
6.28 MelSpecVQVAE Class Reference	95
6.28.1 Detailed Description	96
6.28.2 Constructor & Destructor Documentation	96
6.28.2.1 __init__()	96
6.28.3 Member Function Documentation	96
6.28.3.1 decode()	96
6.28.3.2 encode()	96
6.28.3.3 forward()	97
6.28.3.4 inference()	97
6.28.3.5 loss_function()	97
6.28.4 Member Data Documentation	97
6.28.4.1 decoder	97

6.28.4.2 embedding_dim	97
6.28.4.3 encoder	97
6.28.4.4 num_embeddings	98
6.28.4.5 vq_layer	98
6.28.4.6 vq_weight	98
6.29 MelSpecVQVAEHPParams Class Reference	98
6.29.1 Constructor & Destructor Documentation	99
6.29.1.1 __init__()	99
6.29.2 Member Function Documentation	99
6.29.2.1 ds_cfg()	99
6.30 MelSpecVQVAESupervisor Class Reference	100
6.30.1 Detailed Description	100
6.30.2 Constructor & Destructor Documentation	100
6.30.2.1 __init__()	100
6.30.3 Member Function Documentation	100
6.30.3.1 eval()	100
6.30.3.2 train()	101
6.30.4 Member Data Documentation	101
6.30.4.1 device	101
6.30.4.2 engines	101
6.30.4.3 epoch	101
6.30.4.4 hparams	101
6.30.4.5 model	101
6.30.4.6 step	101
6.30.4.7 val_dl	102
6.31 MidiDataset Class Reference	102
6.31.1 Constructor & Destructor Documentation	102
6.31.1.1 __init__()	102
6.31.2 Member Function Documentation	102
6.31.2.1 __repr__()	102
6.31.2.2 batches()	103
6.31.3 Member Data Documentation	103
6.31.3.1 avglens	103
6.31.3.2 root	103
6.31.3.3 samples	103
6.31.3.4 seqLens	103
6.32 Model Class Reference	104
6.32.1 Detailed Description	104
6.32.2 Constructor & Destructor Documentation	104
6.32.2.1 __init__()	105
6.32.3 Member Function Documentation	105
6.32.3.1 forward()	105

6.32.3.2 inference()	105
6.33 NoteSeq Class Reference	105
6.33.1 Constructor & Destructor Documentation	106
6.33.1.1 __init__()	106
6.33.2 Member Function Documentation	106
6.33.2.1 add_notes()	106
6.33.2.2 adjust_pitches()	106
6.33.2.3 adjust_time()	106
6.33.2.4 adjust_velocities()	107
6.33.2.5 copy()	107
6.33.2.6 from_midi()	107
6.33.2.7 from_midi_file()	107
6.33.2.8 merge()	107
6.33.2.9 to_midi()	107
6.33.2.10 to_midi_file()	108
6.33.2.11 trim_overlapped_notes()	108
6.33.3 Member Data Documentation	108
6.33.3.1 notes	108
6.34 PerformanceRNN Class Reference	108
6.34.1 Constructor & Destructor Documentation	110
6.34.1.1 __init__()	110
6.34.2 Member Function Documentation	110
6.34.2.1 beam_search()	110
6.34.2.2 expand_controls()	110
6.34.2.3 forward()	110
6.34.2.4 generate()	111
6.34.2.5 get_primary_event()	111
6.34.2.6 init_to_hidden()	111
6.34.3 Member Data Documentation	111
6.34.3.1 concat_dim	111
6.34.3.2 concat_input_fc	111
6.34.3.3 concat_input_fc_activation	112
6.34.3.4 control_dim	112
6.34.3.5 device	112
6.34.3.6 event_dim	112
6.34.3.7 event_embedding	112
6.34.3.8 gru	112
6.34.3.9 gru_layers	112
6.34.3.10 hidden_dim	112
6.34.3.11 init_dim	113
6.34.3.12 inithid_fc	113
6.34.3.13 inithid_fc_activation	113

6.34.3.14 input_dim	113
6.34.3.15 output_dim	113
6.34.3.16 output_fc	113
6.34.3.17 output_fc_activation	113
6.34.3.18 primary_event	114
6.35 PerformanceRNHPParams Class Reference	114
6.35.1 Constructor & Destructor Documentation	115
6.35.1.1 __init__()	115
6.36 PerformanceRNNSupervisor Class Reference	115
6.36.1 Detailed Description	116
6.36.2 Constructor & Destructor Documentation	116
6.36.2.1 __init__()	116
6.36.3 Member Function Documentation	116
6.36.3.1 generate()	116
6.36.3.2 load_pretrained()	116
6.36.3.3 train()	117
6.36.4 Member Data Documentation	117
6.36.4.1 batch_size	117
6.36.4.2 control_dim	117
6.36.4.3 control_ratio	117
6.36.4.4 data_path	117
6.36.4.5 device	117
6.36.4.6 enable_logging	117
6.36.4.7 event_dim	118
6.36.4.8 hparams	118
6.36.4.9 learning_rate	118
6.36.4.10 model	118
6.36.4.11 optimizer	118
6.36.4.12 reset_optimizer	118
6.36.4.13 saving_interval	118
6.36.4.14 sess_path	118
6.36.4.15 step	119
6.36.4.16 stride_size	119
6.36.4.17 teacher_forcing_ratio	119
6.36.4.18 use_transposition	119
6.36.4.19 val_dl	119
6.36.4.20 window_size	119
6.37 PixelNormalization Class Reference	120
6.37.1 Detailed Description	120
6.37.2 Constructor & Destructor Documentation	120
6.37.2.1 __init__()	121
6.37.3 Member Function Documentation	121

6.37.3.1 forward()	121
6.37.4 Member Data Documentation	121
6.37.4.1 eps	121
6.38 PrintLayer Class Reference	121
6.38.1 Constructor & Destructor Documentation	122
6.38.1.1 __init__()	122
6.38.2 Member Function Documentation	122
6.38.2.1 forward()	122
6.39 ResidualLayer Class Reference	123
6.39.1 Constructor & Destructor Documentation	123
6.39.1.1 __init__()	124
6.39.2 Member Function Documentation	124
6.39.2.1 forward()	124
6.39.3 Member Data Documentation	124
6.39.3.1 resblock	124
6.40 ResnetBlock Class Reference	124
6.40.1 Constructor & Destructor Documentation	125
6.40.1.1 __init__()	125
6.40.2 Member Function Documentation	125
6.40.2.1 forward()	125
6.40.3 Member Data Documentation	126
6.40.3.1 block	126
6.40.3.2 shortcut	126
6.41 VectorQuantizer Class Reference	126
6.41.1 Detailed Description	127
6.41.2 Constructor & Destructor Documentation	127
6.41.2.1 __init__()	127
6.41.3 Member Function Documentation	127
6.41.3.1 forward()	127
6.41.4 Member Data Documentation	127
6.41.4.1 beta	128
6.41.4.2 D	128
6.41.4.3 embedding	128
6.41.4.4 K	128
7 File Documentation	129
7.1 /home/oskar/Studia/wimu/cooptunes/cooptunes/__init__.py File Reference	129
7.2 /home/oskar/Studia/wimu/cooptunes/cooptunes/datasets/__init__.py File Reference	129
7.3 /home/oskar/Studia/wimu/cooptunes/cooptunes/datatools/__init__.py File Reference	129
7.4 /home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/__init__.py File Reference	129
7.5 /home/oskar/Studia/wimu/cooptunes/cooptunes/models/__init__.py File Reference	130
7.6 /home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/__init__.py File Reference	130

7.7 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/AudioDataset.py File Reference	130
7.8 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/GANSynthDataset.py File Reference	130
7.9 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MelDataset.py File Reference	131
7.10 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MidiDataset.py File Reference	131
7.11 /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/config.py File Reference	131
7.12 /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/downloaders.py File Reference	132
7.13 /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/miditools.py File Reference	132
7.14 /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/process.py File Reference	133
7.15 /home/oskar/Studia/wimu/coopertunes/coopertunes/distributed.py File Reference	133
7.16 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/Audio2Mel.py File Reference	133
7.17 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/Audio2Mel.py File Reference	134
7.18 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/Audio2Mel.py File Reference	134
7.19 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/GANSynth.py File Reference	134
7.20 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/GANSynth.py File Reference	135
7.21 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/GANSynth.py File Reference	135
7.22 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/hparams.py File Reference	135
7.23 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelGan.py File Reference	135
7.24 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelGan.py File Reference	136
7.25 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelGan.py File Reference	136
7.26 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVAE.py File Reference	137
7.27 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVAE.py File Reference	137
7.28 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVAE.py File Reference	137
7.29 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVQVAE.py File Reference	138
7.30 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVQVAE.py File Reference	138
7.31 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVQVAE.py File Reference	138
7.32 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/PerformanceRNN.py File Reference	139
7.33 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/PerformanceRNN.py File Reference	139
7.34 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/PerformanceRNN.py File Reference	139
7.35 /home/oskar/Studia/wimu/coopertunes/coopertunes/logger.py File Reference	140
7.36 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/model.py File Reference	140
7.37 /home/oskar/Studia/wimu/coopertunes/coopertunes/utils.py File Reference	140

Chapter 1

Namespace Index

1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

coopertunes	9
coopertunes.datasets	9
coopertunes.datasets.AudioDataset	9
coopertunes.datasets.GANSynthDataset	10
coopertunes.datasets.MelDataset	10
coopertunes.datasets.MidiDataset	10
coopertunes.datatools	10
coopertunes.datatools.config	10
coopertunes.datatools.downloaders	11
coopertunes.datatools.miditools	12
coopertunes.datatools.process	15
coopertunes.distributed	17
coopertunes.hparams	19
coopertunes.hparams.Audio2Mel	19
coopertunes.hparams.GANSynth	19
coopertunes.hparams.hparams	20
coopertunes.hparams.MelGan	20
coopertunes.hparams.MelSpecVAE	20
coopertunes.hparams.MelSpecVQVAE	20
coopertunes.hparams.PerformanceRNN	20
coopertunes.logger	20
coopertunes.models	21
coopertunes.models.Audio2Mel	21
coopertunes.models.GANSynth	21
coopertunes.models.MelGan	22
coopertunes.models.MelSpecVAE	22
coopertunes.models.MelSpecVQVAE	23
coopertunes.models.model	23
coopertunes.models.PerformanceRNN	23
coopertunes.supervisors	23
coopertunes.supervisors.Audio2Mel	23
coopertunes.supervisors.GANSynth	24
coopertunes.supervisors.MelGan	24
coopertunes.supervisors.MelSpecVAE	25
coopertunes.supervisors.MelSpecVQVAE	26
coopertunes.supervisors.PerformanceRNN	28
coopertunes.utils	29

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Audio2MelSupervisor	40
Control	44
ControlSeq	46
Dataset	
AudioDataset	42
DiscriminatorHParams	52
Event	54
EventSeq	55
GANSynthSupervisor	62
GeneratorHParams	67
Logger	71
MelGanSupervisor	83
MelSpecVAESupervisor	93
MelSpecVQVAESupervisor	100
MidiDataset	102
Module	
Audio2Mel	35
Discriminator	49
Generator	64
MelGanDiscriminator	76
MelGanGenerator	78
MelGanNLayerDiscriminator	82
ResnetBlock	124
MelSpecVAE	87
MelSpecVQVAE	95
ResidualLayer	123
VectorQuantizer	126
Model	104
PerformanceRNN	108
PixelNormalization	120
PrintLayer	121
NoteSeq	105
PerformanceRNNSupervisor	115
ABC	
HParams	69

Audio2MelHParams	38
GANSynthHParams	60
MelGanHParams	80
MelSpecVAEHParams	91
MelSpecVQVAEHParams	98
PerformanceRNNHParams	114
Dataset	
GANSynthDataset	58
MelDataset	74
Enum	
DataType	48

Chapter 3

Class Index

3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Audio2Mel	35
Audio2MelHParams	38
Audio2MelSupervisor	40
AudioDataset	42
Control	44
ControlSeq	46
DataType	48
Discriminator	49
DiscriminatorHParams	52
Event	54
EventSeq	55
GANSynthDataset	58
GANSynthHParams	60
GANSynthSupervisor	62
Generator	64
GeneratorHParams	67
HParams	69
Logger	71
MelDataset	74
MelGanDiscriminator	76
MelGanGenerator	78
MelGanHParams	80
MelGanNLayerDiscriminator	82
MelGanSupervisor	83
MelSpecVAE	87
MelSpecVAEHParams	91
MelSpecVAESupervisor	93
MelSpecVQVAE	95
MelSpecVQVAEHParams	98
MelSpecVQVAESupervisor	100
MidiDataset	102
Model	104
NoteSeq	105
PerformanceRNN	108
PerformanceRNNHParams	114

PerformanceRNNSupervisor	115
PixelNormalization	120
PrintLayer	121
ResidualLayer	123
ResnetBlock	124
VectorQuantizer	126

Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

/home/oskar/Studia/wimu/coopertunes/coopertunes/__init__.py	129
/home/oskar/Studia/wimu/coopertunes/coopertunes/distributed.py	133
/home/oskar/Studia/wimu/coopertunes/coopertunes/logger.py	140
/home/oskar/Studia/wimu/coopertunes/coopertunes/utils.py	140
/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/__init__.py	129
/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/AudioDataset.py	130
/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/GANSynthDataset.py	130
/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MelDataset.py	131
/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MidiDataset.py	131
/home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/__init__.py	129
/home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/config.py	131
/home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/downloaders.py	132
/home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/miditools.py	132
/home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/process.py	133
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/__init__.py	129
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/Audio2Mel.py	133
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/GANSynth.py	134
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/hparams.py	135
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelGan.py	135
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVAE.py	137
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVQVAE.py	138
/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/PerformanceRNN.py	139
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/__init__.py	130
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/Audio2Mel.py	134
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/GANSynth.py	135
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelGan.py	136
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVAE.py	137
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVQVAE.py	138
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/model.py	140
/home/oskar/Studia/wimu/coopertunes/coopertunes/models/PerformanceRNN.py	139
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/__init__.py	130
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/Audio2Mel.py	134
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/GANSynth.py	135
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelGan.py	136
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVAE.py	137
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVQVAE.py	138
/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/PerformanceRNN.py	139

Chapter 5

Namespace Documentation

5.1 coopertunes Namespace Reference

Namespaces

- [datasets](#)
- [datatools](#)
- [distributed](#)
- [hparams](#)
- [logger](#)
- [models](#)
- [supervisors](#)
- [utils](#)

5.2 coopertunes.datasets Namespace Reference

Namespaces

- [AudioDataset](#)
- [GANSynthDataset](#)
- [MelDataset](#)
- [MidiDataset](#)

5.3 coopertunes.datasets.AudioDataset Namespace Reference

Classes

- class [AudioDataset](#)

Functions

- def [files_to_list](#) (filename)

5.3.1 Function Documentation

5.3.1.1 `files_to_list()`

```
def coopertunes.datasets.AudioDataset.files_to_list (
    filename )
```

Takes a text file of filenames and makes a list of filenames

5.4 `coopertunes.datasets.GANSynthDataset` Namespace Reference

Classes

- class [GANSynthDataset](#)

5.5 `coopertunes.datasets.MelDataset` Namespace Reference

Classes

- class [MelDataset](#)

5.6 `coopertunes.datasets.MidiDataset` Namespace Reference

Classes

- class [MidiDataset](#)

5.7 `coopertunes.datatools` Namespace Reference

Namespaces

- [config](#)
- [downloaders](#)
- [miditools](#)
- [process](#)

5.8 `coopertunes.datatools.config` Namespace Reference

Classes

- class [DataType](#)

Variables

- dictionary [DATA_NAMES](#)

5.8.1 Variable Documentation

5.8.1.1 DATA_NAMES

dictionary `DATA_NAMES`

Initial value:

```
1 = {
2     DataType.MIDI: ["classic_piano"],
3     DataType.AUDIO: [],
4 }
```

5.9 coopertunes.datatools.downloaders Namespace Reference

Functions

- def [download_classic_piano](#) (output_dir)
- def [download_dataset](#) (output_dir, data_type, name)
- def [download_file](#) (url, output_dir)
- def [get_datatype_dataset_downloaders](#) ([DataType](#) data_type)

5.9.1 Function Documentation

5.9.1.1 download_classic_piano()

```
def coopertunes.datatools.downloaders.download_classic_piano (
    output_dir )
```

5.9.1.2 download_dataset()

```
def coopertunes.datatools.downloaders.download_dataset (
    output_dir,
    data_type,
    name )
```

Downloads a dataset of specified data_type and name under given output_directory.

5.9.1.3 download_file()

```
def coopertunes.datatools.downloaders.download_file (
    url,
    output_dir )
```

5.9.1.4 get_datatype_dataset_downloaders()

```
def coopertunes.datatools.downloaders.get_datatype_dataset_downloaders (
    DataType data_type )
```

Returns dictionary of all possible downloaders for given datatype.
Ids in this dictionary are DATA_NAMES.

5.10 coopertunes.datatools.miditools Namespace Reference

Classes

- class [Control](#)
- class [ControlSeq](#)
- class [Event](#)
- class [EventSeq](#)
- class [NoteSeq](#)

Variables

- int [BEAT_LENGTH](#) = 60 / [DEFAULT_TEMPO](#)
- [c](#)
- [cs](#) = [ControlSeq](#).from_event_seq(es)
- [DEFAULT_LOADING_PROGRAMS](#) = range(128)
- int [DEFAULT_NORMALIZATION_BASELINE](#) = 60
- int [DEFAULT_NOTE_DENSITY_BINS](#) = np.arange(12) * 3 + 1
- int [DEFAULT_NOTE_LENGTH](#) = [BEAT_LENGTH](#) * 2
- [DEFAULT_PITCH_RANGE](#) = range(21, 109)
- int [DEFAULT_RESOLUTION](#) = 220
- int [DEFAULT_SAVING_PROGRAM](#) = 1
- int [DEFAULT_TEMPO](#) = 120
- float [DEFAULT_TIME_SHIFT_BINS](#) = 1.15 ** np.arange(32) / 65
- int [DEFAULT_VELOCITY](#) = 64
- [DEFAULT_VELOCITY_RANGE](#) = range(21, 109)
- int [DEFAULT_VELOCITY_STEPS](#) = 32
- int [DEFAULT_WINDOW_SIZE](#) = [BEAT_LENGTH](#) * 4
- [es](#) = [EventSeq](#).from_note_seq([NoteSeq](#).from_midi_file(path))
- int [MIN_NOTE_LENGTH](#) = [BEAT_LENGTH](#) / 2
- int [path](#)
- bool [USE_VELOCITY](#) = True

5.10.1 Detailed Description

File from <https://github.com/djosix/Performance-RNN-PyTorch> on MIT licence.

