Foley Sound Synthesis

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What is Foley?

Objective

To create novel foley sound files based on the provided foley sound datasets.

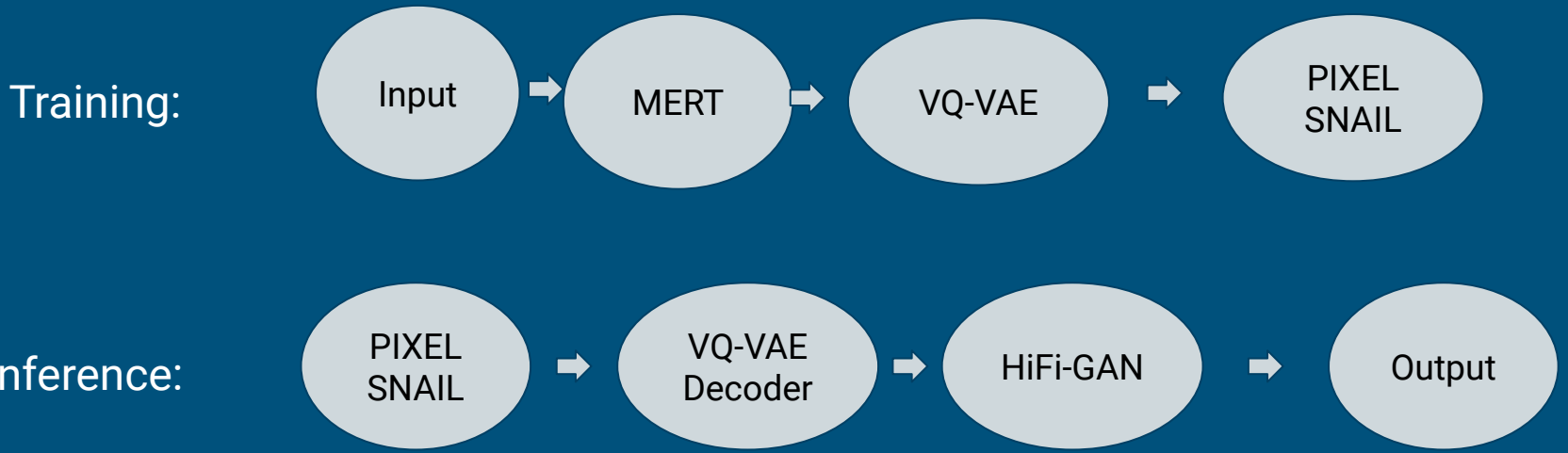
Why?

To make sound design and post-production workflow more time and cost-effective.

