INVESTIGATING LABEL NOISE SENSITIVITY OF CONVOLUTIONAL NEURAL NETWORKS FOR FINE GRAINED AUDIO SIGNAL LABELLING

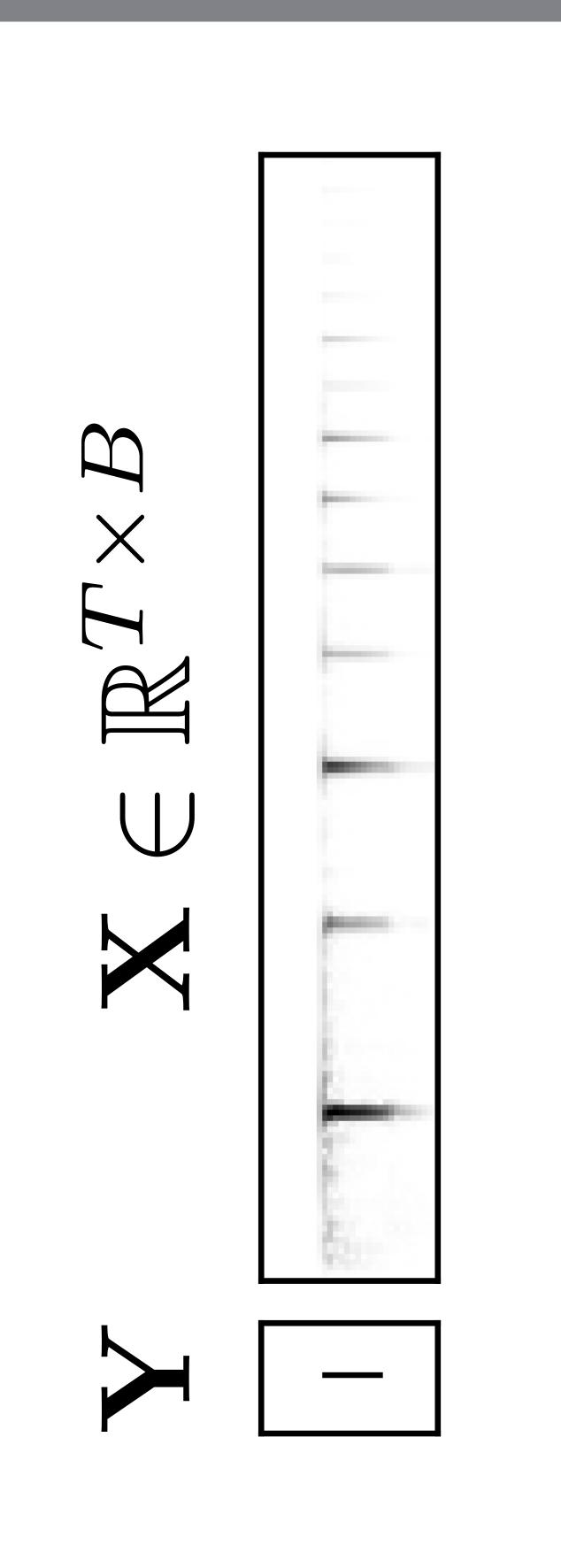
Rainer Kelz, Gerhard Widmer Department of Computational Perception