5.10.2 Variable Documentation

5.10.2.1 BEAT_LENGTH

```
int BEAT_LENGTH = 60 / DEFAULT_TEMPO
```

5.10.2.2 c

c

Initial value:

```
1 = ControlSeq.recover_compressed_array(  
2     pickle.load(open('/tmp/cs-compressed.data', 'rb')))
```

5.10.2.3 cs

```
cs = ControlSeq.from_event_seq(es)
```

5.10.2.4 DEFAULT_LOADING_PROGRAMS

```
DEFAULT_LOADING_PROGRAMS = range(128)
```

5.10.2.5 DEFAULT_NORMALIZATION_BASELINE

```
int DEFAULT_NORMALIZATION_BASELINE = 60
```

5.10.2.6 DEFAULT_NOTE_DENSITY_BINS

```
int DEFAULT_NOTE_DENSITY_BINS = np.arange(12) * 3 + 1
```

5.10.2.7 DEFAULT_NOTE_LENGTH

```
int DEFAULT_NOTE_LENGTH = BEAT_LENGTH * 2
```

5.10.2.8 DEFAULT_PITCH_RANGE

```
DEFAULT_PITCH_RANGE = range(21, 109)
```

5.10.2.9 DEFAULT_RESOLUTION

```
int DEFAULT_RESOLUTION = 220
```

5.10.2.10 DEFAULT_SAVING_PROGRAM

```
int DEFAULT_SAVING_PROGRAM = 1
```

5.10.2.11 DEFAULT_TEMPO

```
int DEFAULT_TEMPO = 120
```

5.10.2.12 DEFAULT_TIME_SHIFT_BINS

```
float DEFAULT_TIME_SHIFT_BINS = 1.15 ** np.arange(32) / 65
```

5.10.2.13 DEFAULT_VELOCITY

```
int DEFAULT_VELOCITY = 64
```

5.10.2.14 DEFAULT_VELOCITY_RANGE

```
DEFAULT_VELOCITY_RANGE = range(21, 109)
```

5.10.2.15 DEFAULT_VELOCITY_STEPS

```
int DEFAULT_VELOCITY_STEPS = 32
```

5.10.2.16 DEFAULT_WINDOW_SIZE

```
int DEFAULT_WINDOW_SIZE = BEAT_LENGTH * 4
```

5.10.2.17 es

```
es = EventSeq.from_note_seq(NoteSeq.from_midi_file(path))
```

5.10.2.18 MIN_NOTE_LENGTH

```
int MIN_NOTE_LENGTH = BEAT_LENGTH / 2
```

5.10.2.19 path

```
int path
```

Initial value:

```
1 = sys.argv[1] if len(  
2     sys.argv) > 1 else 'dataset/midi/ecompe/BLINOV02.mid'
```

5.10.2.20 USE_VELOCITY

```
bool USE_VELOCITY = True
```

5.11 coopertunes.datatools.process Namespace Reference

Functions

- def [get_preprocessing](#) (name)
- def [preprocess_classic_piano](#) (midi_root, save_dir, num_workers)
- def [preprocess_midi2sequence](#) (path)
- def [preprocess_wav2spectrogram](#) (path)

Variables

- [midi_root](#)
- [num_workers](#)
- [save_dir](#)

5.11.1 Function Documentation

5.11.1.1 `get_preprocessing()`

```
def coopertunes.datatools.process.get_preprocessing (
    name )
```

Returns processing funtion for dataset.
Name should be in DATA_NAMES values.

5.11.1.2 `preprocess_classic_piano()`

```
def coopertunes.datatools.process.preprocess_classic_piano (
    midi_root,
    save_dir,
    num_workers )
```

5.11.1.3 `preprocess_midi2sequence()`

```
def coopertunes.datatools.process.preprocess_midi2sequence (
    path )
```

Preprocess single midi under given path to event sequence.

5.11.1.4 `preprocess_wav2spectrogram()`

```
def coopertunes.datatools.process.preprocess_wav2spectrogram (
    path )
```

Preprocess single wav under given path to spectrogram

5.11.2 Variable Documentation

5.11.2.1 `midi_root`

`midi_root`

5.11.2.2 `num_workers`

`num_workers`

5.11.2.3 `save_dir`

`save_dir`

5.12 `coopertunes.distributed` Namespace Reference

Functions

- def [fix_unset_envs](#) ()
- def [get_free_port](#) ()
- def [get_world_size](#) ()
- Callable [global_leader_only](#) (Callable|None fn=None, *default=None)
- def [global_rank](#) ()
- def [is_global_leader](#) ()
- def [is_local_leader](#) ()
- Callable [local_leader_only](#) (fn=None, *default=None)
- def [local_rank](#) ()

5.12.1 Function Documentation

5.12.1.1 `fix_unset_envs()`

```
def coopertunes.distributed.fix_unset_envs ( )
```

5.12.1.2 `get_free_port()`

```
def coopertunes.distributed.get_free_port ( )
```

5.12.1.3 `get_world_size()`

```
def coopertunes.distributed.get_world_size ( )
```

5.12.1.4 `global_leader_only()`

```
Callable coopertunes.distributed.global_leader_only (
    Callable | None  fn = None,
    * default = None )
```

5.12.1.5 `global_rank()`

```
def coopertunes.distributed.global_rank ( )
```

5.12.1.6 `is_global_leader()`

```
def coopertunes.distributed.is_global_leader ( )
```

5.12.1.7 `is_local_leader()`

```
def coopertunes.distributed.is_local_leader ( )
```

5.12.1.8 `local_leader_only()`

```
Callable coopertunes.distributed.local_leader_only (
    fn = None,
    * default = None )
```

5.12.1.9 local_rank()

```
def coopertunes.distributed.local_rank ( )
```

5.13 coopertunes.hparams Namespace Reference

Namespaces

- [Audio2Mel](#)
- [GANSynth](#)
- [hparams](#)
- [MelGan](#)
- [MelSpecVAE](#)
- [MelSpecVQVAE](#)
- [PerformanceRNN](#)

Functions

- def [get_hparams](#) (str model_name)

5.13.1 Function Documentation

5.13.1.1 get_hparams()

```
def coopertunes.hparams.get_hparams (
    str model_name )
```

5.14 coopertunes.hparams.Audio2Mel Namespace Reference

Classes

- class [Audio2MelHParams](#)

5.15 coopertunes.hparams.GANSynth Namespace Reference

Classes

- class [DiscriminatorHParams](#)
- class [GANSynthHParams](#)
- class [GeneratorHParams](#)

5.16 coopertunes.hparams.hparams Namespace Reference

Classes

- class [HParams](#)

5.17 coopertunes.hparams.MelGan Namespace Reference

Classes

- class [MelGanHParams](#)

5.18 coopertunes.hparams.MelSpecVAE Namespace Reference

Classes

- class [MelSpecVAEHParams](#)

5.19 coopertunes.hparams.MelSpecVQVAE Namespace Reference

Classes

- class [MelSpecVQVAEHParams](#)

5.20 coopertunes.hparams.PerformanceRNN Namespace Reference

Classes

- class [PerformanceRNNHParams](#)

5.21 coopertunes.logger Namespace Reference

Classes

- class [Logger](#)

5.21.1 Detailed Description

Module with logger utils class

5.22 coopertunes.models Namespace Reference

Namespaces

- [Audio2Mel](#)
- [GANSynth](#)
- [MelGan](#)
- [MelSpecVAE](#)
- [MelSpecVQVAE](#)
- [model](#)
- [PerformanceRNN](#)

Functions

- def [get_model](#) (model_name)

5.22.1 Function Documentation

5.22.1.1 get_model()

```
def coopertunes.models.get_model (
    model_name )
```

5.23 coopertunes.models.Audio2Mel Namespace Reference

Classes

- class [Audio2Mel](#)

5.24 coopertunes.models.GANSynth Namespace Reference

Classes

- class [Discriminator](#)
- class [Generator](#)

5.24.1 Detailed Description

GANSynth model implementation based on:
GANSynth paper - <https://arxiv.org/pdf/1902.08710.pdf>
PGGAN paper - <https://arxiv.org/pdf/1710.10196.pdf>
ACGAN paper - <https://arxiv.org/pdf/1610.09585.pdf>

5.25 coopertunes.models.MelGan Namespace Reference

Classes

- class [MelGanDiscriminator](#)
- class [MelGanGenerator](#)
- class [MelGanNLayerDiscriminator](#)
- class [ResnetBlock](#)

Functions

- def [weights_init](#) (m)
- def [WNConv1d](#) (*args, **kwargs)
- def [WNConvTranspose1d](#) (*args, **kwargs)

5.25.1 Function Documentation

5.25.1.1 weights_init()

```
def coopertunes.models.MelGan.weights_init (  
    m )
```

5.25.1.2 WNConv1d()

```
def coopertunes.models.MelGan.WNConv1d (  
    * args,  
    ** kwargs )
```

5.25.1.3 WNConvTranspose1d()

```
def coopertunes.models.MelGan.WNConvTranspose1d (  
    * args,  
    ** kwargs )
```

5.26 coopertunes.models.MelSpecVAE Namespace Reference

Classes

- class [MelSpecVAE](#)

5.27 coopertunes.models.MelSpecVQVAE Namespace Reference

Classes

- class [MelSpecVQVAE](#)
- class [ResidualLayer](#)
- class [VectorQuantizer](#)

5.28 coopertunes.models.model Namespace Reference

Classes

- class [Model](#)

5.29 coopertunes.models.PerformanceRNN Namespace Reference

Classes

- class [PerformanceRNN](#)

5.29.1 Detailed Description

Slightly modified code from <https://github.com/djosix/Performance-RNN-PyTorch> on MIT licence.

5.30 coopertunes.supervisors Namespace Reference

Namespaces

- [Audio2Mel](#)
- [GANSynth](#)
- [MelGan](#)
- [MelSpecVAE](#)
- [MelSpecVQVAE](#)
- [PerformanceRNN](#)

5.31 coopertunes.supervisors.Audio2Mel Namespace Reference

Classes

- class [Audio2MelSupervisor](#)

5.32 coopertunes.supervisors.GANSynth Namespace Reference

Classes

- class [GANSynthSupervisor](#)

5.33 coopertunes.supervisors.MelGan Namespace Reference

Classes

- class [MelGanSupervisor](#)

Variables

- [audio2mel_hparams](#) = [Audio2MelHParams](#)()
- [mel_hparams](#) = [MelGanHParams](#)()
- [melGanAudio2mel](#) = [Audio2Mel](#)([audio2mel_hparams](#))
- [melGanDiscriminator](#) = [MelGanDiscriminator](#)([mel_hparams](#))
- [melGanGgenerator](#) = [MelGanGenerator](#)([mel_hparams](#))
- [supervisor](#)

5.33.1 Variable Documentation

5.33.1.1 audio2mel_hparams

```
audio2mel_hparams = Audio2MelHParams()
```

5.33.1.2 mel_hparams

```
mel_hparams = MelGanHParams()
```

5.33.1.3 melGanAudio2mel

```
melGanAudio2mel = Audio2Mel(audio2mel\_hparams)
```

5.33.1.4 melGanDiscriminator

```
melGanDiscriminator = MelGanDiscriminator(mel_hparams)
```

5.33.1.5 melGanGenerator

```
melGanGenerator = MelGanGenerator(mel_hparams)
```

5.33.1.6 supervisor

```
supervisor
```

Initial value:

```
1 = MelGanSupervisor(  
2     melGanGenerator,  
3     melGanDiscriminator,  
4     melGanAudio2mel,  
5     get_default_device(),  
6     mel_hparams,  
7 )
```

5.34 coopertunes.supervisors.MelSpecVAE Namespace Reference

Classes

- class [MelSpecVAESupervisor](#)

Variables

- [backend](#)
- [init_method](#)
- [mel_hparams](#) = [MelSpecVAEHParams\(\)](#)
- [mel_spec_vae](#) = [MelSpecVAE\(mel_hparams\)](#)
- [rank](#)
- [vae_supervisor](#)
- [world_size](#)

5.34.1 Variable Documentation

5.34.1.1 backend

```
backend
```

5.34.1.2 `init_method`

`init_method`

5.34.1.3 `mel_hparams`

`mel_hparams = MelSpecVAEHParams()`

5.34.1.4 `mel_spec_vae`

`mel_spec_vae = MelSpecVAE(mel_hparams)`

5.34.1.5 `rank`

`rank`

5.34.1.6 `vae_supervisor`

`vae_supervisor`

Initial value:

```
1 = MelSpecVAESupervisor(  
2     mel_spec_vae, torch.device("cuda"), mel_hparams  
3 )
```

5.34.1.7 `world_size`

`world_size`

5.35 `coopertunes.supervisors.MelSpecVQVAE` Namespace Reference

Classes

- class `MelSpecVQVAESupervisor`

Variables

- [backend](#)
- [init_method](#)
- [mel_hparams](#) = [MelSpecVQVAEHParams\(\)](#)
- [mel_spec_vae](#) = [MelSpecVQVAE\(mel_hparams\)](#)
- [rank](#)
- [vae_supervisor](#)
- [world_size](#)

5.35.1 Variable Documentation

5.35.1.1 backend

`backend`

5.35.1.2 init_method

`init_method`

5.35.1.3 mel_hparams

`mel_hparams` = [MelSpecVQVAEHParams\(\)](#)

5.35.1.4 mel_spec_vae

`mel_spec_vae` = [MelSpecVQVAE\(mel_hparams\)](#)

5.35.1.5 rank

`rank`

5.35.1.6 vae_supervisor

vae_supervisor

Initial value:

```
1 = MelSpecVQVAESupervisor(  
2     mel_spec_vae, torch.device("cuda"), mel_hparams  
3 )
```

5.35.1.7 world_size

world_size

5.36 coopertunes.supervisors.PerformanceRNN Namespace Reference

Classes

- class [PerformanceRNNSupervisor](#)

Variables

- string [device](#) = "cuda:0"
- [hparams](#) = [PerformanceRNNHParams](#)()
- [model](#) = [PerformanceRNNTentative](#)([hparams](#))
- [supervisor](#) = [PerformanceRNNSupervisor](#)([model](#), [device](#), [hparams](#))

5.36.1 Variable Documentation

5.36.1.1 device

```
string device = "cuda:0"
```

5.36.1.2 hparams

```
hparams = PerformanceRNNHParams()
```


5.36.1.3 model

```
model = PerformanceRNNattentive(hparams)
```

5.36.1.4 supervisor

```
supervisor = PerformanceRNNSupervisor(model, device, hparams)
```

5.37 coopertunes.utils Namespace Reference

Classes

- class [PixelNormalization](#)
- class [PrintLayer](#)

Functions

- def [calc_n_params](#) (module)
- def [compute_gradient_norm](#) (parameters, norm_type=2)
- def [convert_audios2mels](#) (audios, sample_rate, n_mels=80, hop_len=256, n_fft=1024, win_len=1024, fmin=0.0, fmax=8000.0)
- def [convert_audios2mels_h](#) (audios, hparams)
- def [convert_mels2audios](#) (mels, sample_rate, n_griffin_lim_iter=16, hop_len=256, n_fft=1024, win_len=1024, fmin=0.0, fmax=8000.0)
- def [convert_mels2audios_h](#) (mels, hparams)
- def [dconv_same_padding](#) (kernel_size, dilation=1)
- def [dict2params](#) (d, f=";", e="")
- def [event_indeces_to_midi_file](#) (event_indeces, midi_file_name, velocity_scale=0.8)
- def [find_files_by_extensions](#) (root, exts=[])
- def [get_default_device](#) ()
- def [log_debug](#) (*args, **kwargs)
- def [log_error](#) (*args, **kwargs)
- def [log_info](#) (*args, **kwargs)
- def [log_warning](#) (*args, **kwargs)
- def [normalize_audio](#) (audio, float from_sample_rate, float to_sample_rate)
- def [params2dict](#) (p, f=";", e="")
- def [plot_audio](#) (audio, out_fp=None)
- def [plot_mel](#) (mel, out_fp=None)
- def [save_sample](#) (file_path, sampling_rate, audio)
- def [set_seed](#) (int seed)
- def [setup_cuda_debug](#) (bool cuda_debug_mode=False)
- def [transposition](#) (events, controls, offset=0)

Variables

- list [AUDIO_EXTENSIONS](#) = [".wav", ".flac", ".mp3"]
- [L](#) = TypeVar("L")
- list [MIDI_EXTENSIONS](#) = [".midi", ".mid"]
- [propagate](#)

5.37.1 Detailed Description

Module with utilities

5.37.2 Function Documentation

5.37.2.1 `calc_n_params()`

```
def coopertunes.utils.calc_n_params (  
    module )
```

5.37.2.2 `compute_gradient_norm()`

```
def coopertunes.utils.compute_gradient_norm (  
    parameters,  
    norm_type = 2 )
```

5.37.2.3 `convert_audios2mels()`

```
def coopertunes.utils.convert_audios2mels (  
    audios,  
    sample_rate,  
    n_mels = 80,  
    hop_len = 256,  
    n_fft = 1024,  
    win_len = 1024,  
    fmin = 0.0,  
    fmax = 8000.0 )
```

5.37.2.4 `convert_audios2mels_h()`

```
def coopertunes.utils.convert_audios2mels_h (  
    audios,  
    hparams )
```

5.37.2.5 convert_mels2audios()

```
def coopertunes.utils.convert_mels2audios (
    mels,
    sample_rate,
    n_griffin_lim_iter = 16,
    hop_len = 256,
    n_fft = 1024,
    win_len = 1024,
    fmin = 0.0,
    fmax = 8000.0 )
```

5.37.2.6 convert_mels2audios_h()

```
def coopertunes.utils.convert_mels2audios_h (
    mels,
    hparams )
```

5.37.2.7 dconv_same_padding()

```
def coopertunes.utils.dconv_same_padding (
    kernel_size,
    dilation = 1 )
```

5.37.2.8 dict2params()

```
def coopertunes.utils.dict2params (
    d,
    f = ", " )
```

5.37.2.9 event_indices_to_midi_file()

```
def coopertunes.utils.event_indices_to_midi_file (
    event_indices,
    midi_file_name,
    velocity_scale = 0.8 )
```

5.37.2.10 find_files_by_extensions()

```
def coopertunes.utils.find_files_by_extensions (
    root,
    exts = [] )
```

5.37.2.11 get_default_device()

```
def coopertunes.utils.get_default_device ( )
```

5.37.2.12 log_debug()

```
def coopertunes.utils.log_debug (
    * args,
    ** kwargs )
```

5.37.2.13 log_error()

```
def coopertunes.utils.log_error (
    * args,
    ** kwargs )
```

5.37.2.14 log_info()

```
def coopertunes.utils.log_info (
    * args,
    ** kwargs )
```

5.37.2.15 log_warning()

```
def coopertunes.utils.log_warning (
    * args,
    ** kwargs )
```

5.37.2.16 `normalize_audio()`

```
def coopertunes.utils.normalize_audio (
    audio,
    float from_sample_rate,
    float to_sample_rate )
```

5.37.2.17 `params2dict()`

```
def coopertunes.utils.params2dict (
    p,
    f = ",",
    e = "=" )
```

5.37.2.18 `plot_audio()`

```
def coopertunes.utils.plot_audio (
    audio,
    out_fp = None )
```

5.37.2.19 `plot_mel()`

```
def coopertunes.utils.plot_mel (
    mel,
    out_fp = None )
```

5.37.2.20 `save_sample()`

```
def coopertunes.utils.save_sample (
    file_path,
    sampling_rate,
    audio )
```

