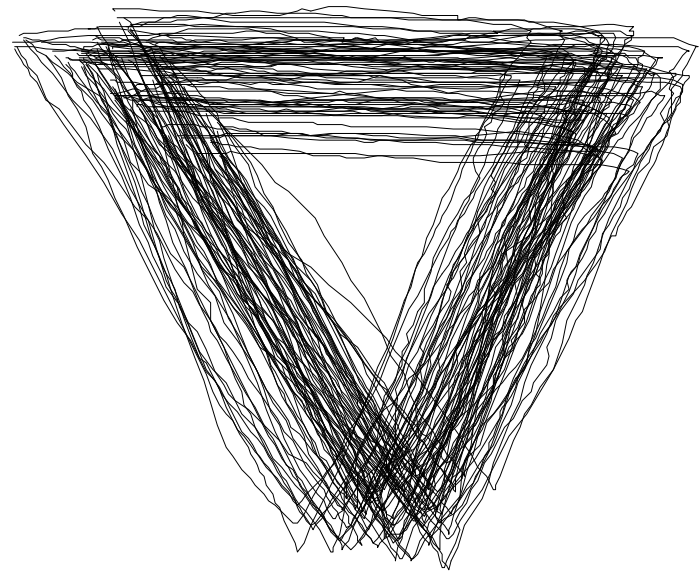# Gesture recognition: a simple example
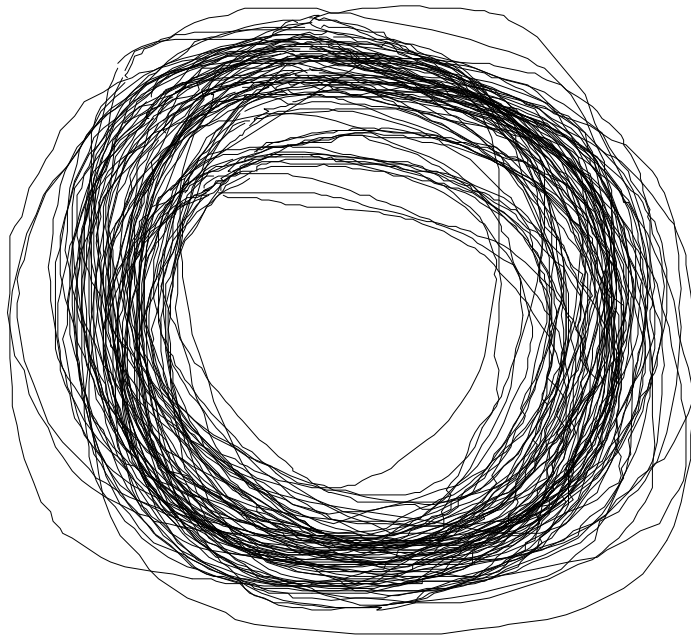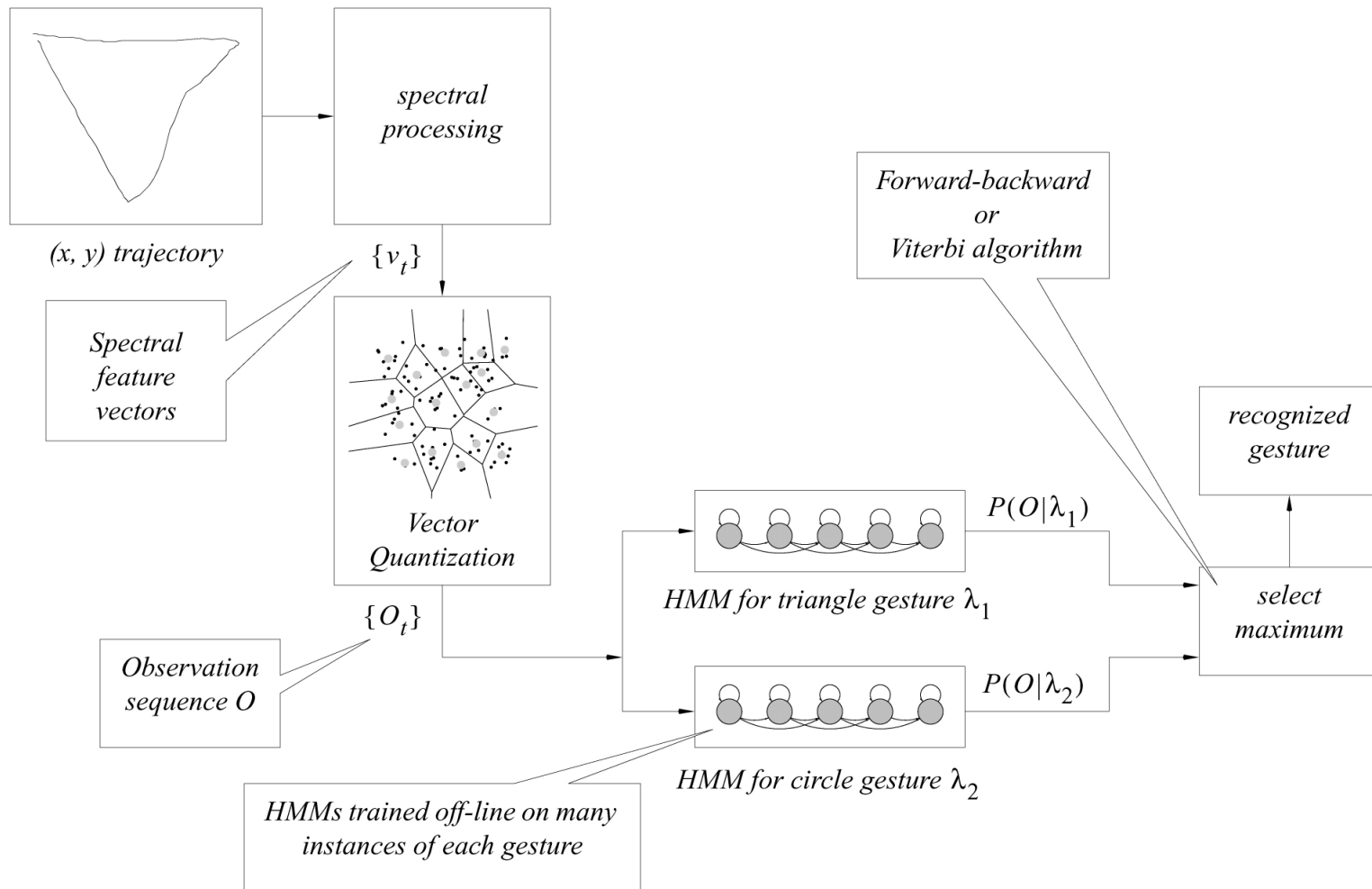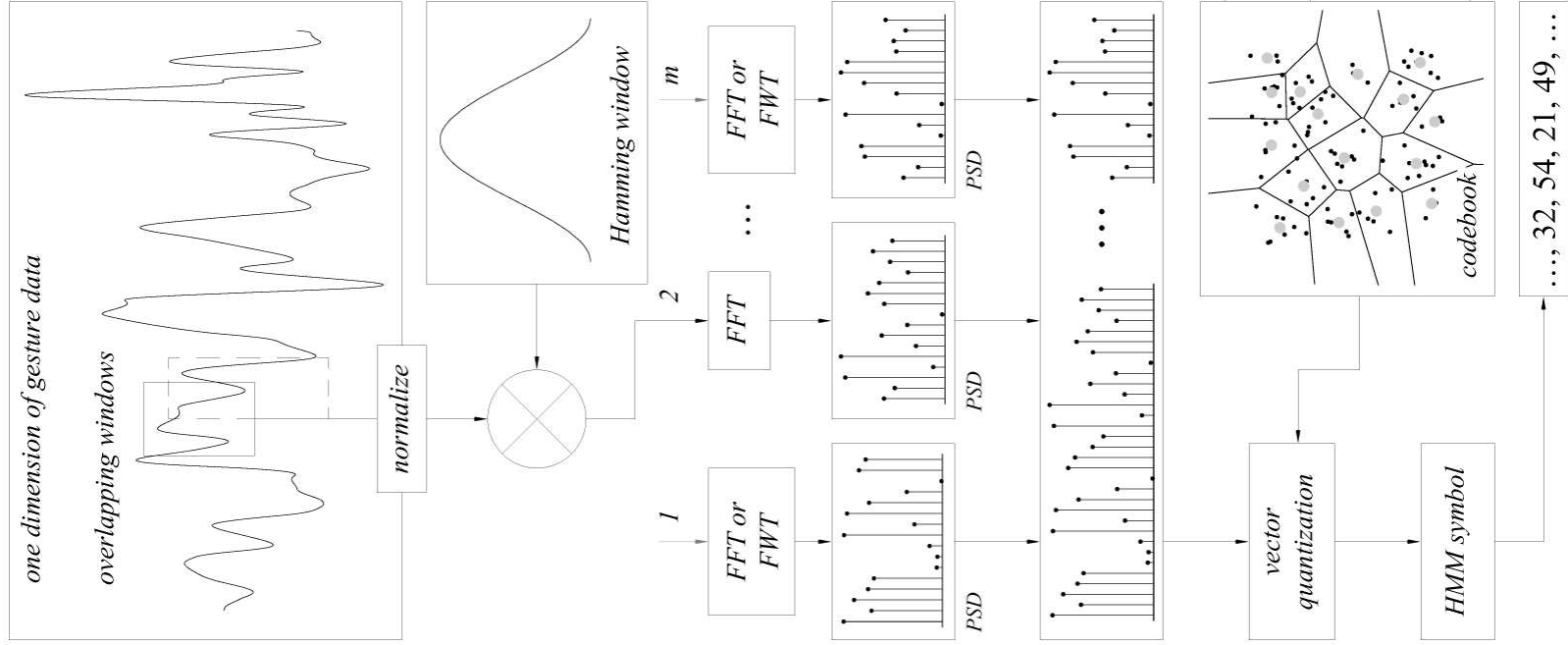
Training data: circles and triangles (80 each)

HMM-based classification system

(x, y) trajectory

$\{v_t\}$

spectral
processing

Spectral
feature
vectors

Vector
Quantization

$\{O_t\}$

Observation
sequence O

HMMs trained off-line on many
instances of each gesture

HMM for triangle gesture λ_1

$P(O|\lambda_1)$

HMM for circle gesture λ_2

$P(O|\lambda_2)$

Forward-backward
or
Viterbi algorithm

select
maximum

recognized
gesture

Signal to symbol conversion

one dimension of gesture data

overlapping windows

normalize

Hamming window

1
FFT or FWT
PSD

2
FFT
PSD

m
FFT or FWT
PSD

codebook

vector quantization

HMM symbol

...,32, 54, 21, 49, ...

Classification performance

95% (circles), 100% (triangles)