

# Raise your skills, then raise your voice

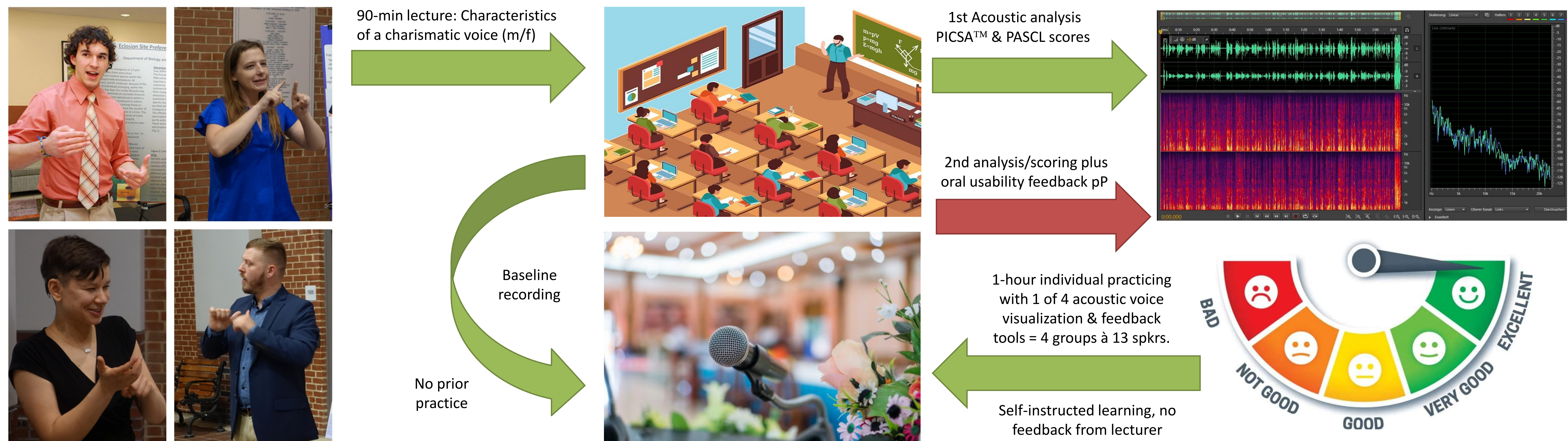
## Comparing speech-melody visualization tools for acoustic leadership training

Oliver Niebuhr & Jana Neitsch

- When it comes to persuading others through oral presentations or public speeches in general, the voice is one of our key “instruments”
  - Oldest means of acoustic communication
  - Strong and fairly direct link between sound and emotional reactions and decisions of listeners → able to circumvent the neo-cortical “thinking” and “reflecting” parts of the human brain