Helper function to save sample

Args:

```
file_path (str or pathlib.Path): save file path
sampling_rate (int): sampling rate of audio (usually 22050)
audio (torch.FloatTensor): torch array containing audio in [-1, 1]
```

5.37.2.21 `set_seed()`

```
def coopertunes.utils.set_seed (
    int seed )
```

5.37.2.22 `setup_cuda_debug()`

```
def coopertunes.utils.setup_cuda_debug (
    bool cuda_debug_mode = False )
```

5.37.2.23 `transposition()`

```
def coopertunes.utils.transposition (
    events,
    controls,
    offset = 0 )
```

5.37.3 Variable Documentation

5.37.3.1 `AUDIO_EXTENSIONS`

```
list AUDIO_EXTENSIONS = [".wav", ".flac", ".mp3"]
```

5.37.3.2 `L`

```
L = TypeVar("L")
```

5.37.3.3 `MIDI_EXTENSIONS`

```
list MIDI_EXTENSIONS = [".midi", ".mid"]
```

5.37.3.4 `propagate`

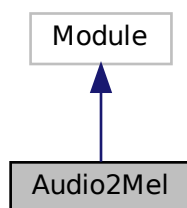
```
propagate
```

Chapter 6

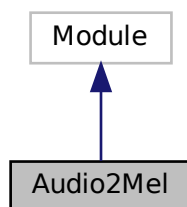
Class Documentation

6.1 Audio2Mel Class Reference

Inheritance diagram for Audio2Mel:



Collaboration diagram for Audio2Mel:



Public Member Functions

- def `__init__` (self, [Audio2MelHParams](#) hparams)
- def `forward` (self, audio)
- def `inference` (self, audio)

Public Attributes

- [hop_length](#)
- [n_fft](#)
- [n_mel_channels](#)
- [sampling_rate](#)
- [win_length](#)

6.1.1 Constructor & Destructor Documentation

6.1.1.1 `__init__()`

```
def __init__ (
    self,
    Audio2MelHParams hparams )
```

6.1.2 Member Function Documentation

6.1.2.1 `forward()`

```
def forward (
    self,
    audio )
```

6.1.2.2 `inference()`

```
def inference (
    self,
    audio )
```

6.1.3 Member Data Documentation

6.1.3.1 hop_length

hop_length

6.1.3.2 n_fft

n_fft

6.1.3.3 n_mel_channels

n_mel_channels

6.1.3.4 sampling_rate

sampling_rate

6.1.3.5 win_length

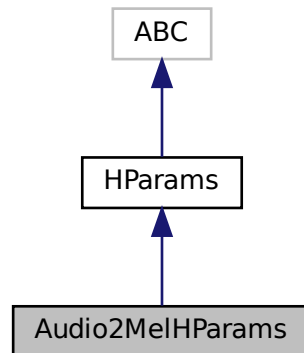
win_length

The documentation for this class was generated from the following file:

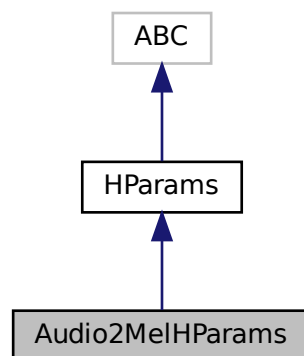
- /home/oskar/Studia/wimu/coopertunes/coopertunes/models/[Audio2Mel.py](#)

6.2 Audio2MelHParams Class Reference

Inheritance diagram for Audio2MelHParams:



Collaboration diagram for Audio2MelHParams:



Public Member Functions

- `def __init__(self, Optional[Union[Path, dict[str, Any]]] hparams=None)`

Public Attributes

- `hop_length`
- `mel_fmax`

- [mel_fmin](#)
- [n_fft](#)
- [n_mel_channels](#)
- [sampling_rate](#)
- [win_length](#)

6.2.1 Constructor & Destructor Documentation

6.2.1.1 `__init__()`

```
def __init__ (
    self,
    Optional[Union[Path, dict[str, Any]]] hparams = None )
```

6.2.2 Member Data Documentation

6.2.2.1 `hop_length`

`hop_length`

6.2.2.2 `mel_fmax`

`mel_fmax`

6.2.2.3 `mel_fmin`

`mel_fmin`

6.2.2.4 `n_fft`

`n_fft`

6.2.2.5 n_mel_channels

n_mel_channels

6.2.2.6 sampling_rate

sampling_rate

6.2.2.7 win_length

win_length

The documentation for this class was generated from the following file:

- /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/[Audio2Mel.py](#)

6.3 Audio2MelSupervisor Class Reference

Public Member Functions

- def `__init__` (self, [Audio2Mel model](#), torch.device [device](#), [Audio2MelHParams hparams](#))
- def `convert` (self, audio)

Public Attributes

- [device](#)
- [hparams](#)
- [model](#)

6.3.1 Constructor & Destructor Documentation

6.3.1.1 `__init__()`

```
def __init__ (
    self,
    Audio2Mel model,
    torch.device device,
    Audio2MelHParams hparams )
```

6.3.2 Member Function Documentation

6.3.2.1 convert()

```
def convert (
    self,
    audio )
```

Args:

audio (torch.tensor): PyTorch tensor containing audio (batch_size, timesteps)

Returns:

torch.tensor: log-mel-spectrogram
computed on input audio (batch_size, mel bank filters, timesteps)

6.3.3 Member Data Documentation

6.3.3.1 device

device

6.3.3.2 hparams

hparams

6.3.3.3 model

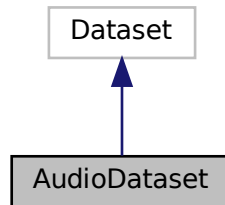
model

The documentation for this class was generated from the following file:

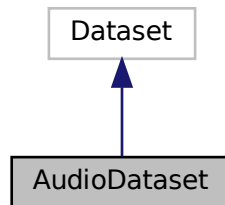
- /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/[Audio2Mel.py](#)

6.4 AudioDataset Class Reference

Inheritance diagram for AudioDataset:



Collaboration diagram for AudioDataset:



Public Member Functions

- `def __getitem__ (self, index)`
- `def __init__ (self, training_files, segment_length, sampling_rate, augment=True)`
- `def __len__ (self)`
- `def load_wav_to_torch (self, full_path)`

Public Attributes

- `audio_files`
- `augment`
- `sampling_rate`
- `segment_length`

6.4.1 Detailed Description

This is the main class that returns audio frames

6.4.2 Constructor & Destructor Documentation

6.4.2.1 `__init__()`

```
def __init__ (
    self,
    training_files,
    segment_length,
    sampling_rate,
    augment = True )
```

6.4.3 Member Function Documentation

6.4.3.1 `__getitem__()`

```
def __getitem__ (
    self,
    index )
```

6.4.3.2 `__len__()`

```
def __len__ (
    self )
```

6.4.3.3 `load_wav_to_torch()`

```
def load_wav_to_torch (
    self,
    full_path )
```

Loads wavdata into torch array

6.4.4 Member Data Documentation

6.4.4.1 audio_files

audio_files

6.4.4.2 augment

augment

6.4.4.3 sampling_rate

sampling_rate

6.4.4.4 segment_length

segment_length

The documentation for this class was generated from the following file:

- [/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/AudioDataset.py](#)

6.5 Control Class Reference

Public Member Functions

- `def __init__(self, pitch_histogram, note_density)`
- `def __repr__(self)`
- `def to_array(self)`

Public Attributes

- [note_density](#)
- [pitch_histogram](#)

6.5.1 Constructor & Destructor Documentation

6.5.1.1 `__init__()`

```
def __init__ (
    self,
    pitch_histogram,
    note_density )
```

6.5.2 Member Function Documentation

6.5.2.1 `__repr__()`

```
def __repr__ (
    self )
```

6.5.2.2 `to_array()`

```
def to_array (
    self )
```

6.5.3 Member Data Documentation

6.5.3.1 `note_density`

`note_density`

6.5.3.2 `pitch_histogram`

`pitch_histogram`

The documentation for this class was generated from the following file:

- `/home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/miditools.py`

6.6 ControlSeq Class Reference

Public Member Functions

- def `__init__` (self, `controls`)
- def `to_compressed_array` (self)

Static Public Member Functions

- def `dim` ()
- def `feat_dims` ()
- def `feat_ranges` ()
- def `from_event_seq` (event_seq)
- def `recover_compressed_array` (array)

Public Attributes

- `controls`

Static Public Attributes

- `note_density_bins` = `DEFAULT_NOTE_DENSITY_BINS`
- `window_size` = `DEFAULT_WINDOW_SIZE`

6.6.1 Constructor & Destructor Documentation

6.6.1.1 `__init__`()

```
def __init__ (
    self,
    controls )
```

6.6.2 Member Function Documentation

6.6.2.1 `dim`()

```
def dim ( ) [static]
```

6.6.2.2 feat_dims()

```
def feat_dims ( ) [static]
```

6.6.2.3 feat_ranges()

```
def feat_ranges ( ) [static]
```

6.6.2.4 from_event_seq()

```
def from_event_seq (
    event_seq ) [static]
```

6.6.2.5 recover_compressed_array()

```
def recover_compressed_array (
    array ) [static]
```

6.6.2.6 to_compressed_array()

```
def to_compressed_array (
    self )
```

6.6.3 Member Data Documentation

6.6.3.1 controls

```
controls
```

6.6.3.2 note_density_bins

```
note_density_bins = DEFAULT\_NOTE\_DENSITY\_BINS [static]
```

6.6.3.3 window_size

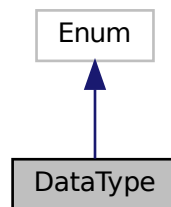
```
window_size = DEFAULT_WINDOW_SIZE [static]
```

The documentation for this class was generated from the following file:

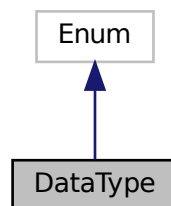
- /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/[miditools.py](#)

6.7 DataType Class Reference

Inheritance diagram for DataType:



Collaboration diagram for DataType:



Static Public Attributes

- string `AUDIO` = "audio"
- string `MIDI` = "midi"

6.7.1 Member Data Documentation

6.7.1.1 AUDIO

```
string AUDIO = "audio" [static]
```

6.7.1.2 MIDI

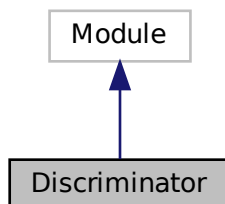
```
string MIDI = "midi" [static]
```

The documentation for this class was generated from the following file:

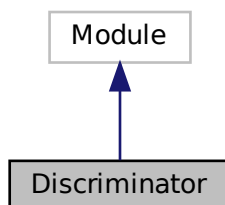
- </home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/config.py>

6.8 Discriminator Class Reference

Inheritance diagram for Discriminator:



Collaboration diagram for Discriminator:



Public Member Functions

- def `__init__` (self, [DiscriminatorHParams](#) hparams)
- def `forward` (self, x)

Public Attributes

- [activation_function](#)
- [block0](#)
- [block1](#)
- [block2](#)
- [block3](#)
- [block4](#)
- [block5](#)
- [block6](#)
- [discriminator_output](#)
- [pitch_classifier](#)

6.8.1 Constructor & Destructor Documentation

6.8.1.1 `__init__()`

```
def __init__ (
    self,
    DiscriminatorHParams hparams )
```

6.8.2 Member Function Documentation

6.8.2.1 `forward()`

```
def forward (
    self,
    x )
```

6.8.3 Member Data Documentation

6.8.3.1 `activation_function`

```
activation_function
```

6.8.3.2 block0

block0

6.8.3.3 block1

block1

6.8.3.4 block2

block2

6.8.3.5 block3

block3

6.8.3.6 block4

block4

6.8.3.7 block5

block5

6.8.3.8 block6

block6

6.8.3.9 discriminator_output

discriminator_output

6.8.3.10 pitch_classifier

`pitch_classifier`

The documentation for this class was generated from the following file:

- `/home/oskar/Studia/wimu/coopertunes/coopertunes/models/GANSynth.py`

6.9 DiscriminatorHParams Class Reference

Public Member Functions

- `def __init__ (self)`

Public Attributes

- `betas`
- `block_conv_filters`
- `block_conv_kernel`
- `block_downsample_factor`
- `leaky_relu_slope`
- `linear_in_size`
- `lr`
- `pitch_dim`

6.9.1 Constructor & Destructor Documentation

6.9.1.1 __init__()

```
def __init__ (  
    self )
```

6.9.2 Member Data Documentation

6.9.2.1 betas

`betas`

6.9.2.2 block_conv_filters

block_conv_filters

6.9.2.3 block_conv_kernel

block_conv_kernel

6.9.2.4 block_downsample_factor

block_downsample_factor

6.9.2.5 leaky_relu_slope

leaky_relu_slope

6.9.2.6 linear_in_size

linear_in_size

6.9.2.7 lr

lr

6.9.2.8 pitch_dim

pitch_dim

The documentation for this class was generated from the following file:

- /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/[GANSynth.py](#)

6.10 Event Class Reference

Public Member Functions

- `def __init__(self, type, time, value)`
- `def __repr__(self)`

Public Attributes

- `time`
- `type`
- `value`

6.10.1 Constructor & Destructor Documentation

6.10.1.1 `__init__()`

```
def __init__ (
    self,
    type,
    time,
    value )
```

6.10.2 Member Function Documentation

6.10.2.1 `__repr__()`

```
def __repr__ (
    self )
```

6.10.3 Member Data Documentation

6.10.3.1 `time`

`time`

6.10.3.2 type

type

6.10.3.3 value

value

The documentation for this class was generated from the following file:

- </home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/miditools.py>

6.11 EventSeq Class Reference

Public Member Functions

- [def __init__](#) (self, [events](#)=[])
- [def to_array](#) (self)
- [def to_note_seq](#) (self)

Static Public Member Functions

- [def dim](#) ()
- [def feat_dims](#) ()
- [def feat_ranges](#) ()
- [def from_array](#) (event_indeces)
- [def from_note_seq](#) (note_seq)
- [def get_velocity_bins](#) ()

Public Attributes

- [events](#)

Static Public Attributes

- [pitch_range](#) = [DEFAULT_PITCH_RANGE](#)
- [time_shift_bins](#) = [DEFAULT_TIME_SHIFT_BINS](#)
- [velocity_range](#) = [DEFAULT_VELOCITY_RANGE](#)
- [velocity_steps](#) = [DEFAULT_VELOCITY_STEPS](#)

6.11.1 Constructor & Destructor Documentation

6.11.1.1 `__init__()`

```
def __init__ (
    self,
    events = [] )
```

6.11.2 Member Function Documentation

6.11.2.1 `dim()`

```
def dim ( ) [static]
```

6.11.2.2 `feat_dims()`

```
def feat_dims ( ) [static]
```

6.11.2.3 `feat_ranges()`

```
def feat_ranges ( ) [static]
```

6.11.2.4 `from_array()`

```
def from_array (
    event_indeces ) [static]
```

6.11.2.5 `from_note_seq()`

```
def from_note_seq (
    note_seq ) [static]
```

6.11.2.6 `get_velocity_bins()`

```
def get_velocity_bins ( ) [static]
```

6.11.2.7 to_array()

```
def to_array (
    self )
```

6.11.2.8 to_note_seq()

```
def to_note_seq (
    self )
```

6.11.3 Member Data Documentation

6.11.3.1 events

```
events
```

6.11.3.2 pitch_range

```
pitch_range = DEFAULT_PITCH_RANGE [static]
```

6.11.3.3 time_shift_bins

```
time_shift_bins = DEFAULT_TIME_SHIFT_BINS [static]
```

6.11.3.4 velocity_range

```
velocity_range = DEFAULT_VELOCITY_RANGE [static]
```

6.11.3.5 velocity_steps

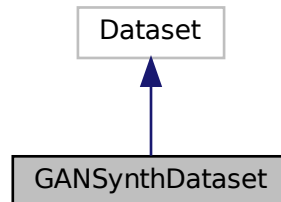
```
velocity_steps = DEFAULT_VELOCITY_STEPS [static]
```

The documentation for this class was generated from the following file:

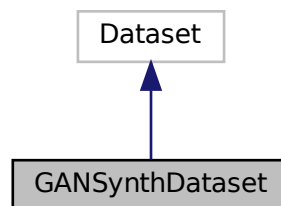
- </home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/miditools.py>

6.12 GANSynthDataset Class Reference

Inheritance diagram for GANSynthDataset:



Collaboration diagram for GANSynthDataset:



Public Member Functions

- `def __getitem__ (self, idx)`
- `def __init__ (self, Path train_data_dir)`
- `def __len__ (self)`

Public Attributes

- `filepaths`
- `metadata`

6.12.1 Detailed Description

Dataset class for NSynth [json/wav] - download from <https://magenta.tensorflow.org/datasets/nsynth>
Dataset used for GANSynth model training
dataset folder should have structure "example.json" with metadata about audio files and directory audio containing audio files with .wav file extension

6.12.2 Constructor & Destructor Documentation

6.12.2.1 `__init__()`

```
def __init__ (
    self,
    Path train_data_dir )
```

6.12.3 Member Function Documentation

6.12.3.1 `__getitem__()`

```
def __getitem__ (
    self,
    idx )
```

6.12.3.2 `__len__()`

```
def __len__ (
    self )
```

6.12.4 Member Data Documentation

6.12.4.1 `filepaths`

`filepaths`

6.12.4.2 `metadata`

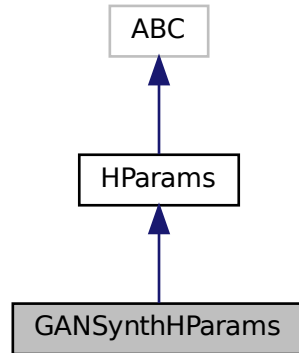
`metadata`

The documentation for this class was generated from the following file:

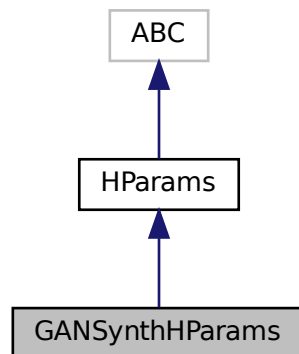
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/GANSynthDataset.py`

6.13 GANSynthHParams Class Reference

Inheritance diagram for GANSynthHParams:



Collaboration diagram for GANSynthHParams:



Public Member Functions

- `def __init__(self)`

Public Attributes

- `discriminator`
- `epochs`
- `generator`
- `train_data_dir`

6.13.1 Constructor & Destructor Documentation

6.13.1.1 `__init__()`

```
def __init__ (
    self )
```

Reimplemented from [HParams](#).