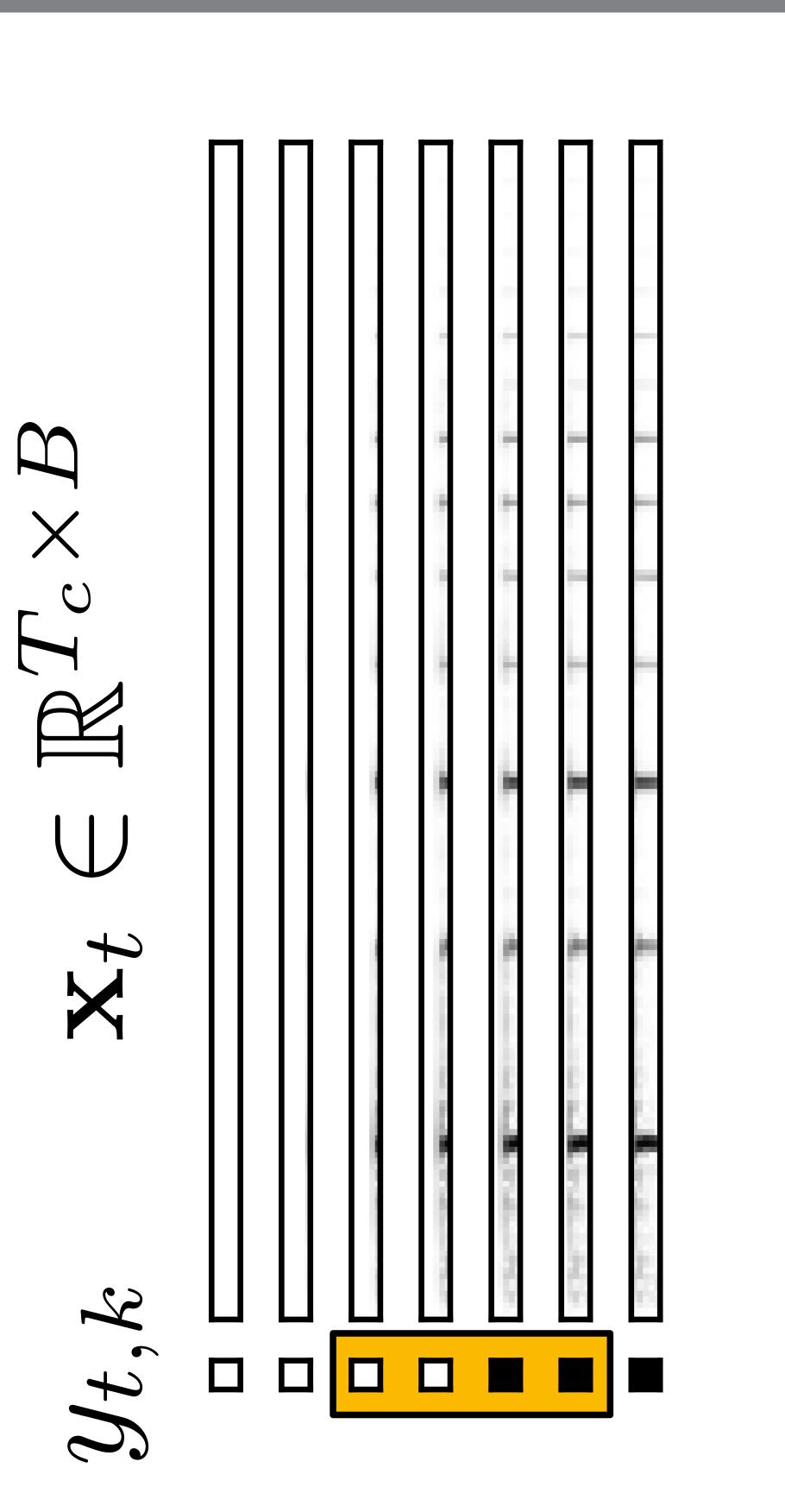


Manually annotated **time series data** contains many examples that are **similar** in **input** space but have **different labels**.

A common approach to **time series labelling** is sliding a convolutional neural network along the time dimension.

Even small amounts of systematic or random label noise have a noticeable impact.