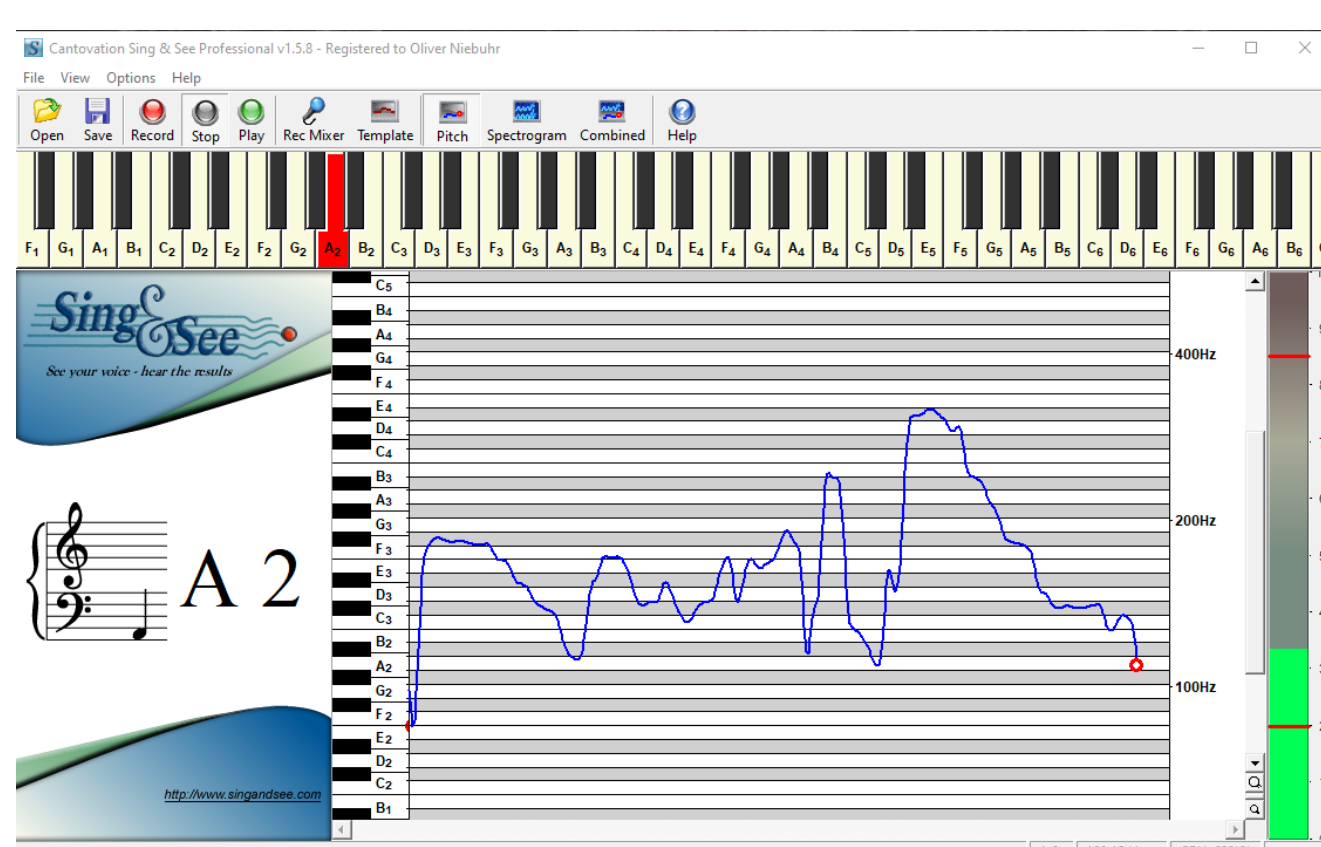
- SDU leads an international network of researchers that analyses the acoustic fingerprint of a persuasive “charismatic” voice for different cultures/languages as well as for different purposes and, of course, for male and female speakers.
- Successfully growing spin-out company has been established → Allgoodspeakers ApS (German branch: Sapphire Solutions)

- 5 years and several hundred speakers and listeners later, we have arrived at a profound understanding of what a charismatic voice is...
  - And we can measure and quantify a speaker’s charismatic voice by means of PICSA™ & PACAL ...
- What how can we most effectively support the training of a more charismatic voice and increase a speaker’s impact in presentations?