6.13.2 Member Data Documentation

6.13.2.1 `discriminator`

`discriminator`

6.13.2.2 `epochs`

`epochs`

6.13.2.3 `generator`

`generator`

6.13.2.4 `train_data_dir`

`train_data_dir`

The documentation for this class was generated from the following file:

- [/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/GANSynth.py](#)

6.14 GANSynthSupervisor Class Reference

Public Member Functions

- def `__init__` (self, Tuple models, `device`, `GANSynthHParams` hparams)
- def `train` (self)

Public Attributes

- `device`
- `discriminator`
- `discriminator_optimizer`
- `epoch`
- `generator`
- `generator_optimizer`
- `hparams`
- `step`
- `train_loader`

6.14.1 Detailed Description

Supervisor for GANSynth training
After init you can launch training with `'train'` method

6.14.2 Constructor & Destructor Documentation

6.14.2.1 `__init__()`

```
def __init__ (
    self,
    Tuple models,
    device,
    GANSynthHParams hparams )
```

6.14.3 Member Function Documentation

6.14.3.1 `train()`

```
def train (
    self )
```

6.14.4 Member Data Documentation

6.14.4.1 device

device

6.14.4.2 discriminator

discriminator

6.14.4.3 discriminator_optimizer

discriminator_optimizer

6.14.4.4 epoch

epoch

6.14.4.5 generator

generator

6.14.4.6 generator_optimizer

generator_optimizer

6.14.4.7 hparams

hparams

6.14.4.8 step

`step`

6.14.4.9 train_loader

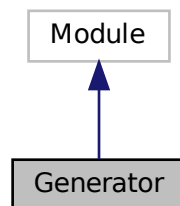
`train_loader`

The documentation for this class was generated from the following file:

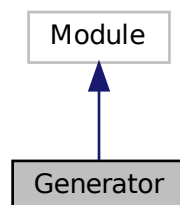
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/GANSynth.py`

6.15 Generator Class Reference

Inheritance diagram for Generator:



Collaboration diagram for Generator:



Public Member Functions

- def `__init__` (self, [GeneratorHParams](#) hparams)
- def `forward` (self, z, pitch)

Public Attributes

- [activation_function](#)
- [block0](#)
- [block1](#)
- [block2](#)
- [block3](#)
- [block4](#)
- [block5](#)
- [block6](#)

6.15.1 Constructor & Destructor Documentation

6.15.1.1 `__init__()`

```
def __init__ (
    self,
    GeneratorHParams hparams )
```

6.15.2 Member Function Documentation

6.15.2.1 `forward()`

```
def forward (
    self,
    z,
    pitch )
```

6.15.3 Member Data Documentation

6.15.3.1 `activation_function`

```
activation_function
```

6.15.3.2 block0

block0

6.15.3.3 block1

block1

6.15.3.4 block2

block2

6.15.3.5 block3

block3

6.15.3.6 block4

block4

6.15.3.7 block5

block5

6.15.3.8 block6

block6

The documentation for this class was generated from the following file:

- </home/oskar/Studia/wimu/coopertunes/coopertunes/models/GANSynth.py>

6.16 GeneratorHParams Class Reference

Public Member Functions

- `def __init__(self)`

Public Attributes

- [betas](#)
- [block_dconv_filters](#)
- [block_dconv_kernel](#)
- [block_upsample_factor](#)
- [eps](#)
- [first_dconv_kernel](#)
- [latent_dim](#)
- [leaky_relu_slope](#)
- [lr](#)
- [pitch_dim](#)

6.16.1 Constructor & Destructor Documentation

6.16.1.1 `__init__()`

```
def __init__ (  
    self )
```

6.16.2 Member Data Documentation

6.16.2.1 `betas`

`betas`

6.16.2.2 `block_dconv_filters`

`block_dconv_filters`

6.16.2.3 block_dconv_kernel

block_dconv_kernel

6.16.2.4 block_upsample_factor

block_upsample_factor

6.16.2.5 eps

eps

6.16.2.6 first_dconv_kernel

first_dconv_kernel

6.16.2.7 latent_dim

latent_dim

6.16.2.8 leaky_relu_slope

leaky_relu_slope

6.16.2.9 lr

lr

6.16.2.10 pitch_dim

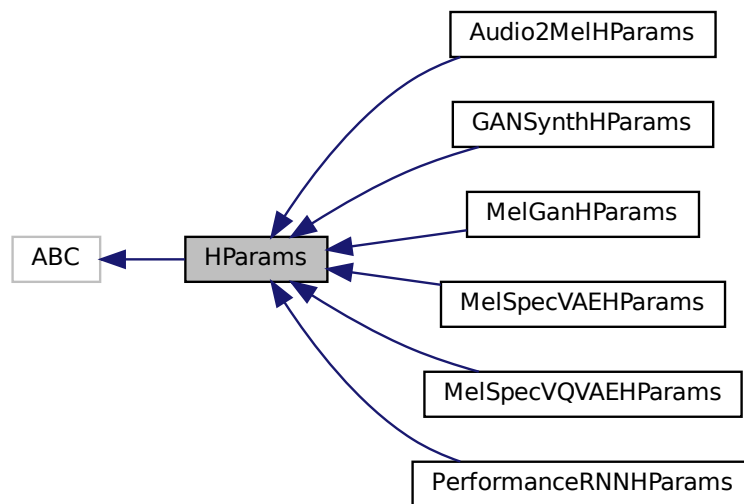
pitch_dim

The documentation for this class was generated from the following file:

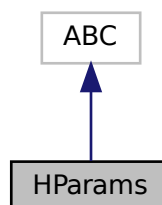
- /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/[GANSynth.py](#)

6.17 HParams Class Reference

Inheritance diagram for HParams:



Collaboration diagram for HParams:



Public Member Functions

- None `__init__` (self)
- str `__repr__` (self)
- def `dumps_to_file` (self, Optional[Path] output_dir=None)
- def `update` (self, Optional[Union[Path, dict[str, Any]]] hparams=None)

Public Attributes

- `checkpoints_dir`
- `logs_dir`
- `train_data_dirs`
- `valid_data_dirs`

6.17.1 Detailed Description

Base class with hyperparameters

6.17.2 Constructor & Destructor Documentation

6.17.2.1 `__init__()`

```
None __init__ (  
    self )
```

Reimplemented in [GANSynthHParams](#).

6.17.3 Member Function Documentation

6.17.3.1 `__repr__()`

```
str __repr__ (  
    self )
```

6.17.3.2 `dumps_to_file()`

```
def dumps_to_file (  
    self,  
    Optional[Path] output_dir = None )
```

6.17.3.3 update()

```
def update (
    self,
    Optional[Union[Path, dict[str, Any]]] hparams = None )
```

6.17.4 Member Data Documentation

6.17.4.1 checkpoints_dir

```
checkpoints_dir
```

6.17.4.2 logs_dir

```
logs_dir
```

6.17.4.3 train_data_dirs

```
train_data_dirs
```

6.17.4.4 valid_data_dirs

```
valid_data_dirs
```

The documentation for this class was generated from the following file:

- [/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/hparams.py](#)

6.18 Logger Class Reference

Public Member Functions

- def `__init__` (self, str `model_name`, `HParams` `hparams`, torch.device `device`)
- def `get_summary_writer` (self)
- def `log_running_vals_to_tb` (self, step)
- def `update_running_vals` (self, dict[str, Any] `vals`, str|None `prefix=None`)

Public Attributes

- [device](#)
- [hparams](#)
- [log_audio](#)
- [model_name](#)

6.18.1 Detailed Description

Class for logging training information.
The logger takes care of providing feedback to 'stdout' and to the 'tensorboard'
To add a logger for a model create two functions \
 to log the step and model and to log items to the tensorbord.
Then register the above functions in '_init_utils_fn'

6.18.2 Constructor & Destructor Documentation

6.18.2.1 __init__()

```
def __init__ (
    self,
    str model_name,
    HParams hparams,
    torch.device device )
```

6.18.3 Member Function Documentation

6.18.3.1 get_summary_writer()

```
def get_summary_writer (
    self )
```

6.18.3.2 log_running_vals_to_tb()

```
def log_running_vals_to_tb (
    self,
    step )
```

6.18.3.3 update_running_vals()

```
def update_running_vals (
    self,
    dict[str, Any] vals,
    str | None prefix = None )
```

6.18.4 Member Data Documentation

6.18.4.1 device

device

6.18.4.2 hparams

hparams

6.18.4.3 log_audio

log_audio

6.18.4.4 model_name

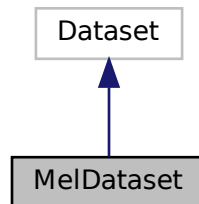
model_name

The documentation for this class was generated from the following file:

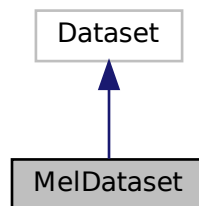
- </home/oskar/Studia/wimu/coopertunes/coopertunes/logger.py>

6.19 MelDataset Class Reference

Inheritance diagram for MelDataset:



Collaboration diagram for MelDataset:



Public Member Functions

- `def __getitem__(self, idx)`
- `def __init__(self, HParams hparams, list[Path]|Path data_dirs)`
- `def __len__(self)`

Public Attributes

- [data_dirs](#)
- [filepaths](#)
- [hparams](#)

6.19.1 Constructor & Destructor Documentation

6.19.1.1 `__init__()`

```
def __init__ (
    self,
    HParams hparams,
    list[Path] | Path data_dirs )
```

6.19.2 Member Function Documentation

6.19.2.1 `__getitem__()`

```
def __getitem__ (
    self,
    idx )
```

6.19.2.2 `__len__()`

```
def __len__ (
    self )
```

6.19.3 Member Data Documentation

6.19.3.1 `data_dirs`

`data_dirs`

6.19.3.2 `filepaths`

`filepaths`

6.19.3.3 `hparams`

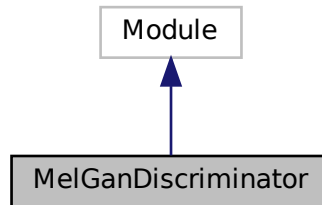
`hparams`

The documentation for this class was generated from the following file:

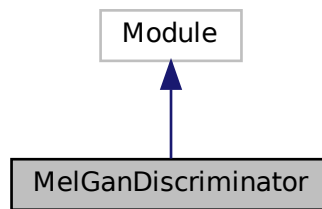
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MelDataset.py`

6.20 MelGanDiscriminator Class Reference

Inheritance diagram for MelGanDiscriminator:



Collaboration diagram for MelGanDiscriminator:



Public Member Functions

- `def __init__` (self, [MelGanHParams](#) hparams)
- `def forward` (self, x)

Public Attributes

- [downsample](#)
- [model](#)

6.20.1 Constructor & Destructor Documentation

6.20.1.1 `__init__()`

```
def __init__ (
    self,
    MelGanHParams hparams )
```

6.20.2 Member Function Documentation

6.20.2.1 `forward()`

```
def forward (
    self,
    x )
```

6.20.3 Member Data Documentation

6.20.3.1 `downsample`

`downsample`

6.20.3.2 `model`

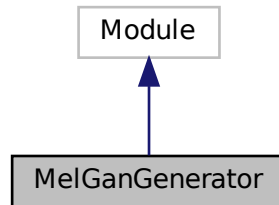
`model`

The documentation for this class was generated from the following file:

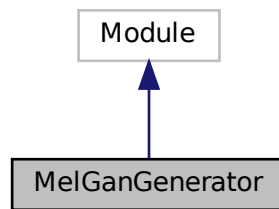
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelGan.py`

6.21 MelGanGenerator Class Reference

Inheritance diagram for MelGanGenerator:



Collaboration diagram for MelGanGenerator:



Public Member Functions

- `def __init__` (self, [MelGanHParams](#) hparams)
- `def forward` (self, x)
- `def inference` (self, x)

Public Attributes

- [hop_length](#)
- [model](#)

6.21.1 Detailed Description

Generating raw audio from mel spectrogram with GAN generator.

6.21.2 Constructor & Destructor Documentation

6.21.2.1 `__init__()`

```
def __init__ (
    self,
    MelGanHParams hparams )
```

6.21.3 Member Function Documentation

6.21.3.1 `forward()`

```
def forward (
    self,
    x )
```

6.21.3.2 `inference()`

```
def inference (
    self,
    x )
```

6.21.4 Member Data Documentation

6.21.4.1 `hop_length`

`hop_length`

6.21.4.2 `model`

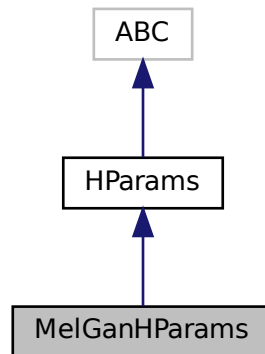
`model`

The documentation for this class was generated from the following file:

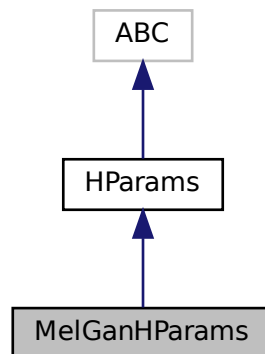
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelGan.py`

6.22 MelGanHParams Class Reference

Inheritance diagram for MelGanHParams:



Collaboration diagram for MelGanHParams:



Public Member Functions

- `def __init__(self, Optional[Union[Path, dict[str, Any]]] hparams=None)`

Public Attributes

- `adam_betas`
- `default_checkpoint`
- `learning_rate`
- `summary_path`

6.22.1 Detailed Description

Parameters for MelGan and MelGanSupervisor.

6.22.2 Constructor & Destructor Documentation

6.22.2.1 `__init__()`

```
def __init__ (
    self,
    Optional[Union[Path, dict[str, Any]]] hparams = None )
```

6.22.3 Member Data Documentation

6.22.3.1 `adam_betas`

`adam_betas`

6.22.3.2 `default_checkpoint`

`default_checkpoint`

6.22.3.3 `learning_rate`

`learning_rate`

6.22.3.4 `summary_path`

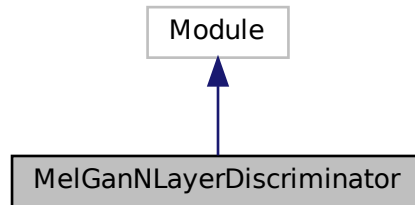
`summary_path`

The documentation for this class was generated from the following file:

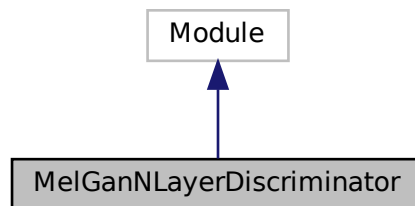
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelGan.py`

6.23 MelGanNLayerDiscriminator Class Reference

Inheritance diagram for MelGanNLayerDiscriminator:



Collaboration diagram for MelGanNLayerDiscriminator:



Public Member Functions

- `def __init__` (self, [MelGanHParams](#) hparams)
- `def forward` (self, x)

Public Attributes

- [model](#)

6.23.1 Constructor & Destructor Documentation

6.23.1.1 `__init__()`

```
def __init__ (
    self,
    MelGanHParams hparams )
```

6.23.2 Member Function Documentation

6.23.2.1 `forward()`

```
def forward (
    self,
    x )
```

6.23.3 Member Data Documentation

6.23.3.1 `model`

`model`

The documentation for this class was generated from the following file:

- `/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelGan.py`

6.24 MelGanSupervisor Class Reference

Public Member Functions

- `def __call__` (self, np.ndarray spectrogram)
- `def __init__` (self, [MelGanGenerator](#) generator, [MelGanDiscriminator](#) discriminator, [Audio2Mel](#) audio2mel, torch.device [device](#), [MelGanHParams](#) hparams)
- `def eval` (self, mel_recon)
- `def load_pretrained` (self)
- `def test` (self, str audio_path, str output_path="melgan_result.wav")
- `def train` (self)

Public Attributes

- [audio2mel](#)
- [device](#)
- [epoch](#)
- [hparams](#)
- [netD](#)
- [netG](#)
- [optD](#)
- [optG](#)
- [step](#)
- [val_dl](#)

6.24.1 Detailed Description

Supervisor for MelGAN

After init you can launch training with 'train' method

You can test trained checkpoints with 'test' method on given raw audio

6.24.2 Constructor & Destructor Documentation

6.24.2.1 `__init__()`

```
def __init__ (
    self,
    MelGanGenerator generator,
    MelGanDiscriminator discriminator,
    Audio2Mel audio2mel,
    torch.device device,
    MelGanHParams hparams )
```

6.24.3 Member Function Documentation

6.24.3.1 `__call__()`

```
def __call__ (
    self,
    np.ndarray spectrogram )
```

Converts spectrogram to raw audio.

spectrogram's shape is [1, bins, len]

6.24.3.2 eval()

```
def eval (
    self,
    mel_recon )
```

6.24.3.3 load_pretrained()

```
def load_pretrained (
    self )
```

6.24.3.4 test()

```
def test (
    self,
    str audio_path,
    str output_path = "melgan_result.wav" )
```

It allows to reconstruct given raw audio using currently loaded generator.
Audio will be converted to Mel Spectrogram, then back to raw audio, and saved.

6.24.3.5 train()

```
def train (
    self )
```

6.24.4 Member Data Documentation

6.24.4.1 audio2mel

```
audio2mel
```

6.24.4.2 device

```
device
```

6.24.4.3 epoch

epoch

6.24.4.4 hparams

hparams

6.24.4.5 netD

netD

6.24.4.6 netG

netG

6.24.4.7 optD

optD

6.24.4.8 optG

optG

6.24.4.9 step

step

6.24.4.10 val_dl

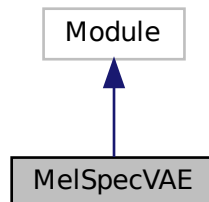
val_dl

The documentation for this class was generated from the following file:

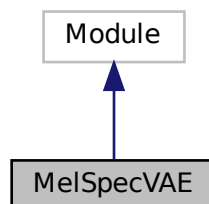
- /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/[MelGan.py](#)

6.25 MelSpecVAE Class Reference

Inheritance diagram for MelSpecVAE:



Collaboration diagram for MelSpecVAE:



Public Member Functions

- def `__init__` (self, [MelSpecVAEHPParams](#) hparams)
- torch.Tensor `decode` (self, torch.Tensor z)
- list[torch.Tensor] `encode` (self, torch.Tensor x)
- def `forward` (self, torch.Tensor x)
- def `inference` (self, torch.Tensor z)
- dict `loss_function` (self, torch.Tensor y_recon, torch.Tensor y_target, torch.Tensor mu, torch.Tensor log_var)
- torch.Tensor `reparameterize` (self, torch.Tensor mu, torch.Tensor logvar)

Public Attributes

- [before_latent](#)
- [decoder](#)
- [decoder_input](#)
- [encoder](#)
- [fc_mu](#)
- [fc_var](#)
- [final_layer](#)
- [kld_weight](#)
- [last_filter](#)
- [latent_dim](#)
- [pool_factor](#)

6.25.1 Detailed Description

Generating mels from noise with vanilla VAE

6.25.2 Constructor & Destructor Documentation

6.25.2.1 `__init__()`

```
def __init__ (
    self,
    MelSpecVAEHPParams hparams )
```

6.25.3 Member Function Documentation

6.25.3.1 `decode()`

```
torch.Tensor decode (
    self,
    torch.Tensor z )
```

Maps the given latent codes
onto the image space.