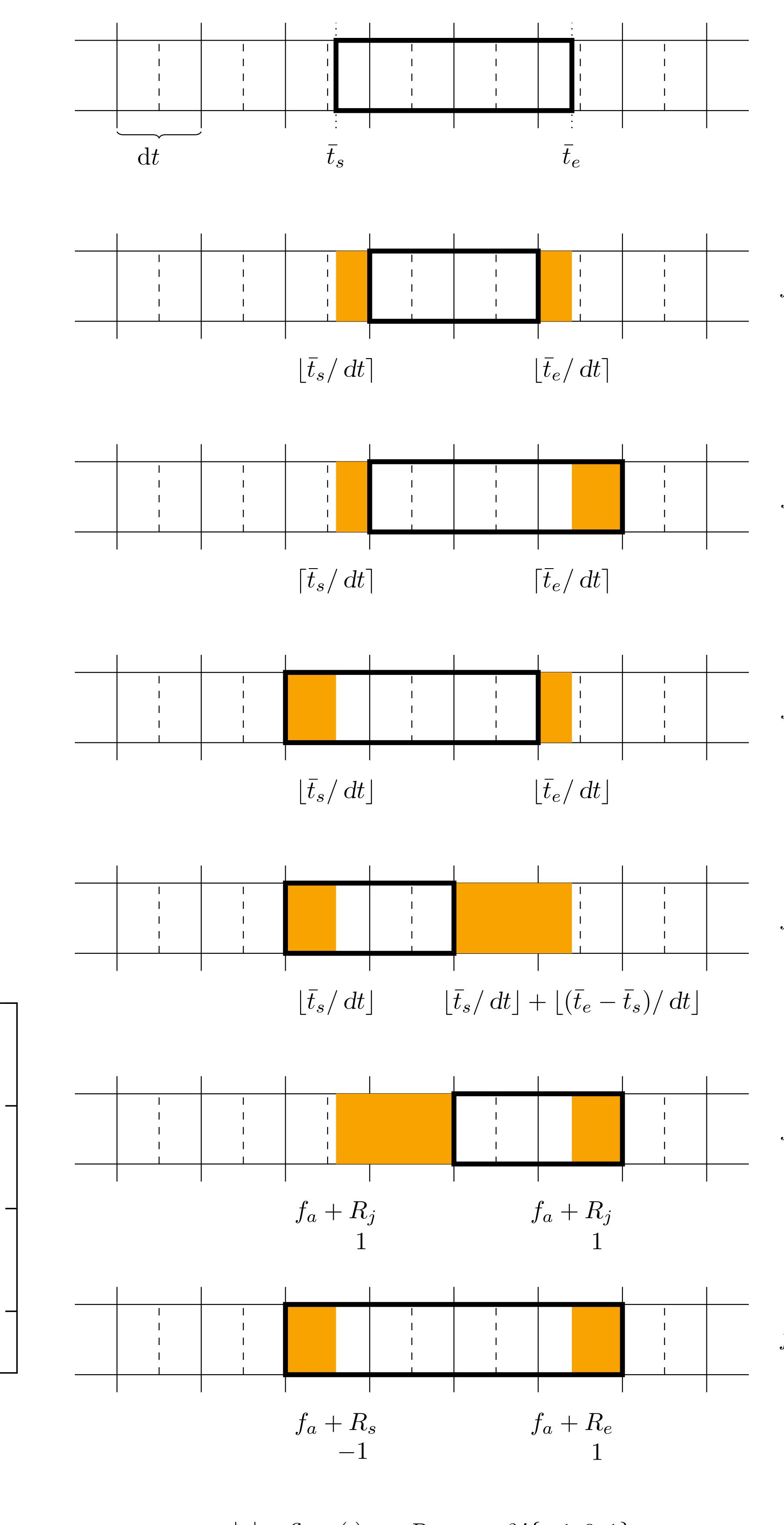


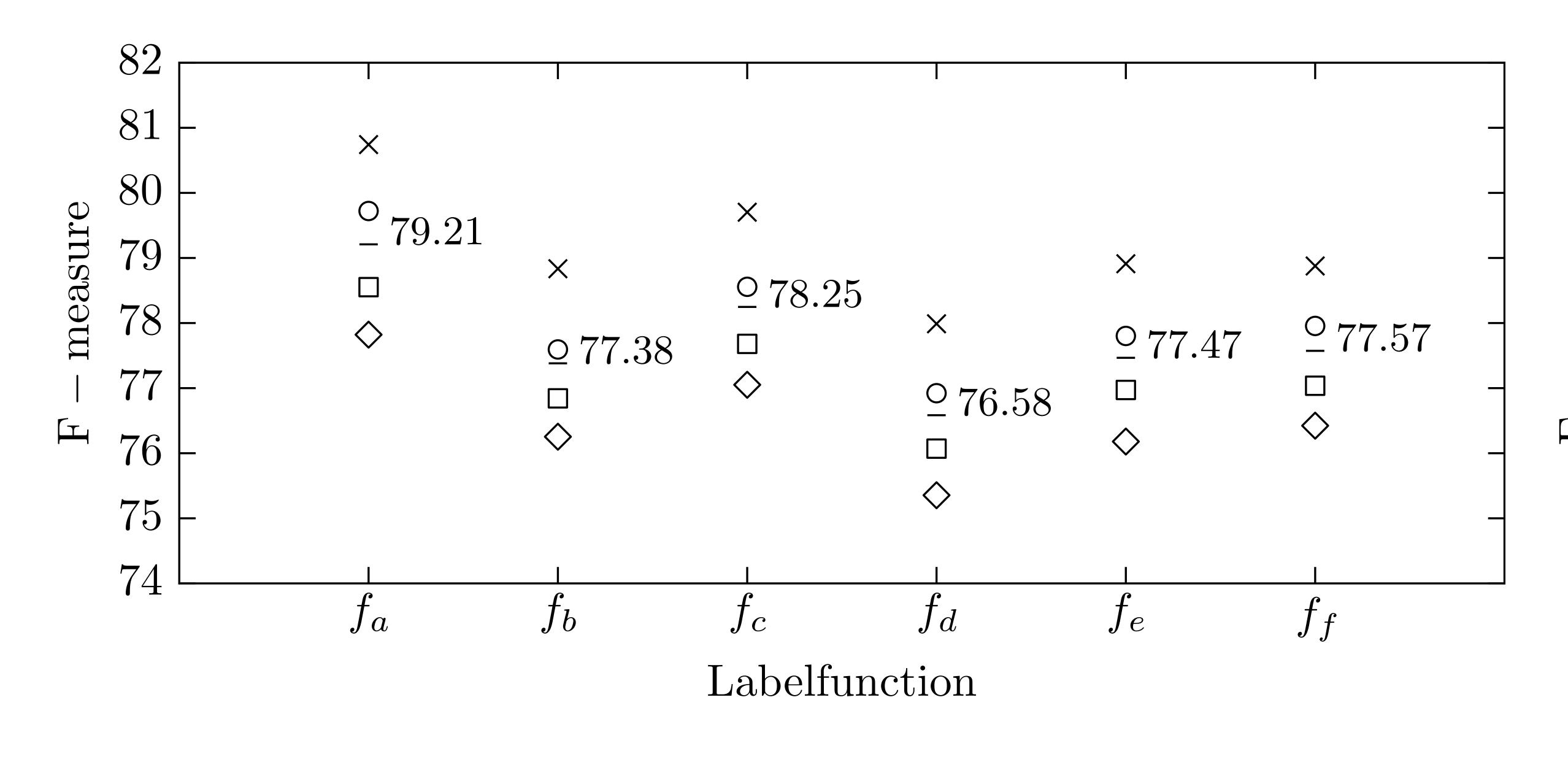
MAPS is a database of classical **piano music**, played with virtual instruments, **aligned to MIDI**.