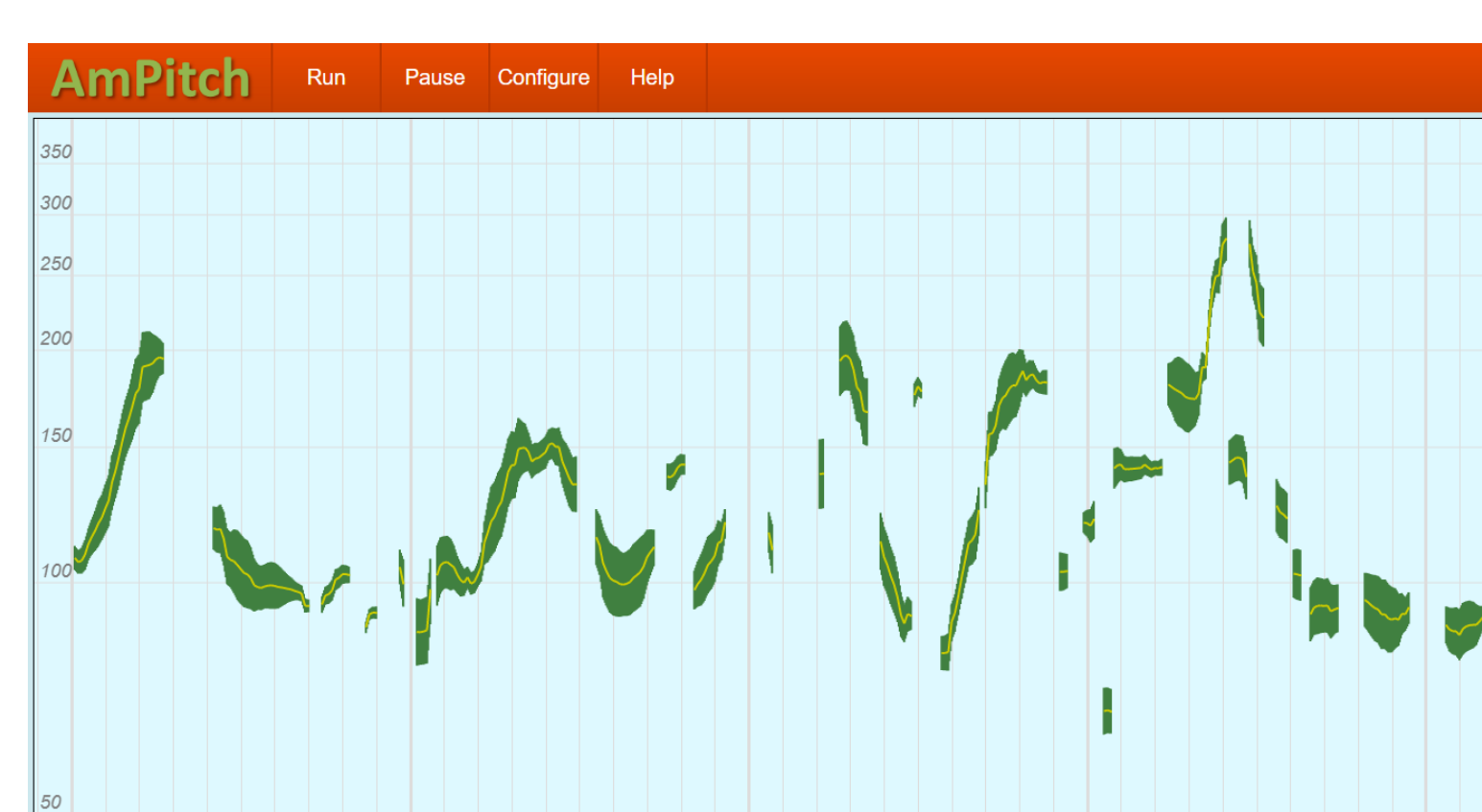
- 52 first-semester BSc students of Electrical Engineering at CIE/MCI on SDU campus Sonderborg (split up into 4 groups à 13 speakers)
- All gave an oral presentation of about 3-5 minutes, L2 English
- 19 females, 33 males; 19-22 years old

- Acoustic analysis of presentation performance
  - Pitch range (semitones), tempo (syll/s), duration of interpausal speech units (s), “sentence” final pitch level (st), voice energy (dB)
  - Quantitative assessment of presentation performance (PASCAL/7)



