Optimising a pitch tracker

- **Downsampling**
- Sliding windows
- Neighbourhood search

Human pitch perception ranges between ~20Hz and 5kHz - 44.1kHz is overkill for pitch

A soprano high C is 1046Hz - much lower than Nyquist frequency at 5kHz

We can do initial pitch detection on downsampled data

Requires a range of 2-110 lags at 5kHz

Optimising a pitch tracker

- Downsampling
- **Sliding windows**
- Neighbourhood search

For a given lag, say 100, when we move along 1 sample then 98 of the mul-adds are the same as for the previous position

Because we only care about the sum (for E and for H) we can remove the oldest value and add one new value

Reduces $O(N^2)$ to $O(N)$

Known as the “sliding window” algorithm