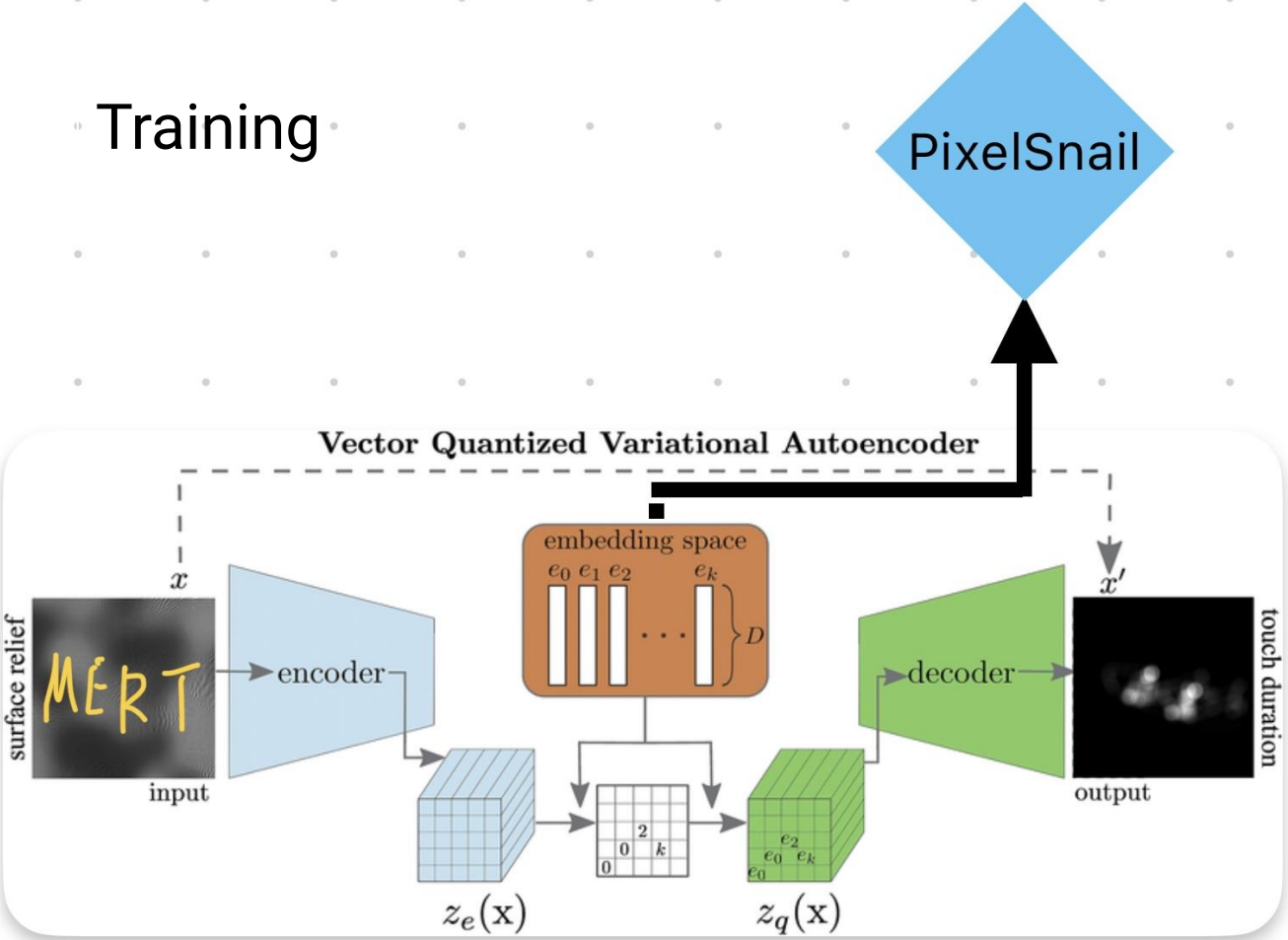
Training Data

5496 .wav files spread between 7 categories: Dog Bark, Footstep, GunShot, Keyboard, MovingMotorVehicle, Rain, Sneeze/Cough