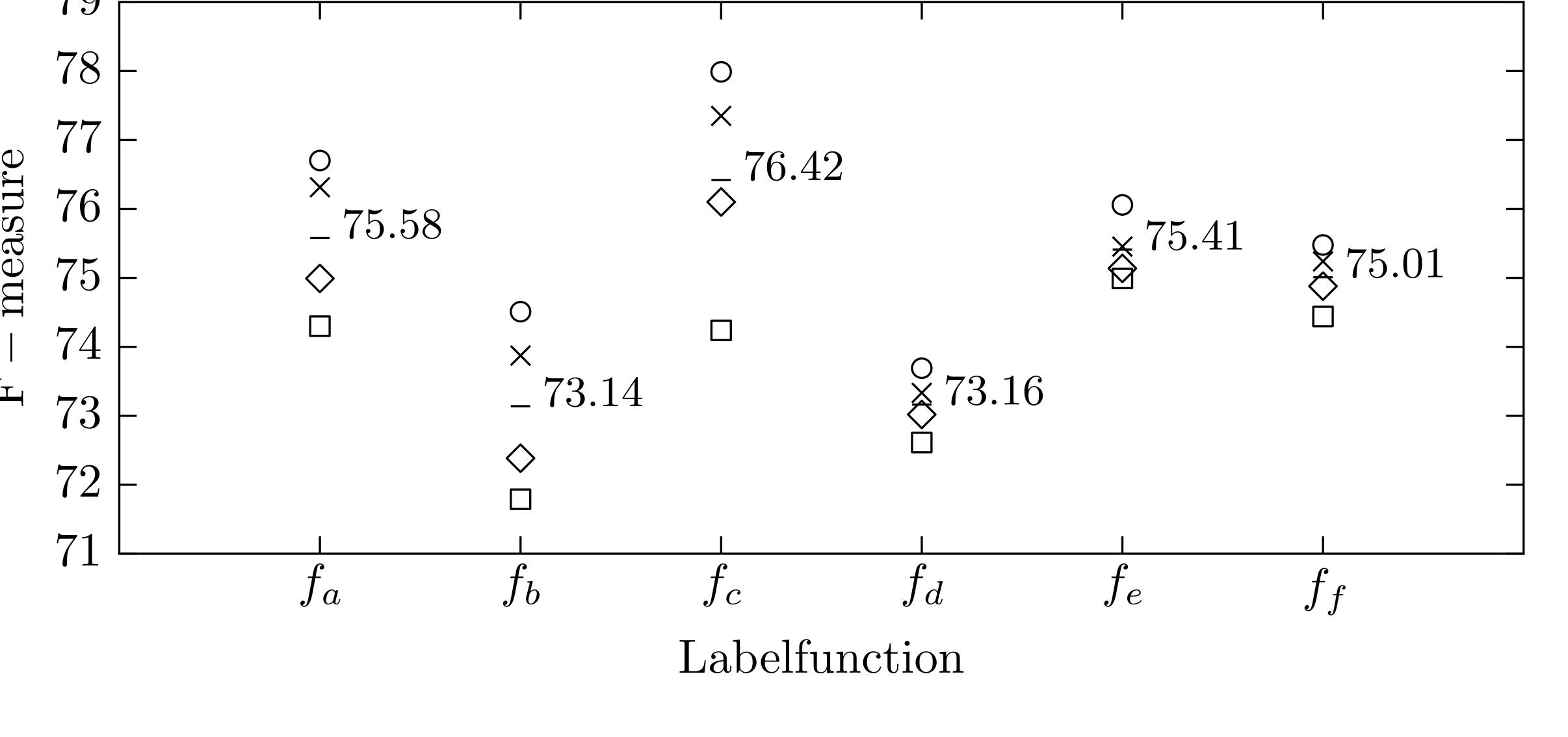
The time resolution of the annotation is high, annotations are as precise as it gets.