6.25.3.2 encode()

```
list[torch.Tensor] encode (
    self,
    torch.Tensor x )
```

Encodes the input by passing through the encoder network and returns the latent codes

6.25.3.3 forward()

```
def forward (
    self,
    torch.Tensor x )
```

6.25.3.4 inference()

```
def inference (
    self,
    torch.Tensor z )
```

6.25.3.5 loss_function()

```
dict loss_function (
    self,
    torch.Tensor y_recon,
    torch.Tensor y_target,
    torch.Tensor mu,
    torch.Tensor log_var )
```

6.25.3.6 reparameterize()

```
torch.Tensor reparameterize (
    self,
    torch.Tensor mu,
    torch.Tensor logvar )
```

Reparameterization trick to sample from $N(\mu, \text{var})$ from $N(0, 1)$.

6.25.4 Member Data Documentation

6.25.4.1 before_latent

`before_latent`

6.25.4.2 decoder

`decoder`

6.25.4.3 decoder_input

`decoder_input`

6.25.4.4 encoder

`encoder`

6.25.4.5 fc_mu

`fc_mu`

6.25.4.6 fc_var

`fc_var`

6.25.4.7 final_layer

`final_layer`

6.25.4.8 kld_weight

kld_weight

6.25.4.9 last_filter

last_filter

6.25.4.10 latent_dim

latent_dim

6.25.4.11 pool_factor

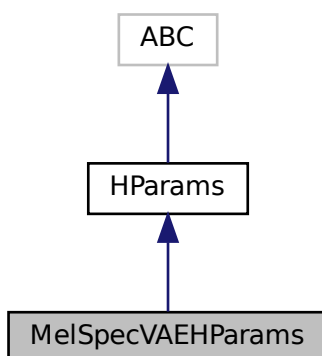
pool_factor

The documentation for this class was generated from the following file:

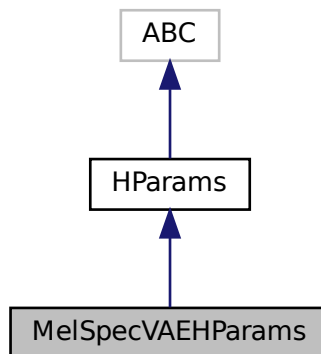
- [/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVAE.py](#)

6.26 MelSpecVAEHParams Class Reference

Inheritance diagram for MelSpecVAEHParams:



Collaboration diagram for MelSpecVAEHParams:



Public Member Functions

- def `__init__` (self, Optional[Union[Path, dict[str, Any]]] hparams=None)
- def `ds_cfg` (self)

Additional Inherited Members

6.26.1 Constructor & Destructor Documentation

6.26.1.1 `__init__()`

```
def __init__ (
    self,
    Optional[Union[Path, dict[str, Any]]] hparams = None )
```

6.26.2 Member Function Documentation

6.26.2.1 `ds_cfg()`

```
def ds_cfg (
    self )
```

The documentation for this class was generated from the following file:

- `/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVAE.py`

6.27 MelSpecVAESupervisor Class Reference

Public Member Functions

- def `__init__` (self, [MelSpecVAE model](#), torch.device [device](#), [MelSpecVAEHParams hparams](#))
- def `eval` (self)
- def `train` (self)

Public Attributes

- [device](#)
- [engines](#)
- [epoch](#)
- [hparams](#)
- [model](#)
- [step](#)
- [val_dl](#)

6.27.1 Detailed Description

Supervisor for MelSpecVAESupervisor
After init you can launch training with `'train'` method

6.27.2 Constructor & Destructor Documentation

6.27.2.1 `__init__()`

```
def __init__ (
    self,
    MelSpecVAE model,
    torch.device device,
    MelSpecVAEHParams hparams )
```

6.27.3 Member Function Documentation

6.27.3.1 `eval()`

```
def eval (
    self )
```

6.27.3.2 train()

```
def train (
    self )
```

6.27.4 Member Data Documentation

6.27.4.1 device

```
device
```

6.27.4.2 engines

```
engines
```

6.27.4.3 epoch

```
epoch
```

6.27.4.4 hparams

```
hparams
```

6.27.4.5 model

```
model
```

6.27.4.6 step

```
step
```

6.27.4.7 val_dl

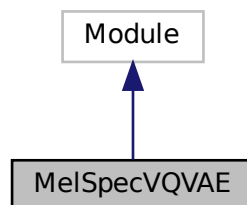
val_dl

The documentation for this class was generated from the following file:

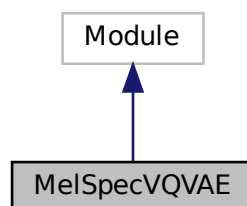
- [/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVAE.py](#)

6.28 MelSpecVQVAE Class Reference

Inheritance diagram for MelSpecVQVAE:



Collaboration diagram for MelSpecVQVAE:



Public Member Functions

- None `__init__` (self, [MelSpecVQVAEHParams](#) hparams)
- torch.Tensor `decode` (self, torch.Tensor z)
- list[torch.Tensor] `encode` (self, torch.Tensor x)
- def `forward` (self, torch.Tensor x)
- def `inference` (self, torch.Tensor x)
- dict[str, Any] `loss_function` (self, torch.Tensor y_recon, torch.Tensor y_target, vq_loss)

Public Attributes

- [decoder](#)
- [embedding_dim](#)
- [encoder](#)
- [num_embeddings](#)
- [vq_layer](#)
- [vq_weight](#)

6.28.1 Detailed Description

Generating mels from noise with VQVAE

6.28.2 Constructor & Destructor Documentation

6.28.2.1 `__init__()`

```
None __init__ (
    self,
    MelSpecVQVAEHParams hparams )
```

6.28.3 Member Function Documentation

6.28.3.1 `decode()`

```
torch.Tensor decode (
    self,
    torch.Tensor z )
```

Maps the given latent codes
onto the image space.

6.28.3.2 `encode()`

```
list[torch.Tensor] encode (
    self,
    torch.Tensor x )
```

Encodes the input by passing through the encoder network
and returns the latent codes.

6.28.3.3 forward()

```
def forward (
    self,
    torch.Tensor x )
```

6.28.3.4 inference()

```
def inference (
    self,
    torch.Tensor x )
```

Given an input image `x`, returns the reconstructed image

6.28.3.5 loss_function()

```
dict[str, Any] loss_function (
    self,
    torch.Tensor y_recon,
    torch.Tensor y_target,
    vq_loss )
```

6.28.4 Member Data Documentation

6.28.4.1 decoder

decoder

6.28.4.2 embedding_dim

embedding_dim

6.28.4.3 encoder

encoder

6.28.4.4 num_embeddings

num_embeddings

6.28.4.5 vq_layer

vq_layer

6.28.4.6 vq_weight

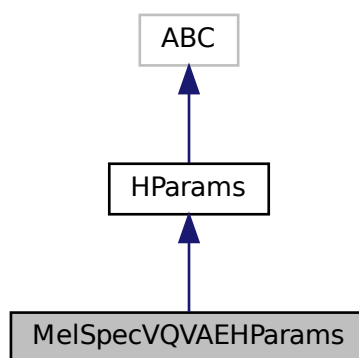
vq_weight

The documentation for this class was generated from the following file:

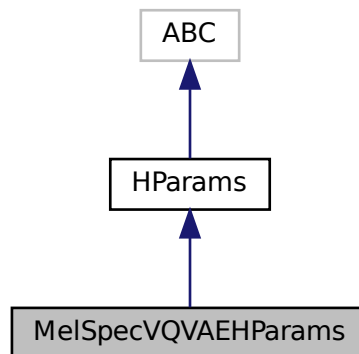
- [/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVQVAE.py](#)

6.29 MelSpecVQVAEHParams Class Reference

Inheritance diagram for MelSpecVQVAEHParams:



Collaboration diagram for MeISpecVQVAEHParams:



Public Member Functions

- def `__init__` (self, Optional[Union[Path, dict[str, Any]]] hparams=None)
- def `ds_cfg` (self)

Additional Inherited Members

6.29.1 Constructor & Destructor Documentation

6.29.1.1 `__init__()`

```
def __init__ (
    self,
    Optional[Union[Path, dict[str, Any]]] hparams = None )
```

6.29.2 Member Function Documentation

6.29.2.1 `ds_cfg()`

```
def ds_cfg (
    self )
```

The documentation for this class was generated from the following file:

- `/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MeISpecVQVAE.py`

6.30 MelSpecVQVAESupervisor Class Reference

Public Member Functions

- def `__init__` (self, [MelSpecVQVAE model](#), torch.device [device](#), [MelSpecVQVAEHPParams hparams](#))
- def `eval` (self)
- def `train` (self)

Public Attributes

- [device](#)
- [engines](#)
- [epoch](#)
- [hparams](#)
- [model](#)
- [step](#)
- [val_dl](#)

6.30.1 Detailed Description

Supervisor for MelSpecVQVAESupervisor
After init you can launch training with `'train'` method

6.30.2 Constructor & Destructor Documentation

6.30.2.1 `__init__()`

```
def __init__ (
    self,
    MelSpecVQVAE model,
    torch.device device,
    MelSpecVQVAEHPParams hparams )
```

6.30.3 Member Function Documentation

6.30.3.1 `eval()`

```
def eval (
    self )
```


6.30.3.2 train()

```
def train (
    self )
```

6.30.4 Member Data Documentation

6.30.4.1 device

```
device
```

6.30.4.2 engines

```
engines
```

6.30.4.3 epoch

```
epoch
```

6.30.4.4 hparams

```
hparams
```

6.30.4.5 model

```
model
```

6.30.4.6 step

```
step
```

6.30.4.7 val_dl

val_dl

The documentation for this class was generated from the following file:

- /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/[MelSpecVQVAE.py](#)

6.31 MidiDataset Class Reference

Public Member Functions

- def `__init__` (self, [root](#), verbose=False)
- def `__repr__` (self)
- def `batches` (self, batch_size, window_size, stride_size)

Public Attributes

- [avglens](#)
- [root](#)
- [samples](#)
- [seqlens](#)

6.31.1 Constructor & Destructor Documentation

6.31.1.1 `__init__()`

```
def __init__ (
    self,
    root,
    verbose = False )
```

6.31.2 Member Function Documentation

6.31.2.1 `__repr__()`

```
def __repr__ (
    self )
```

6.31.2.2 batches()

```
def batches (
    self,
    batch_size,
    window_size,
    stride_size )
```

6.31.3 Member Data Documentation

6.31.3.1 avglen

avglen

6.31.3.2 root

root

6.31.3.3 samples

samples

6.31.3.4 seqLens

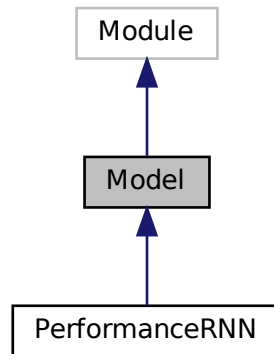
seqLens

The documentation for this class was generated from the following file:

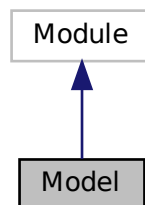
- </home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MidiDataset.py>

6.32 Model Class Reference

Inheritance diagram for Model:



Collaboration diagram for Model:



Public Member Functions

- def `__init__` (self, [HParams](#) hparams)
- def `forward` (self, **kwargs)
- def `inference` (self, **kwargs)

6.32.1 Detailed Description

Abstract class for all coopertunes models

6.32.2 Constructor & Destructor Documentation

6.32.2.1 `__init__()`

```
def __init__ (
    self,
    HParams hparams )
```

6.32.3 Member Function Documentation

6.32.3.1 `forward()`

```
def forward (
    self,
    ** kwargs )
```

Returns data after forward.
Calculate gradients.

6.32.3.2 `inference()`

```
def inference (
    self,
    ** kwargs )
```

Returns data after forward.
Does not calculate gradients.

The documentation for this class was generated from the following file:

- `/home/oskar/Studia/wimu/coopertunes/coopertunes/models/model.py`

6.33 NoteSeq Class Reference

Public Member Functions

- `def __init__ (self, notes=[])`
- `def add_notes (self, notes)`
- `def adjust_pitches (self, offset)`
- `def adjust_time (self, offset)`
- `def adjust_velocities (self, offset)`
- `def copy (self)`
- `def to_midi (self, program=DEFAULT_SAVING_PROGRAM, resolution=DEFAULT_RESOLUTION, tempo=DEFAULT_TEMPO)`
- `def to_midi_file (self, path, *args, **kwargs)`
- `def trim_overlapped_notes (self, min_interval=0)`

Static Public Member Functions

- def [from_midi](#) (midi, programs=[DEFAULT_LOADING_PROGRAMS](#))
- def [from_midi_file](#) (path, *args, **kwargs)
- def [merge](#) (*note_seqs)

Public Attributes

- [notes](#)

6.33.1 Constructor & Destructor Documentation

6.33.1.1 `__init__()`

```
def __init__ (
    self,
    notes = [] )
```

6.33.2 Member Function Documentation

6.33.2.1 `add_notes()`

```
def add_notes (
    self,
    notes )
```

6.33.2.2 `adjust_pitches()`

```
def adjust_pitches (
    self,
    offset )
```

6.33.2.3 `adjust_time()`

```
def adjust_time (
    self,
    offset )
```

6.33.2.4 `adjust_velocities()`

```
def adjust_velocities (
    self,
    offset )
```

6.33.2.5 `copy()`

```
def copy (
    self )
```

6.33.2.6 `from_midi()`

```
def from_midi (
    midi,
    programs = DEFAULT\_LOADING\_PROGRAMS ) [static]
```

6.33.2.7 `from_midi_file()`

```
def from_midi_file (
    path,
    * args,
    ** kwargs ) [static]
```

6.33.2.8 `merge()`

```
def merge (
    * note_seqs ) [static]
```

6.33.2.9 `to_midi()`

```
def to_midi (
    self,
    program = DEFAULT\_SAVING\_PROGRAM,
    resolution = DEFAULT\_RESOLUTION,
    tempo = DEFAULT\_TEMPO )
```

6.33.2.10 to_midi_file()

```
def to_midi_file (
    self,
    path,
    * args,
    ** kwargs )
```

6.33.2.11 trim_overlapped_notes()

```
def trim_overlapped_notes (
    self,
    min_interval = 0 )
```

6.33.3 Member Data Documentation

6.33.3.1 notes

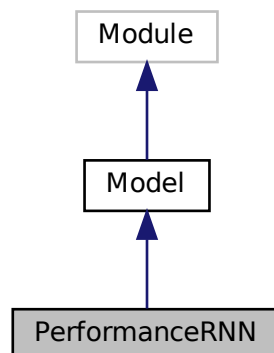
notes

The documentation for this class was generated from the following file:

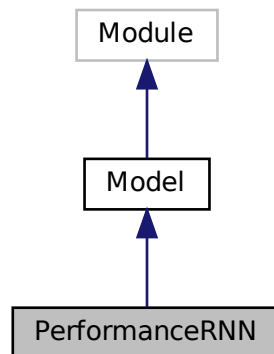
- </home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/miditools.py>

6.34 PerformanceRNN Class Reference

Inheritance diagram for PerformanceRNN:



Collaboration diagram for PerformanceRNN:



Public Member Functions

- def `__init__` (self, [PerformanceRNNHParams](#) hparams, str `device`="cuda:0")
- def `beam_search` (self, init, steps, beam_size, controls=None, temperature=1.0, stochastic=False, verbose=False)
- def `expand_controls` (self, controls, steps)
- def `forward` (self, event, control=None, hidden=None)
- def `generate` (self, init, steps, events=None, controls=None, greedy=1.0, temperature=1.0, teacher_forcing↔_ratio=1.0, output_type='index', verbose=False)
- def `get_primary_event` (self, batch_size)
- def `init_to_hidden` (self, init)

Public Attributes

- `concat_dim`
- `concat_input_fc`
- `concat_input_fc_activation`
- `control_dim`
- `device`
- `event_dim`
- `event_embedding`
- `gru`
- `gru_layers`
- `hidden_dim`
- `init_dim`
- `inithid_fc`
- `inithid_fc_activation`
- `input_dim`
- `output_dim`
- `output_fc`
- `output_fc_activation`
- `primary_event`

6.34.1 Constructor & Destructor Documentation

6.34.1.1 `__init__()`

```
def __init__ (
    self,
    PerformanceRNNHParams hparams,
    str device = "cuda:0" )
```

6.34.2 Member Function Documentation

6.34.2.1 `beam_search()`

```
def beam_search (
    self,
    init,
    steps,
    beam_size,
    controls = None,
    temperature = 1.0,
    stochastic = False,
    verbose = False )
```

6.34.2.2 `expand_controls()`

```
def expand_controls (
    self,
    controls,
    steps )
```

6.34.2.3 `forward()`

```
def forward (
    self,
    event,
    control = None,
    hidden = None )
```

6.34.2.4 generate()

```
def generate (
    self,
    init,
    steps,
    events = None,
    controls = None,
    greedy = 1.0,
    temperature = 1.0,
    teacher_forcing_ratio = 1.0,
    output_type = 'index',
    verbose = False )
```

6.34.2.5 get_primary_event()

```
def get_primary_event (
    self,
    batch_size )
```

6.34.2.6 init_to_hidden()

```
def init_to_hidden (
    self,
    init )
```

6.34.3 Member Data Documentation

6.34.3.1 concat_dim

concat_dim

6.34.3.2 concat_input_fc

concat_input_fc

6.34.3.3 concat_input_fc_activation

concat_input_fc_activation

6.34.3.4 control_dim

control_dim

6.34.3.5 device

device

6.34.3.6 event_dim

event_dim

6.34.3.7 event_embedding

event_embedding

6.34.3.8 gru

gru

6.34.3.9 gru_layers

gru_layers

6.34.3.10 hidden_dim

hidden_dim

6.34.3.11 init_dim

init_dim

6.34.3.12 inithid_fc

inithid_fc

6.34.3.13 inithid_fc_activation

inithid_fc_activation

6.34.3.14 input_dim

input_dim

6.34.3.15 output_dim

output_dim

6.34.3.16 output_fc

output_fc

6.34.3.17 output_fc_activation

output_fc_activation

6.34.3.18 primary_event

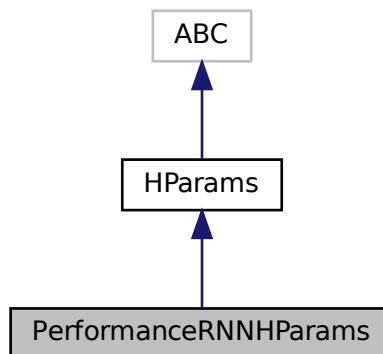
`primary_event`

The documentation for this class was generated from the following file:

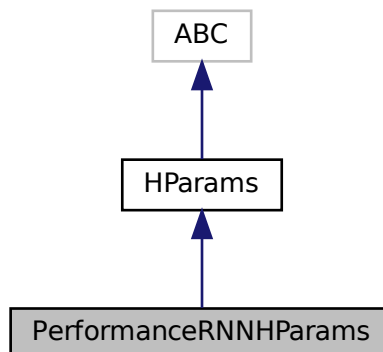
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/models/PerformanceRNN.py`

6.35 PerformanceRNNHParams Class Reference

Inheritance diagram for PerformanceRNNHParams:



Collaboration diagram for PerformanceRNNHParams:



Public Member Functions

- def `__init__` (self, Optional[Union[Path, dict[str, Any]]] hparams=None)

Additional Inherited Members

6.35.1 Constructor & Destructor Documentation

6.35.1.1 `__init__()`

```
def __init__ (
    self,
    Optional[Union[Path, dict[str, Any]]] hparams = None )
```

The documentation for this class was generated from the following file:

- /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/[PerformanceRNN.py](#)

6.36 PerformanceRNNSupervisor Class Reference

Public Member Functions

- def `__init__` (self, [PerformanceRNN model](#), torch.device [device](#), [PerformanceRNNHParams](#) hparams)
- def `generate` (self, output_dir, control=None, init_zero=False, use_beam_search=False)
- def `load_pretrained` (self)
- def `train` (self)

Public Attributes

- [batch_size](#)
- [control_dim](#)
- [control_ratio](#)
- [data_path](#)
- [device](#)
- [enable_logging](#)
- [event_dim](#)
- [hparams](#)
- [learning_rate](#)
- [model](#)
- [optimizer](#)
- [reset_optimizer](#)
- [saving_interval](#)
- [sess_path](#)
- [step](#)
- [stride_size](#)
- [teacher_forcing_ratio](#)
- [use_transposition](#)
- [val_dl](#)
- [window_size](#)

6.36.1 Detailed Description

Supervisor for PerformanceRNNSupervisor
After init you can launch training with `train` method
You can generate sample using "generate" method.