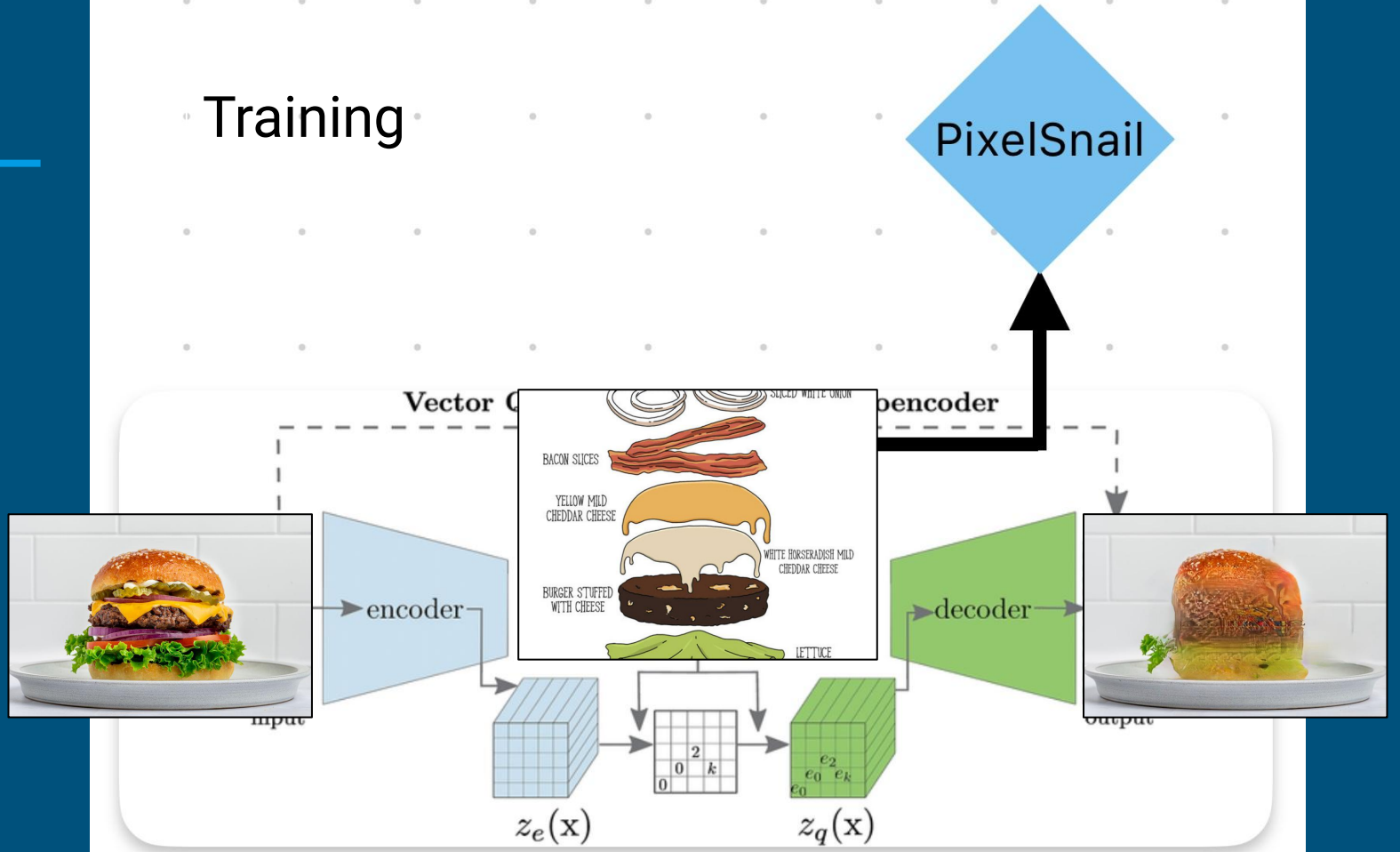
Model Pipeline



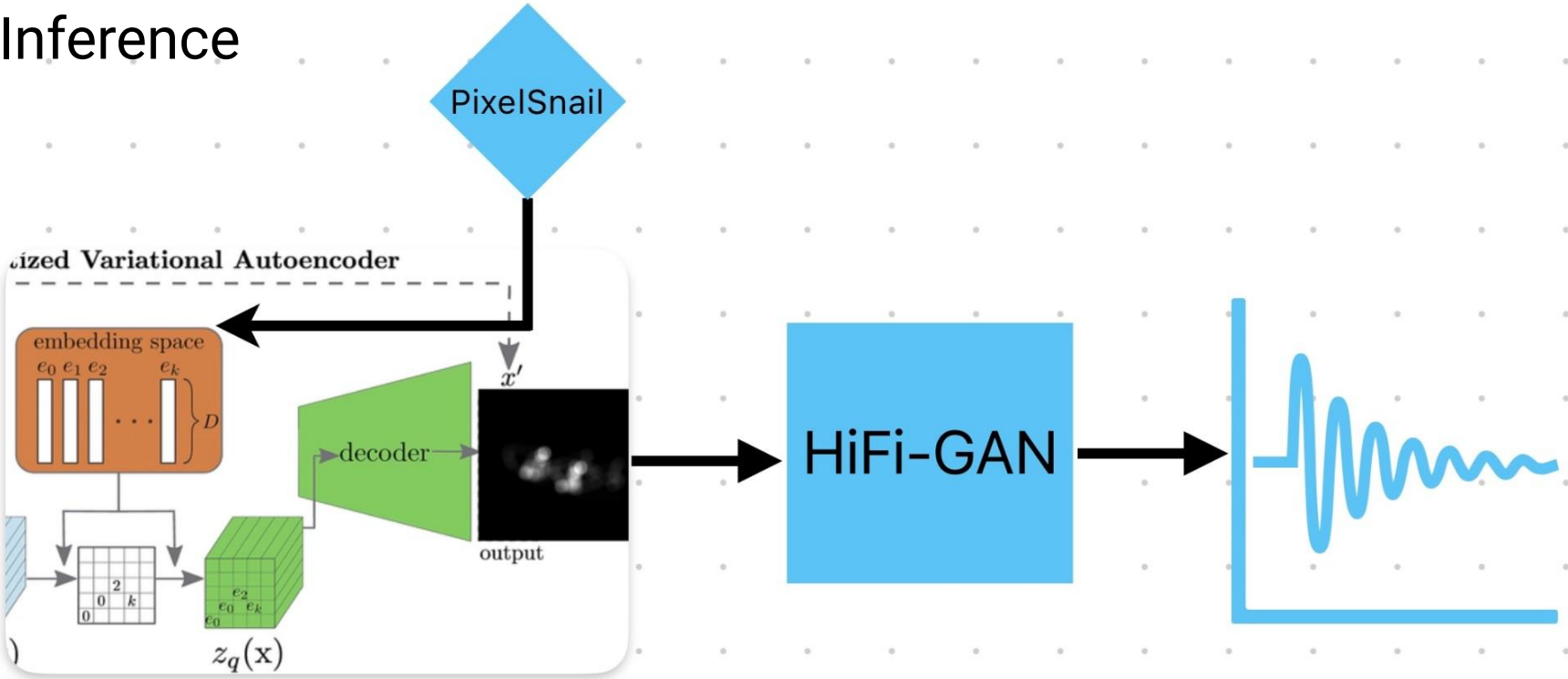
Training


PixelSnail
Vector Quantized Variational Autoencoder
embedding space
e_0 e_1 e_2 e_k
D
x
surface relief
MERT
input
encoder
$z_e(\mathrm{x})$
$z_q(\mathrm{x})$
decoder
x'
touch duration
output

Training


PixelSnail
Vector
pencoder
BACON SLICES
YELLOW MILD CHEDDAR CHEESE
WHITE HORSERADISH MILD CHEDDAR CHEESE
BURGER STUFFED WITH CHEESE
LETTUCE
encoder
decoder
$z_e(x)$
$z_q(x)$

Inference


PixelSnail
ized Variational Autoencoder
embedding space
e_0 e_1 e_2 e_k
D
x'
decoder
output
$z_q(x)$
HiFi-GAN

Project Running Modules

Training the VQ-VAE: trainvqvae.py

Extract code/embeddings from trained VQ-VAE: extract_code.py

Training PixelSnail:, train_pixelsnail.py

Synthesizing the sound file: inference.py

Baseline results

Dog bark

Gunshot

Sneeze/Cough