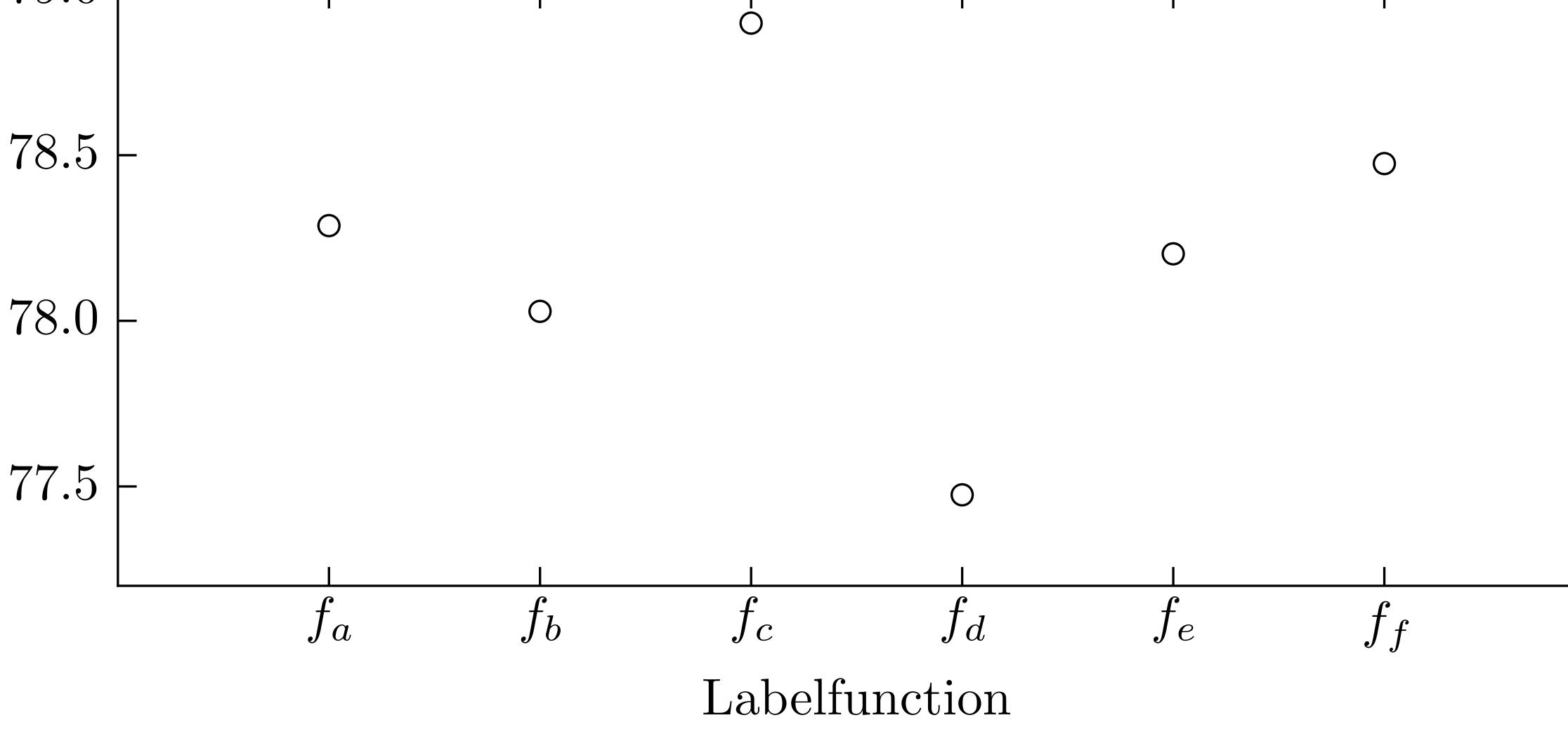
We define **6 labelling functions**, causing different amounts of **labelnoise**, due to quantization errors.

We measure their **impact** on the framewise **F-measure** with respect to a reference labelling.









Configuration I, Validation Set 31.25 [f/s]

Configuration II, Test Set 31.25 [f/s]

Configuration II, Test Set 100 [f/s]