6.36.2 Constructor & Destructor Documentation

6.36.2.1 `__init__()`

```
def __init__ (
    self,
    PerformanceRNN model,
    torch.device device,
    PerformanceRNHParams hparams )
```

6.36.3 Member Function Documentation

6.36.3.1 `generate()`

```
def generate (
    self,
    output_dir,
    control = None,
    init_zero = False,
    use_beam_search = False )
```

Generate music sample.
It uses options specified at hparams, and:
output dir: where to save generated samples.
control: key of generated audio. example C dur is '1,0,1,0,1,1,0,1,0,1,0,1;3'.
May be None, or path to Midi file for guidance.

6.36.3.2 `load_pretrained()`

```
def load_pretrained (
    self )
```


6.36.3.3 train()

```
def train (
    self )
```

6.36.4 Member Data Documentation

6.36.4.1 batch_size

```
batch_size
```

6.36.4.2 control_dim

```
control_dim
```

6.36.4.3 control_ratio

```
control_ratio
```

6.36.4.4 data_path

```
data_path
```

6.36.4.5 device

```
device
```

6.36.4.6 enable_logging

```
enable_logging
```

6.36.4.7 event_dim

event_dim

6.36.4.8 hparams

hparams

6.36.4.9 learning_rate

learning_rate

6.36.4.10 model

model

6.36.4.11 optimizer

optimizer

6.36.4.12 reset_optimizer

reset_optimizer

6.36.4.13 saving_interval

saving_interval

6.36.4.14 sess_path

sess_path

6.36.4.15 step

step

6.36.4.16 stride_size

stride_size

6.36.4.17 teacher_forcing_ratio

teacher_forcing_ratio

6.36.4.18 use_transposition

use_transposition

6.36.4.19 val_dl

val_dl

6.36.4.20 window_size

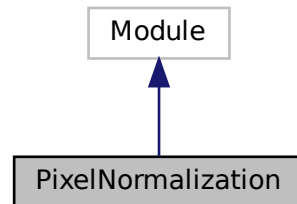
window_size

The documentation for this class was generated from the following file:

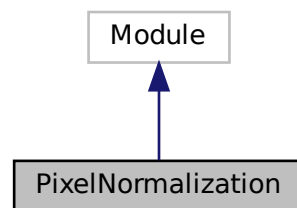
- [/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/PerformanceRNN.py](#)

6.37 PixelNormalization Class Reference

Inheritance diagram for PixelNormalization:



Collaboration diagram for PixelNormalization:



Public Member Functions

- def `__init__` (self, [eps](#))
- def `forward` (self, x)

Public Attributes

- [eps](#)

6.37.1 Detailed Description

Pixel normalization proposed in <https://arxiv.org/pdf/1902.08710.pdf>

6.37.2 Constructor & Destructor Documentation

6.37.2.1 `__init__()`

```
def __init__ (
    self,
    eps )
```

6.37.3 Member Function Documentation

6.37.3.1 `forward()`

```
def forward (
    self,
    x )
```

6.37.4 Member Data Documentation

6.37.4.1 `eps`

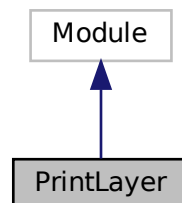
`eps`

The documentation for this class was generated from the following file:

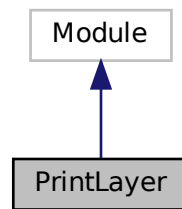
- </home/oskar/Studia/wimu/coopertunes/coopertunes/utils.py>

6.38 PrintLayer Class Reference

Inheritance diagram for PrintLayer:



Collaboration diagram for PrintLayer:



Public Member Functions

- def `__init__` (self)
- def `forward` (self, x)

6.38.1 Constructor & Destructor Documentation

6.38.1.1 `__init__()`

```
def __init__ (  
    self )
```

6.38.2 Member Function Documentation

6.38.2.1 `forward()`

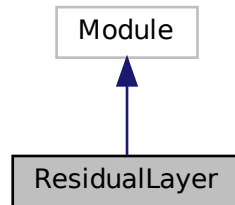
```
def forward (  
    self,  
    x )
```

The documentation for this class was generated from the following file:

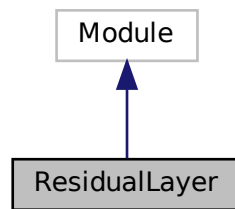
- `/home/oskar/Studia/wimu/coopertunes/coopertunes/utils.py`

6.39 ResidualLayer Class Reference

Inheritance diagram for ResidualLayer:



Collaboration diagram for ResidualLayer:



Public Member Functions

- `def __init__` (self, int in_channels, int out_channels)
- `torch.Tensor forward` (self, torch.Tensor x)

Public Attributes

- [resblock](#)

6.39.1 Constructor & Destructor Documentation

6.39.1.1 `__init__()`

```
def __init__ (
    self,
    int in_channels,
    int out_channels )
```

6.39.2 Member Function Documentation

6.39.2.1 `forward()`

```
torch.Tensor forward (
    self,
    torch.Tensor x )
```

6.39.3 Member Data Documentation

6.39.3.1 `resblock`

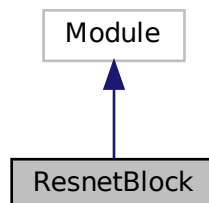
```
resblock
```

The documentation for this class was generated from the following file:

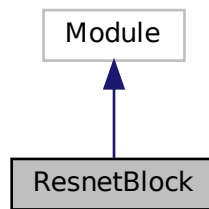
- </home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVQVAE.py>

6.40 ResnetBlock Class Reference

Inheritance diagram for ResnetBlock:



Collaboration diagram for ResnetBlock:



Public Member Functions

- `def __init__` (self, dim, dilation=1)
- `def forward` (self, x)

Public Attributes

- `block`
- `shortcut`

6.40.1 Constructor & Destructor Documentation

6.40.1.1 __init__()

```
def __init__ (  
    self,  
    dim,  
    dilation = 1 )
```

6.40.2 Member Function Documentation

6.40.2.1 forward()

```
def forward (  
    self,  
    x )
```

6.40.3 Member Data Documentation

6.40.3.1 block

block

6.40.3.2 shortcut

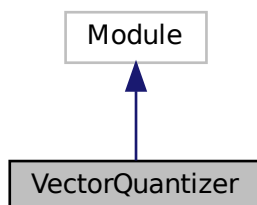
shortcut

The documentation for this class was generated from the following file:

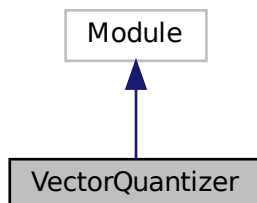
- /home/oskar/Studia/wimu/coopertunes/coopertunes/models/[MelGan.py](#)

6.41 VectorQuantizer Class Reference

Inheritance diagram for VectorQuantizer:



Collaboration diagram for VectorQuantizer:



Public Member Functions

- def `__init__` (self, int `num_embeddings`, int `embedding_dim`, float `beta`=0.25)
- tuple[torch.Tensor, torch.Tensor] `forward` (self, torch.Tensor latents)

Public Attributes

- `beta`
- `D`
- `embedding`
- `K`

6.41.1 Detailed Description

Reference:
[1] <https://github.com/deepmind/sonnet/blob/v2/sonnet/src/nets/vqvae.py>

6.41.2 Constructor & Destructor Documentation

6.41.2.1 `__init__()`

```
def __init__ (
    self,
    int num_embeddings,
    int embedding_dim,
    float beta = 0.25 )
```

6.41.3 Member Function Documentation

6.41.3.1 `forward()`

```
tuple[torch.Tensor, torch.Tensor] forward (
    self,
    torch.Tensor latents )
```

6.41.4 Member Data Documentation

6.41.4.1 beta

beta

6.41.4.2 D

D

6.41.4.3 embedding

embedding

6.41.4.4 K

K

The documentation for this class was generated from the following file:

- </home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVQVAE.py>

Chapter 7

File Documentation

7.1 /home/oskar/Studia/wimu/coopertunes/coopertunes/__init__.py File Reference

Namespaces

- [coopertunes](#)

7.2 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/__init__[↩](#).py File Reference

Namespaces

- [coopertunes.datasets](#)

7.3 /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/__[↩](#)init__.py File Reference

Namespaces

- [coopertunes.datatools](#)

7.4 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/__init__[↩](#).py File Reference

Namespaces

- [coopertunes.hparams](#)

Functions

- def [get_hparams](#) (str model_name)

7.5 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/___init___ _.py File Reference

Namespaces

- [coopertunes.models](#)

Functions

- def [get_model](#) (model_name)

7.6 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/___ init___ .py File Reference

Namespaces

- [coopertunes.supervisors](#)

7.7 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/___ AudioDataset.py File Reference

Classes

- class [AudioDataset](#)

Namespaces

- [coopertunes.datasets.AudioDataset](#)

Functions

- def [files_to_list](#) (filename)

7.8 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/___ GANSynthDataset.py File Reference

Classes

- class [GANSynthDataset](#)

Namespaces

- [coopertunes.datasets.GANSynthDataset](#)

7.9 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MelDataset.py File Reference ↩↪

Classes

- class [MelDataset](#)

Namespaces

- [coopertunes.datasets.MelDataset](#)

7.10 /home/oskar/Studia/wimu/coopertunes/coopertunes/datasets/MidiDataset.py File Reference ↩↪

Classes

- class [MidiDataset](#)

Namespaces

- [coopertunes.datasets.MidiDataset](#)

7.11 /home/oskar/Studia/wimu/coopertunes/coopertunes/datatools/config.py File Reference ↩↪

Classes

- class [DataType](#)

Namespaces

- [coopertunes.datatools.config](#)

Variables

- dictionary [DATA_NAMES](#)

7.12 `/home/oskar/↵`

Studia/wimu/coopertunes/coopertunes/datatools/downloaders.py File Reference

Namespaces

- [coopertunes.datatools.downloaders](#)

Functions

- def [download_classic_piano](#) (output_dir)
- def [download_dataset](#) (output_dir, data_type, name)
- def [download_file](#) (url, output_dir)
- def [get_datatype_dataset_downloaders](#) (DataType data_type)

7.13 `/home/oskar/↵`

Studia/wimu/coopertunes/coopertunes/datatools/miditools.py File Reference

Classes

- class [Control](#)
- class [ControlSeq](#)
- class [Event](#)
- class [EventSeq](#)
- class [NoteSeq](#)

Namespaces

- [coopertunes.datatools.miditools](#)

Variables

- int [BEAT_LENGTH](#) = 60 / DEFAULT_TEMPO
- [c](#)
- [cs](#) = ControlSeq.from_event_seq(es)
- [DEFAULT_LOADING_PROGRAMS](#) = range(128)
- int [DEFAULT_NORMALIZATION_BASELINE](#) = 60
- int [DEFAULT_NOTE_DENSITY_BINS](#) = np.arange(12) * 3 + 1
- int [DEFAULT_NOTE_LENGTH](#) = BEAT_LENGTH * 2
- [DEFAULT_PITCH_RANGE](#) = range(21, 109)
- int [DEFAULT_RESOLUTION](#) = 220
- int [DEFAULT_SAVING_PROGRAM](#) = 1
- int [DEFAULT_TEMPO](#) = 120
- float [DEFAULT_TIME_SHIFT_BINS](#) = 1.15 ** np.arange(32) / 65
- int [DEFAULT_VELOCITY](#) = 64
- [DEFAULT_VELOCITY_RANGE](#) = range(21, 109)
- int [DEFAULT_VELOCITY_STEPS](#) = 32
- int [DEFAULT_WINDOW_SIZE](#) = BEAT_LENGTH * 4
- [es](#) = EventSeq.from_note_seq(NoteSeq.from_midi_file(path))
- int [MIN_NOTE_LENGTH](#) = BEAT_LENGTH / 2
- int [path](#)
- bool [USE_VELOCITY](#) = True

7.14 /home/oskar/↵ Studia/wimu/coopertunes/coopertunes/datatools/process.py File Reference

Namespaces

- [coopertunes.datatools.process](#)

Functions

- def [get_preprocessing](#) (name)
- def [preprocess_classic_piano](#) (midi_root, save_dir, num_workers)
- def [preprocess_midi2sequence](#) (path)
- def [preprocess_wav2spectrogram](#) (path)

Variables

- [midi_root](#)
- [num_workers](#)
- [save_dir](#)

7.15 /home/oskar/Studia/wimu/coopertunes/coopertunes/distributed.py File Reference

Namespaces

- [coopertunes.distributed](#)

Functions

- def [fix_unset_envs](#) ()
- def [get_free_port](#) ()
- def [get_world_size](#) ()
- Callable [global_leader_only](#) (Callable|None fn=None, *default=None)
- def [global_rank](#) ()
- def [is_global_leader](#) ()
- def [is_local_leader](#) ()
- Callable [local_leader_only](#) (fn=None, *default=None)
- def [local_rank](#) ()

7.16 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/↵ Audio2Mel.py File Reference

Classes

- class [Audio2MelHParams](#)

Namespaces

- [coopertunes.hparams.Audio2Mel](#)

7.17 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/↔ Audio2Mel.py File Reference

Classes

- class [Audio2Mel](#)

Namespaces

- [coopertunes.models.Audio2Mel](#)

7.18 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/↔ Audio2Mel.py File Reference

Classes

- class [Audio2MelSupervisor](#)

Namespaces

- [coopertunes.supervisors.Audio2Mel](#)

7.19 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/↔ GANSynth.py File Reference

Classes

- class [DiscriminatorHParams](#)
- class [GANSynthHParams](#)
- class [GeneratorHParams](#)

Namespaces

- [coopertunes.hparams.GANSynth](#)

7.20 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/↵ GANSynth.py File Reference

Classes

- class [Discriminator](#)
- class [Generator](#)

Namespaces

- [coopertunes.models.GANSynth](#)

7.21 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/↵ GANSynth.py File Reference

Classes

- class [GANSynthSupervisor](#)

Namespaces

- [coopertunes.supervisors.GANSynth](#)

7.22 /home/oskar/↵ Studia/wimu/coopertunes/coopertunes/hparams/hparams.py File Reference

Classes

- class [HParams](#)

Namespaces

- [coopertunes.hparams.hparams](#)

7.23 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/Mel↵ Gan.py File Reference

Classes

- class [MelGanHParams](#)

Namespaces

- [coopertunes.hparams.MelGan](#)

7.24 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelGan.py File Reference ↩

Classes

- class [MelGanDiscriminator](#)
- class [MelGanGenerator](#)
- class [MelGanNLayerDiscriminator](#)
- class [ResnetBlock](#)

Namespaces

- [coopertunes.models.MelGan](#)

Functions

- def [weights_init](#) (m)
- def [WNConv1d](#) (*args, **kwargs)
- def [WNConvTranspose1d](#) (*args, **kwargs)

7.25 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelGan.py File Reference ↩

Classes

- class [MelGanSupervisor](#)

Namespaces

- [coopertunes.supervisors.MelGan](#)

Variables

- [audio2mel_hparams](#) = [Audio2MelHParams](#)()
- [mel_hparams](#) = [MelGanHParams](#)()
- [melGanAudio2mel](#) = [Audio2Mel](#)([audio2mel_hparams](#))
- [melGanDiscriminator](#) = [MelGanDiscriminator](#)([mel_hparams](#))
- [melGanGgenerator](#) = [MelGanGenerator](#)([mel_hparams](#))
- [supervisor](#)

7.26 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVAE.py File Reference

Classes

- class [MelSpecVAEHParams](#)

Namespaces

- [coopertunes.hparams.MelSpecVAE](#)

7.27 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVAE.py File Reference

Classes

- class [MelSpecVAE](#)

Namespaces

- [coopertunes.models.MelSpecVAE](#)

7.28 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVAE.py File Reference

Classes

- class [MelSpecVAESupervisor](#)

Namespaces

- [coopertunes.supervisors.MelSpecVAE](#)

Variables

- [backend](#)
- [init_method](#)
- [mel_hparams](#) = [MelSpecVAEHParams](#)()
- [mel_spec_vae](#) = [MelSpecVAE](#)([mel_hparams](#))
- [rank](#)
- [vae_supervisor](#)
- [world_size](#)

7.29 [/home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/MelSpecVQVAE.py](#) File Reference

Classes

- class [MelSpecVQVAEHParams](#)

Namespaces

- [coopertunes.hparams.MelSpecVQVAE](#)

7.30 [/home/oskar/Studia/wimu/coopertunes/coopertunes/models/MelSpecVQVAE.py](#) File Reference

Classes

- class [MelSpecVQVAE](#)
- class [ResidualLayer](#)
- class [VectorQuantizer](#)

Namespaces

- [coopertunes.models.MelSpecVQVAE](#)

7.31 [/home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/MelSpecVQVAE.py](#) File Reference

Classes

- class [MelSpecVQVAESupervisor](#)

Namespaces

- [coopertunes.supervisors.MelSpecVQVAE](#)

Variables

- [backend](#)
- [init_method](#)
- [mel_hparams](#) = [MelSpecVQVAEHParams](#)()
- [mel_spec_vae](#) = [MelSpecVQVAE](#)([mel_hparams](#))
- [rank](#)
- [vae_supervisor](#)
- [world_size](#)

7.32 /home/oskar/Studia/wimu/coopertunes/coopertunes/hparams/↵ PerformanceRNN.py File Reference

Classes

- class [PerformanceRNNHParams](#)

Namespaces

- [coopertunes.hparams.PerformanceRNN](#)

7.33 /home/oskar/Studia/wimu/coopertunes/coopertunes/models/↵ PerformanceRNN.py File Reference

Classes

- class [PerformanceRNN](#)

Namespaces

- [coopertunes.models.PerformanceRNN](#)

7.34 /home/oskar/Studia/wimu/coopertunes/coopertunes/supervisors/↵ PerformanceRNN.py File Reference

Classes

- class [PerformanceRNNSupervisor](#)

Namespaces

- [coopertunes.supervisors.PerformanceRNN](#)

Variables

- string [device](#) = "cuda:0"
- [hparams](#) = PerformanceRNNHParams()
- [model](#) = PerformanceRNNAntentive(hparams)
- [supervisor](#) = PerformanceRNNSupervisor(model, device, hparams)

7.35 `/home/oskar/Studia/wimu/coopertunes/coopertunes/logger.py` File Reference

Classes

- class [Logger](#)

Namespaces

- [coopertunes.logger](#)

7.36 `/home/oskar/↵ Studia/wimu/coopertunes/coopertunes/models/model.py` File Reference

Classes

- class [Model](#)

Namespaces

- [coopertunes.models.model](#)

7.37 `/home/oskar/Studia/wimu/coopertunes/coopertunes/utils.py` File Reference

Classes

- class [PixelNormalization](#)
- class [PrintLayer](#)

Namespaces

- [coopertunes.utils](#)

Functions

- def [calc_n_params](#) (module)
- def [compute_gradient_norm](#) (parameters, norm_type=2)
- def [convert_audios2mels](#) (audios, sample_rate, n_mels=80, hop_len=256, n_fft=1024, win_len=1024, fmin=0.0, fmax=8000.0)
- def [convert_audios2mels_h](#) (audios, hparams)
- def [convert_mels2audios](#) (mels, sample_rate, n_griffin_lim_iter=16, hop_len=256, n_fft=1024, win_len=1024, fmin=0.0, fmax=8000.0)
- def [convert_mels2audios_h](#) (mels, hparams)
- def [dconv_same_padding](#) (kernel_size, dilation=1)
- def [dict2params](#) (d, f="", e="")
- def [event_indeces_to_midi_file](#) (event_indeces, midi_file_name, velocity_scale=0.8)
- def [find_files_by_extensions](#) (root, exts=[])
- def [get_default_device](#) ()
- def [log_debug](#) (*args, **kwargs)
- def [log_error](#) (*args, **kwargs)
- def [log_info](#) (*args, **kwargs)
- def [log_warning](#) (*args, **kwargs)
- def [normalize_audio](#) (audio, float from_sample_rate, float to_sample_rate)
- def [params2dict](#) (p, f="", e="")
- def [plot_audio](#) (audio, out_fp=None)
- def [plot_mel](#) (mel, out_fp=None)
- def [save_sample](#) (file_path, sampling_rate, audio)
- def [set_seed](#) (int seed)
- def [setup_cuda_debug](#) (bool cuda_debug_mode=False)
- def [transposition](#) (events, controls, offset=0)

Variables

- list [AUDIO_EXTENSIONS](#) = [".wav", ".flac", ".mp3"]
- [L](#) = TypeVar("L")
- list [MIDI_EXTENSIONS](#) = [".midi", ".mid"]
- [propagate](#)

Index

[/home/oskar/Studia/wimu/cooptunes/cooptunes/__init__.py](#), [137](#)
[129](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/models/MelSpecVQVAE.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datasets/AudioDataset.py](#), [135](#)
[130](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/models/Performance.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datasets/GANSynthDataset.py](#), [135](#)
[130](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/models/__init__.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datasets/MelDataset.py](#), [136](#)
[131](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/models/model.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datasets/MidiDataset.py](#), [136](#)
[131](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/Audio2Mel.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datasets/__init__.py](#), [134](#)
[129](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/GANSynth.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datatools/__init__.py](#), [135](#)
[129](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/MelGAN.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datatools/config.py](#), [136](#)
[131](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/MelSpecVQVAE.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datatools/downloaders.py](#), [137](#)
[132](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/MelSpecVQVAE.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datatools/miditoolbox.py](#), [138](#)
[132](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/Performance.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/datatools/process.py](#), [139](#)
[133](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/supervisors/__init__.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/distributed.py](#), [130](#)
[133](#) [/home/oskar/Studia/wimu/cooptunes/cooptunes/utils.py](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/Audio2Mel.py](#), [136](#)
[133](#) [__call__](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/GANSynthSupervisor.py](#), [84](#)
[134](#) [__getitem__](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/MelDataset.py](#), [43](#)
[135](#) [GANSynthDataset](#), [59](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/MelDataset.py](#), [75](#)
[137](#) [__init__](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/MelSpecVQVAE.py](#), [138](#)
[138](#) [Audio2MelHParams](#), [39](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/PerformanceHParams.py](#), [40](#)
[139](#) [AudioDataset](#), [43](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/__init__.py](#), [44](#)
[129](#) [ControlSeq](#), [46](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/hparams/hparams.py](#), [50](#)
[135](#) [Discriminator](#), [50](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/logger.py](#), [54](#)
[140](#) [EventSeq](#), [55](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/models/AudioDataset.py](#), [59](#)
[134](#) [GANSynthHParams](#), [61](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/models/GANSynthSupervisor.py](#), [62](#)
[135](#) [Generator](#), [65](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/models/MelGANHParams.py](#), [67](#)
[136](#) [HParams](#), [70](#)
[/home/oskar/Studia/wimu/cooptunes/cooptunes/models/MelSpecVQVAE.py](#), [72](#)

- MelDataset, 74
- MelGanDiscriminator, 76
- MelGanGenerator, 79
- MelGanHParams, 81
- MelGanNLayerDiscriminator, 82
- MelGanSupervisor, 84
- MelSpecVAE, 88
- MelSpecVAEHParams, 92
- MelSpecVAESupervisor, 93
- MelSpecVQVAE, 96
- MelSpecVQVAEHParams, 99
- MelSpecVQVAESupervisor, 100
- MidiDataset, 102
- Model, 104
- NoteSeq, 106
- PerformanceRNN, 110
- PerformanceRNNHParams, 115
- PerformanceRNNSupervisor, 116
- PixelNormalization, 120
- PrintLayer, 122
- ResidualLayer, 123
- ResnetBlock, 125
- VectorQuantizer, 127
- __len__
 - AudioDataset, 43
 - GANSynthDataset, 59
 - MelDataset, 75
- __repr__
 - Control, 45
 - Event, 54
 - HParams, 70
 - MidiDataset, 102
- activation_function
 - Discriminator, 50
 - Generator, 65
- adam_betas
 - MelGanHParams, 81
- add_notes
 - NoteSeq, 106
- adjust_pitches
 - NoteSeq, 106
- adjust_time
 - NoteSeq, 106
- adjust_velocities
 - NoteSeq, 106
- AUDIO
 - DataType, 48
- Audio2Mel, 35
 - __init__, 36
 - forward, 36
 - hop_length, 36
 - inference, 36
 - n_fft, 37
 - n_mel_channels, 37
 - sampling_rate, 37
 - win_length, 37
- audio2mel
 - MelGanSupervisor, 85
- audio2mel_hparams
 - coopertunes.supervisors.MelGan, 24
- Audio2MelHParams, 38
 - __init__, 39
 - hop_length, 39
 - mel_fmax, 39
 - mel_fmin, 39
 - n_fft, 39
 - n_mel_channels, 39
 - sampling_rate, 40
 - win_length, 40
- Audio2MelSupervisor, 40
 - __init__, 40
 - convert, 41
 - device, 41
 - hparams, 41
 - model, 41
- AUDIO_EXTENSIONS
 - coopertunes.utils, 34
- audio_files
 - AudioDataset, 43
- AudioDataset, 42
 - __getitem__, 43
 - __init__, 43
 - __len__, 43
 - audio_files, 43
 - augment, 44
 - load_wav_to_torch, 43
 - sampling_rate, 44
 - segment_length, 44
- augment
 - AudioDataset, 44
- avglen
 - MidiDataset, 103
- backend
 - coopertunes.supervisors.MelSpecVAE, 25
 - coopertunes.supervisors.MelSpecVQVAE, 27
- batch_size
 - PerformanceRNNSupervisor, 117
- batches
 - MidiDataset, 102
- beam_search
 - PerformanceRNN, 110
- BEAT_LENGTH
 - coopertunes.datatools.miditools, 13
- before_latent
 - MelSpecVAE, 90
- beta
 - VectorQuantizer, 127
- betas
 - DiscriminatorHParams, 52
 - GeneratorHParams, 67
- block
 - ResnetBlock, 126
- block0
 - Discriminator, 50
 - Generator, 65
- block1

- Discriminator, 51
- Generator, 66
- block2
 - Discriminator, 51
 - Generator, 66
- block3
 - Discriminator, 51
 - Generator, 66
- block4
 - Discriminator, 51
 - Generator, 66
- block5
 - Discriminator, 51
 - Generator, 66
- block6
 - Discriminator, 51
 - Generator, 66
- block_conv_filters
 - DiscriminatorHPParams, 52
- block_conv_kernel
 - DiscriminatorHPParams, 53
- block_dconv_filters
 - GeneratorHPParams, 67
- block_dconv_kernel
 - GeneratorHPParams, 67
- block_downsample_factor
 - DiscriminatorHPParams, 53
- block_upsample_factor
 - GeneratorHPParams, 68
- c
 - coopertunes.datatools.miditools, 13
- calc_n_params
 - coopertunes.utils, 30
- checkpoints_dir
 - HPParams, 71
- compute_gradient_norm
 - coopertunes.utils, 30
- concat_dim
 - PerformanceRNN, 111
- concat_input_fc
 - PerformanceRNN, 111
- concat_input_fc_activation
 - PerformanceRNN, 111
- Control, 44
 - __init__, 44
 - __repr__, 45
 - note_density, 45
 - pitch_histogram, 45
 - to_array, 45
- control_dim
 - PerformanceRNN, 112
 - PerformanceRNNSupervisor, 117
- control_ratio
 - PerformanceRNNSupervisor, 117
- controls
 - ControlSeq, 47
- ControlSeq, 46
 - __init__, 46
 - controls, 47
 - dim, 46
 - feat_dims, 46
 - feat_ranges, 47
 - from_event_seq, 47
 - note_density_bins, 47
 - recover_compressed_array, 47
 - to_compressed_array, 47
 - window_size, 47
- convert
 - Audio2MelSupervisor, 41
- convert_audios2mels
 - coopertunes.utils, 30
- convert_audios2mels_h
 - coopertunes.utils, 30
- convert_mels2audios
 - coopertunes.utils, 30
- convert_mels2audios_h
 - coopertunes.utils, 31
- coopertunes, 9
- coopertunes.datasets, 9
- coopertunes.datasets.AudioDataset, 9
 - files_to_list, 10
- coopertunes.datasets.GANSynthDataset, 10
- coopertunes.datasets.MelDataset, 10
- coopertunes.datasets.MidiDataset, 10
- coopertunes.datatools, 10
- coopertunes.datatools.config, 10
 - DATA_NAMES, 11
- coopertunes.datatools.downloaders, 11
 - download_classic_piano, 11
 - download_dataset, 11
 - download_file, 11
 - get_datatype_dataset_downloaders, 12
- coopertunes.datatools.miditools, 12
 - BEAT_LENGTH, 13
 - c, 13
 - cs, 13
 - DEFAULT_LOADING_PROGRAMS, 13
 - DEFAULT_NORMALIZATION_BASELINE, 13
 - DEFAULT_NOTE_DENSITY_BINS, 13
 - DEFAULT_NOTE_LENGTH, 13
 - DEFAULT_PITCH_RANGE, 14
 - DEFAULT_RESOLUTION, 14
 - DEFAULT_SAVING_PROGRAM, 14
 - DEFAULT_TEMPO, 14
 - DEFAULT_TIME_SHIFT_BINS, 14
 - DEFAULT_VELOCITY, 14
 - DEFAULT_VELOCITY_RANGE, 14
 - DEFAULT_VELOCITY_STEPS, 14
 - DEFAULT_WINDOW_SIZE, 15
 - es, 15
 - MIN_NOTE_LENGTH, 15
 - path, 15
 - USE_VELOCITY, 15
- coopertunes.datatools.process, 15
 - get_preprocessing, 16
 - midi_root, 17

- num_workers, 17
- preprocess_classic_piano, 16
- preprocess_midi2sequence, 16
- preprocess_wav2spectrogram, 16
- save_dir, 17
- coopertunes.distributed, 17
 - fix_unset_envs, 17
 - get_free_port, 17
 - get_world_size, 18
 - global_leader_only, 18
 - global_rank, 18
 - is_global_leader, 18
 - is_local_leader, 18
 - local_leader_only, 18
 - local_rank, 18
- coopertunes.hparams, 19
 - get_hparams, 19
- coopertunes.hparams.Audio2Mel, 19
- coopertunes.hparams.GANSynth, 19
- coopertunes.hparams.hparams, 20
- coopertunes.hparams.MelGan, 20
- coopertunes.hparams.MelSpecVAE, 20
- coopertunes.hparams.MelSpecVQVAE, 20
- coopertunes.hparams.PerformanceRNN, 20
- coopertunes.logger, 20
- coopertunes.models, 21
 - get_model, 21
- coopertunes.models.Audio2Mel, 21
- coopertunes.models.GANSynth, 21
- coopertunes.models.MelGan, 22
 - weights_init, 22
 - WNConv1d, 22
 - WNConvTranspose1d, 22
- coopertunes.models.MelSpecVAE, 22
- coopertunes.models.MelSpecVQVAE, 23
- coopertunes.models.model, 23
- coopertunes.models.PerformanceRNN, 23
- coopertunes.supervisors, 23
- coopertunes.supervisors.Audio2Mel, 23
- coopertunes.supervisors.GANSynth, 24
- coopertunes.supervisors.MelGan, 24
 - audio2mel_hparams, 24
 - mel_hparams, 24
 - melGanAudio2mel, 24
 - melGanDiscriminator, 24
 - melGanGenerator, 25
 - supervisor, 25
- coopertunes.supervisors.MelSpecVAE, 25
 - backend, 25
 - init_method, 25
 - mel_hparams, 26
 - mel_spec_vae, 26
 - rank, 26
 - vae_supervisor, 26
 - world_size, 26
- coopertunes.supervisors.MelSpecVQVAE, 26
 - backend, 27
 - init_method, 27
 - mel_hparams, 27
 - mel_spec_vae, 27
 - rank, 27
 - vae_supervisor, 27
 - world_size, 28
- coopertunes.supervisors.PerformanceRNN, 28
 - device, 28
 - hparams, 28
 - model, 28
 - supervisor, 29
- coopertunes.utils, 29
 - AUDIO_EXTENSIONS, 34
 - calc_n_params, 30
 - compute_gradient_norm, 30
 - convert_audios2mels, 30
 - convert_audios2mels_h, 30
 - convert_mels2audios, 30
 - convert_mels2audios_h, 31
 - dconv_same_padding, 31
 - dict2params, 31
 - event_indices_to_midi_file, 31
 - find_files_by_extensions, 31
 - get_default_device, 32
 - L, 34
 - log_debug, 32
 - log_error, 32
 - log_info, 32
 - log_warning, 32
 - MIDI_EXTENSIONS, 34
 - normalize_audio, 32
 - params2dict, 33
 - plot_audio, 33
 - plot_mel, 33
 - propagate, 34
 - save_sample, 33
 - set_seed, 33
 - setup_cuda_debug, 34
 - transposition, 34
- copy
 - NoteSeq, 107
- cs
 - coopertunes.datatools.miditools, 13
- D
 - VectorQuantizer, 128
- data_dirs
 - MelDataset, 75
- DATA_NAMES
 - coopertunes.datatools.config, 11
- data_path
 - PerformanceRNNSupervisor, 117
- DataType, 48
 - AUDIO, 48
 - MIDI, 49
- dconv_same_padding
 - coopertunes.utils, 31
- decode
 - MelSpecVAE, 88
 - MelSpecVQVAE, 96

- decoder
 - MelSpecVAE, 90
 - MelSpecVQVAE, 97
- decoder_input
 - MelSpecVAE, 90
- default_checkpoint
 - MelGanHParams, 81
- DEFAULT_LOADING_PROGRAMS
 - coopertunes.datatools.miditools, 13
- DEFAULT_NORMALIZATION_BASELINE
 - coopertunes.datatools.miditools, 13
- DEFAULT_NOTE_DENSITY_BINS
 - coopertunes.datatools.miditools, 13
- DEFAULT_NOTE_LENGTH
 - coopertunes.datatools.miditools, 13
- DEFAULT_PITCH_RANGE
 - coopertunes.datatools.miditools, 14
- DEFAULT_RESOLUTION
 - coopertunes.datatools.miditools, 14
- DEFAULT_SAVING_PROGRAM
 - coopertunes.datatools.miditools, 14
- DEFAULT_TEMPO
 - coopertunes.datatools.miditools, 14
- DEFAULT_TIME_SHIFT_BINS
 - coopertunes.datatools.miditools, 14
- DEFAULT_VELOCITY
 - coopertunes.datatools.miditools, 14
- DEFAULT_VELOCITY_RANGE
 - coopertunes.datatools.miditools, 14
- DEFAULT_VELOCITY_STEPS
 - coopertunes.datatools.miditools, 14
- DEFAULT_WINDOW_SIZE
 - coopertunes.datatools.miditools, 15
- device
 - Audio2MelSupervisor, 41
 - coopertunes.supervisors.PerformanceRNN, 28
 - GANSynthSupervisor, 63
 - Logger, 73
 - MelGanSupervisor, 85
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
 - PerformanceRNN, 112
 - PerformanceRNNSupervisor, 117
- dict2params
 - coopertunes.utils, 31
- dim
 - ControlSeq, 46
 - EventSeq, 56
- Discriminator, 49
 - __init__, 50
 - activation_function, 50
 - block0, 50
 - block1, 51
 - block2, 51
 - block3, 51
 - block4, 51
 - block5, 51
 - block6, 51
 - discriminator_output, 51
 - forward, 50
 - pitch_classifier, 51
- discriminator
 - GANSynthHParams, 61
 - GANSynthSupervisor, 63
- discriminator_optimizer
 - GANSynthSupervisor, 63
- discriminator_output
 - Discriminator, 51
- DiscriminatorHParams, 52
 - __init__, 52
 - betas, 52
 - block_conv_filters, 52
 - block_conv_kernel, 53
 - block_downsample_factor, 53
 - leaky_relu_slope, 53
 - linear_in_size, 53
 - lr, 53
 - pitch_dim, 53
- download_classic_piano
 - coopertunes.datatools.downloaders, 11
- download_dataset
 - coopertunes.datatools.downloaders, 11
- download_file
 - coopertunes.datatools.downloaders, 11
- downsample
 - MelGanDiscriminator, 77
- ds_cfg
 - MelSpecVAEHParams, 92
 - MelSpecVQVAEHParams, 99
- dumps_to_file
 - HParams, 70
- embedding
 - VectorQuantizer, 128
- embedding_dim
 - MelSpecVQVAE, 97
- enable_logging
 - PerformanceRNNSupervisor, 117
- encode
 - MelSpecVAE, 88
 - MelSpecVQVAE, 96
- encoder
 - MelSpecVAE, 90
 - MelSpecVQVAE, 97
- engines
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
- epoch
 - GANSynthSupervisor, 63
 - MelGanSupervisor, 85
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
- epochs
 - GANSynthHParams, 61
- eps
 - GeneratorHParams, 68
 - PixelNormalization, 121

- es
 - coopertunes.datatools.miditools, 15
- eval
 - MelGanSupervisor, 84
 - MelSpecVAESupervisor, 93
 - MelSpecVQVAESupervisor, 100
- Event, 54
 - __init__, 54
 - __repr__, 54
 - time, 54
 - type, 54
 - value, 55
- event_dim
 - PerformanceRNN, 112
 - PerformanceRNNSupervisor, 117
- event_embedding
 - PerformanceRNN, 112
- event_indices_to_midi_file
 - coopertunes.utils, 31
- events
 - EventSeq, 57
- EventSeq, 55
 - __init__, 55
 - dim, 56
 - events, 57
 - feat_dims, 56
 - feat_ranges, 56
 - from_array, 56
 - from_note_seq, 56
 - get_velocity_bins, 56
 - pitch_range, 57
 - time_shift_bins, 57
 - to_array, 56
 - to_note_seq, 57
 - velocity_range, 57
 - velocity_steps, 57
- expand_controls
 - PerformanceRNN, 110
- fc_mu
 - MelSpecVAE, 90
- fc_var
 - MelSpecVAE, 90
- feat_dims
 - ControlSeq, 46
 - EventSeq, 56
- feat_ranges
 - ControlSeq, 47
 - EventSeq, 56
- filepaths
 - GANSynthDataset, 59
 - MelDataset, 75
- files_to_list
 - coopertunes.datasets.AudioDataset, 10
- final_layer
 - MelSpecVAE, 90
- find_files_by_extensions
 - coopertunes.utils, 31
- first_dconv_kernel
 - GeneratorHParams, 68
- fix_unset_envs
 - coopertunes.distributed, 17
- forward
 - Audio2Mel, 36
 - Discriminator, 50
 - Generator, 65
 - MelGanDiscriminator, 77
 - MelGanGenerator, 79
 - MelGanNLayerDiscriminator, 83
 - MelSpecVAE, 89
 - MelSpecVQVAE, 96
 - Model, 105
 - PerformanceRNN, 110
 - PixelNormalization, 121
 - PrintLayer, 122
 - ResidualLayer, 124
 - ResnetBlock, 125
 - VectorQuantizer, 127
- from_array
 - EventSeq, 56
- from_event_seq
 - ControlSeq, 47
- from_midi
 - NoteSeq, 107
- from_midi_file
 - NoteSeq, 107
- from_note_seq
 - EventSeq, 56
- GANSynthDataset, 58
 - __getitem__, 59
 - __init__, 59
 - __len__, 59
 - filepaths, 59
 - metadata, 59
- GANSynthHParams, 60
 - __init__, 61
 - discriminator, 61
 - epochs, 61
 - generator, 61
 - train_data_dir, 61
- GANSynthSupervisor, 62
 - __init__, 62
 - device, 63
 - discriminator, 63
 - discriminator_optimizer, 63
 - epoch, 63
 - generator, 63
 - generator_optimizer, 63
 - hparams, 63
 - step, 63
 - train, 62
 - train_loader, 64
- generate
 - PerformanceRNN, 110
 - PerformanceRNNSupervisor, 116
- Generator, 64
 - __init__, 65

- activation_function, 65
- block0, 65
- block1, 66
- block2, 66
- block3, 66
- block4, 66
- block5, 66
- block6, 66
- forward, 65
- generator
 - GANSynthHParams, 61
 - GANSynthSupervisor, 63
- generator_optimizer
 - GANSynthSupervisor, 63
- GeneratorHParams, 67
 - __init__, 67
 - betas, 67
 - block_dconv_filters, 67
 - block_dconv_kernel, 67
 - block_upsample_factor, 68
 - eps, 68
 - first_dconv_kernel, 68
 - latent_dim, 68
 - leaky_relu_slope, 68
 - lr, 68
 - pitch_dim, 68
- get_datatype_dataset_downloaders
 - coopertunes.datatools.downloaders, 12
- get_default_device
 - coopertunes.utils, 32
- get_free_port
 - coopertunes.distributed, 17
- get_hparams
 - coopertunes.hparams, 19
- get_model
 - coopertunes.models, 21
- get_preprocessing
 - coopertunes.datatools.process, 16
- get_primary_event
 - PerformanceRNN, 111
- get_summary_writer
 - Logger, 72
- get_velocity_bins
 - EventSeq, 56
- get_world_size
 - coopertunes.distributed, 18
- global_leader_only
 - coopertunes.distributed, 18
- global_rank
 - coopertunes.distributed, 18
- gru
 - PerformanceRNN, 112
- gru_layers
 - PerformanceRNN, 112
- hidden_dim
 - PerformanceRNN, 112
- hop_length
 - Audio2Mel, 36
- Audio2MelHParams, 39
- MelGanGenerator, 79
- HParams, 69
 - __init__, 70
 - __repr__, 70
 - checkpoints_dir, 71
 - dumps_to_file, 70
 - logs_dir, 71
 - train_data_dirs, 71
 - update, 70
 - valid_data_dirs, 71
- hparams
 - Audio2MelSupervisor, 41
 - coopertunes.supervisors.PerformanceRNN, 28
 - GANSynthSupervisor, 63
 - Logger, 73
 - MelDataset, 75
 - MelGanSupervisor, 86
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
 - PerformanceRNNSupervisor, 118
- inference
 - Audio2Mel, 36
 - MelGanGenerator, 79
 - MelSpecVAE, 89
 - MelSpecVQVAE, 97
 - Model, 105
- init_dim
 - PerformanceRNN, 112
- init_method
 - coopertunes.supervisors.MelSpecVAE, 25
 - coopertunes.supervisors.MelSpecVQVAE, 27
- init_to_hidden
 - PerformanceRNN, 111
- inithid_fc
 - PerformanceRNN, 113
- inithid_fc_activation
 - PerformanceRNN, 113
- input_dim
 - PerformanceRNN, 113
- is_global_leader
 - coopertunes.distributed, 18
- is_local_leader
 - coopertunes.distributed, 18
- K
 - VectorQuantizer, 128
- kld_weight
 - MelSpecVAE, 90
- L
 - coopertunes.utils, 34
- last_filter
 - MelSpecVAE, 91
- latent_dim
 - GeneratorHParams, 68
 - MelSpecVAE, 91
- leaky_relu_slope

- DiscriminatorHParams, 53
- GeneratorHParams, 68
- learning_rate
 - MelGanHParams, 81
 - PerformanceRNNSupervisor, 118
- linear_in_size
 - DiscriminatorHParams, 53
- load_pretrained
 - MelGanSupervisor, 85
 - PerformanceRNNSupervisor, 116
- load_wav_to_torch
 - AudioDataset, 43
- local_leader_only
 - coopertunes.distributed, 18
- local_rank
 - coopertunes.distributed, 18
- log_audio
 - Logger, 73
- log_debug
 - coopertunes.utils, 32
- log_error
 - coopertunes.utils, 32
- log_info
 - coopertunes.utils, 32
- log_running_vals_to_tb
 - Logger, 72
- log_warning
 - coopertunes.utils, 32
- Logger, 71
 - __init__, 72
 - device, 73
 - get_summary_writer, 72
 - hparams, 73
 - log_audio, 73
 - log_running_vals_to_tb, 72
 - model_name, 73
 - update_running_vals, 72
- logs_dir
 - HParams, 71
- loss_function
 - MelSpecVAE, 89
 - MelSpecVQVAE, 97
- lr
 - DiscriminatorHParams, 53
 - GeneratorHParams, 68
- mel_fmax
 - Audio2MelHParams, 39
- mel_fmin
 - Audio2MelHParams, 39
- mel_hparams
 - coopertunes.supervisors.MelGan, 24
 - coopertunes.supervisors.MelSpecVAE, 26
 - coopertunes.supervisors.MelSpecVQVAE, 27
- mel_spec_vae
 - coopertunes.supervisors.MelSpecVAE, 26
 - coopertunes.supervisors.MelSpecVQVAE, 27
- MelDataset, 74
 - __getitem__, 75
 - __init__, 74
 - __len__, 75
 - data_dirs, 75
 - filepaths, 75
 - hparams, 75
- melGanAudio2mel
 - coopertunes.supervisors.MelGan, 24
- MelGanDiscriminator, 76
 - __init__, 76
 - downsample, 77
 - forward, 77
 - model, 77
- melGanDiscriminator
 - coopertunes.supervisors.MelGan, 24
- MelGanGenerator, 78
 - __init__, 79
 - forward, 79
 - hop_length, 79
 - inference, 79
 - model, 79
- melGanGgenerator
 - coopertunes.supervisors.MelGan, 25
- MelGanHParams, 80
 - __init__, 81
 - adam_betas, 81
 - default_checkpoint, 81
 - learning_rate, 81
 - summary_path, 81
- MelGanNLayerDiscriminator, 82
 - __init__, 82
 - forward, 83
 - model, 83
- MelGanSupervisor, 83
 - __call__, 84
 - __init__, 84
 - audio2mel, 85
 - device, 85
 - epoch, 85
 - eval, 84
 - hparams, 86
 - load_pretrained, 85
 - netD, 86
 - netG, 86
 - optD, 86
 - optG, 86
 - step, 86
 - test, 85
 - train, 85
 - val_dl, 86
- MelSpecVAE, 87
 - __init__, 88
 - before_latent, 90
 - decode, 88
 - decoder, 90
 - decoder_input, 90
 - encode, 88
 - encoder, 90
 - fc_mu, 90

- fc_var, 90
- final_layer, 90
- forward, 89
- inference, 89
- kld_weight, 90
- last_filter, 91
- latent_dim, 91
- loss_function, 89
- pool_factor, 91
- reparameterize, 89
- MelSpecVAEHParams, 91
 - __init__, 92
 - ds_cfg, 92
- MelSpecVAESupervisor, 93
 - __init__, 93
 - device, 94
 - engines, 94
 - epoch, 94
 - eval, 93
 - hparams, 94
 - model, 94
 - step, 94
 - train, 93
 - val_dl, 94
- MelSpecVQVAE, 95
 - __init__, 96
 - decode, 96
 - decoder, 97
 - embedding_dim, 97
 - encode, 96
 - encoder, 97
 - forward, 96
 - inference, 97
 - loss_function, 97
 - num_embeddings, 97
 - vq_layer, 98
 - vq_weight, 98
- MelSpecVQVAEHParams, 98
 - __init__, 99
 - ds_cfg, 99
- MelSpecVQVAESupervisor, 100
 - __init__, 100
 - device, 101
 - engines, 101
 - epoch, 101
 - eval, 100
 - hparams, 101
 - model, 101
 - step, 101
 - train, 100
 - val_dl, 101
- merge
 - NoteSeq, 107
- metadata
 - GANSynthDataset, 59
- MIDI
 - DataType, 49
- MIDI_EXTENSIONS
 - coopertunes.utils, 34
- midi_root
 - coopertunes.datatools.process, 17
- MidiDataset, 102
 - __init__, 102
 - __repr__, 102
 - avglen, 103
 - batches, 102
 - root, 103
 - samples, 103
 - seqLens, 103
- MIN_NOTE_LENGTH
 - coopertunes.datatools.miditools, 15
- Model, 104
 - __init__, 104
 - forward, 105
 - inference, 105
- model
 - Audio2MelSupervisor, 41
 - coopertunes.supervisors.PerformanceRNN, 28
 - MelGanDiscriminator, 77
 - MelGanGenerator, 79
 - MelGanNLayerDiscriminator, 83
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
 - PerformanceRNNSupervisor, 118
- model_name
 - Logger, 73
- n_fft
 - Audio2Mel, 37
 - Audio2MelHParams, 39
- n_mel_channels
 - Audio2Mel, 37
 - Audio2MelHParams, 39
- netD
 - MelGanSupervisor, 86
- netG
 - MelGanSupervisor, 86
- normalize_audio
 - coopertunes.utils, 32
- note_density
 - Control, 45
- note_density_bins
 - ControlSeq, 47
- notes
 - NoteSeq, 108
- NoteSeq, 105
 - __init__, 106
 - add_notes, 106
 - adjust_pitches, 106
 - adjust_time, 106
 - adjust_velocities, 106
 - copy, 107
 - from_midi, 107
 - from_midi_file, 107
 - merge, 107
 - notes, 108
 - to_midi, 107

- to_midi_file, 107
 - trim_overlapped_notes, 108
- num_embeddings
 - MelSpecVQVAE, 97
- num_workers
 - coopertunes.datatools.process, 17
- optD
 - MelGanSupervisor, 86
- optG
 - MelGanSupervisor, 86
- optimizer
 - PerformanceRNNSupervisor, 118
- output_dim
 - PerformanceRNN, 113
- output_fc
 - PerformanceRNN, 113
- output_fc_activation
 - PerformanceRNN, 113
- params2dict
 - coopertunes.utils, 33
- path
 - coopertunes.datatools.miditools, 15
- PerformanceRNN, 108
 - __init__, 110
 - beam_search, 110
 - concat_dim, 111
 - concat_input_fc, 111
 - concat_input_fc_activation, 111
 - control_dim, 112
 - device, 112
 - event_dim, 112
 - event_embedding, 112
 - expand_controls, 110
 - forward, 110
 - generate, 110
 - get_primary_event, 111
 - gru, 112
 - gru_layers, 112
 - hidden_dim, 112
 - init_dim, 112
 - init_to_hidden, 111
 - inithid_fc, 113
 - inithid_fc_activation, 113
 - input_dim, 113
 - output_dim, 113
 - output_fc, 113
 - output_fc_activation, 113
 - primary_event, 113
- PerformanceRNNHParams, 114
 - __init__, 115
- PerformanceRNNSupervisor, 115
 - __init__, 116
 - batch_size, 117
 - control_dim, 117
 - control_ratio, 117
 - data_path, 117
 - device, 117
 - enable_logging, 117
 - event_dim, 117
 - generate, 116
 - hparams, 118
 - learning_rate, 118
 - load_pretrained, 116
 - model, 118
 - optimizer, 118
 - reset_optimizer, 118
 - saving_interval, 118
 - sess_path, 118
 - step, 118
 - stride_size, 119
 - teacher_forcing_ratio, 119
 - train, 116
 - use_transposition, 119
 - val_dl, 119
 - window_size, 119
- pitch_classifier
 - Discriminator, 51
- pitch_dim
 - DiscriminatorHParams, 53
 - GeneratorHParams, 68
- pitch_histogram
 - Control, 45
- pitch_range
 - EventSeq, 57
- PixelNormalization, 120
 - __init__, 120
 - eps, 121
 - forward, 121
- plot_audio
 - coopertunes.utils, 33
- plot_mel
 - coopertunes.utils, 33
- pool_factor
 - MelSpecVAE, 91
- preprocess_classic_piano
 - coopertunes.datatools.process, 16
- preprocess_midi2sequence
 - coopertunes.datatools.process, 16
- preprocess_wav2spectrogram
 - coopertunes.datatools.process, 16
- primary_event
 - PerformanceRNN, 113
- PrintLayer, 121
 - __init__, 122
 - forward, 122
- propagate
 - coopertunes.utils, 34
- rank
 - coopertunes.supervisors.MelSpecVAE, 26
 - coopertunes.supervisors.MelSpecVQVAE, 27
- recover_compressed_array
 - ControlSeq, 47
- reparameterize
 - MelSpecVAE, 89
- resblock

- ResidualLayer, 124
- reset_optimizer
 - PerformanceRNNSupervisor, 118
- ResidualLayer, 123
 - __init__, 123
 - forward, 124
 - resblock, 124
- ResnetBlock, 124
 - __init__, 125
 - block, 126
 - forward, 125
 - shortcut, 126
- root
 - MidiDataset, 103
- samples
 - MidiDataset, 103
- sampling_rate
 - Audio2Mel, 37
 - Audio2MelHParams, 40
 - AudioDataset, 44
- save_dir
 - coopertunes.datatools.process, 17
- save_sample
 - coopertunes.utils, 33
- saving_interval
 - PerformanceRNNSupervisor, 118
- segment_length
 - AudioDataset, 44
- seqLens
 - MidiDataset, 103
- sess_path
 - PerformanceRNNSupervisor, 118
- set_seed
 - coopertunes.utils, 33
- setup_cuda_debug
 - coopertunes.utils, 34
- shortcut
 - ResnetBlock, 126
- step
 - GANSynthSupervisor, 63
 - MelGanSupervisor, 86
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
 - PerformanceRNNSupervisor, 118
- stride_size
 - PerformanceRNNSupervisor, 119
- summary_path
 - MelGanHParams, 81
- supervisor
 - coopertunes.supervisors.MelGan, 25
 - coopertunes.supervisors.PerformanceRNN, 29
- teacher_forcing_ratio
 - PerformanceRNNSupervisor, 119
- test
 - MelGanSupervisor, 85
- time
 - Event, 54
- time_shift_bins
 - EventSeq, 57
- to_array
 - Control, 45
 - EventSeq, 56
- to_compressed_array
 - ControlSeq, 47
- to_midi
 - NoteSeq, 107
- to_midi_file
 - NoteSeq, 107
- to_note_seq
 - EventSeq, 57
- train
 - GANSynthSupervisor, 62
 - MelGanSupervisor, 85
 - MelSpecVAESupervisor, 93
 - MelSpecVQVAESupervisor, 100
 - PerformanceRNNSupervisor, 116
- train_data_dir
 - GANSynthHParams, 61
- train_data_dirs
 - HParams, 71
- train_loader
 - GANSynthSupervisor, 64
- transposition
 - coopertunes.utils, 34
- trim_overlapped_notes
 - NoteSeq, 108
- type
 - Event, 54
- update
 - HParams, 70
- update_running_vals
 - Logger, 72
- use_transposition
 - PerformanceRNNSupervisor, 119
- USE_VELOCITY
 - coopertunes.datatools.miditools, 15
- vae_supervisor
 - coopertunes.supervisors.MelSpecVAE, 26
 - coopertunes.supervisors.MelSpecVQVAE, 27
- val_dl
 - MelGanSupervisor, 86
 - MelSpecVAESupervisor, 94
 - MelSpecVQVAESupervisor, 101
 - PerformanceRNNSupervisor, 119
- valid_data_dirs
 - HParams, 71
- value
 - Event, 55
- VectorQuantizer, 126
 - __init__, 127
 - beta, 127
 - D, 128
 - embedding, 128
 - forward, 127

- K, [128](#)
- velocity_range
 - EventSeq, [57](#)
- velocity_steps
 - EventSeq, [57](#)
- vq_layer
 - MeISpecVQVAE, [98](#)
- vq_weight
 - MeISpecVQVAE, [98](#)
- weights_init
 - coopertunes.models.MelGan, [22](#)
- win_length
 - Audio2Mel, [37](#)
 - Audio2MelHParams, [40](#)
- window_size
 - ControlSeq, [47](#)
 - PerformanceRNNSupervisor, [119](#)
- WNConv1d
 - coopertunes.models.MelGan, [22](#)
- WNConvTranspose1d
 - coopertunes.models.MelGan, [22](#)
- world_size
 - coopertunes.supervisors.MeISpecVAE, [26](#)
 - coopertunes.supervisors.MeISpecVQVAE, [28](#)