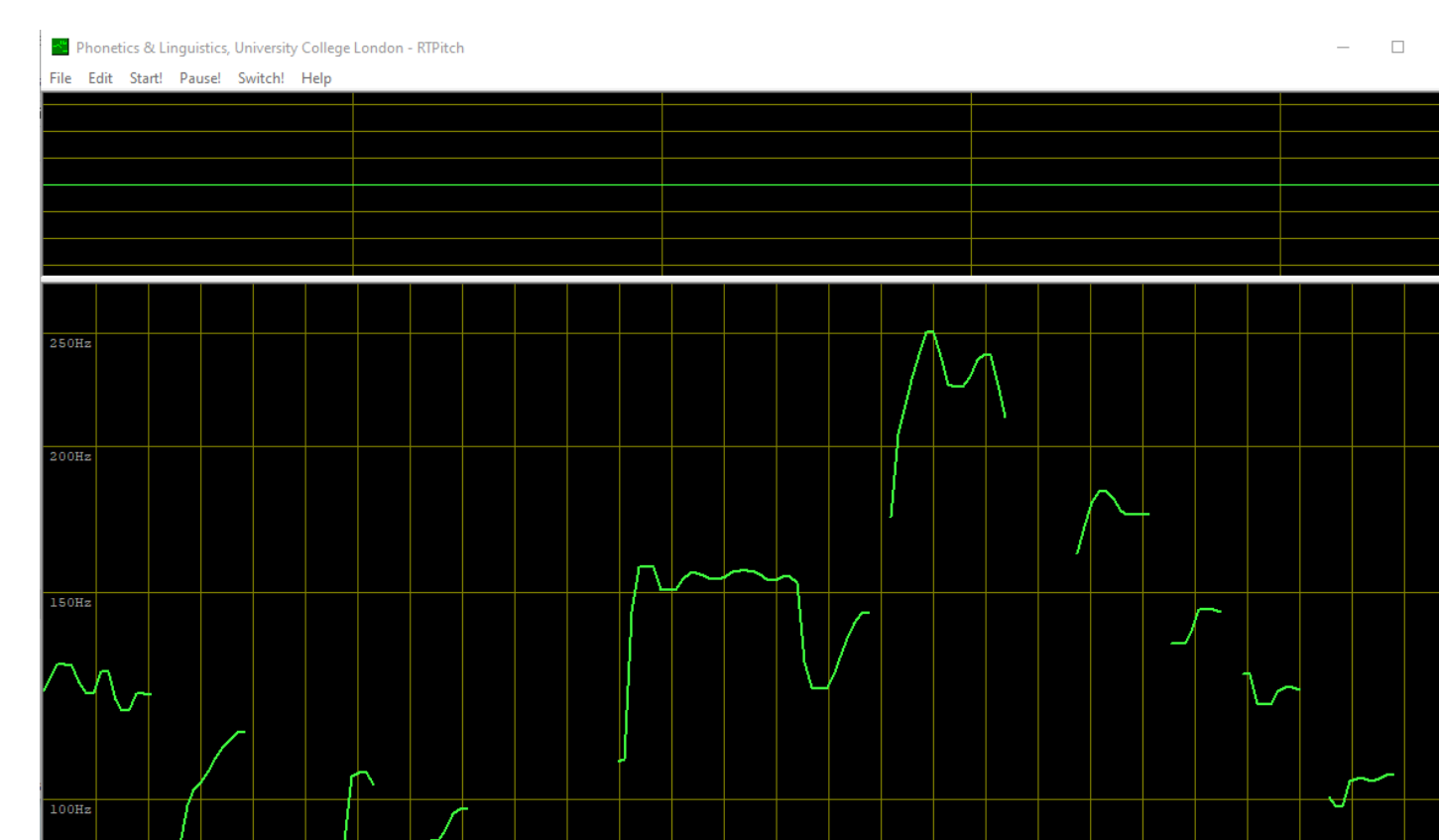
### See & Sing Professional 1.5.8

- pitch tracker, cont. line
- musical notes & intervals
- sep. voice-energy meter



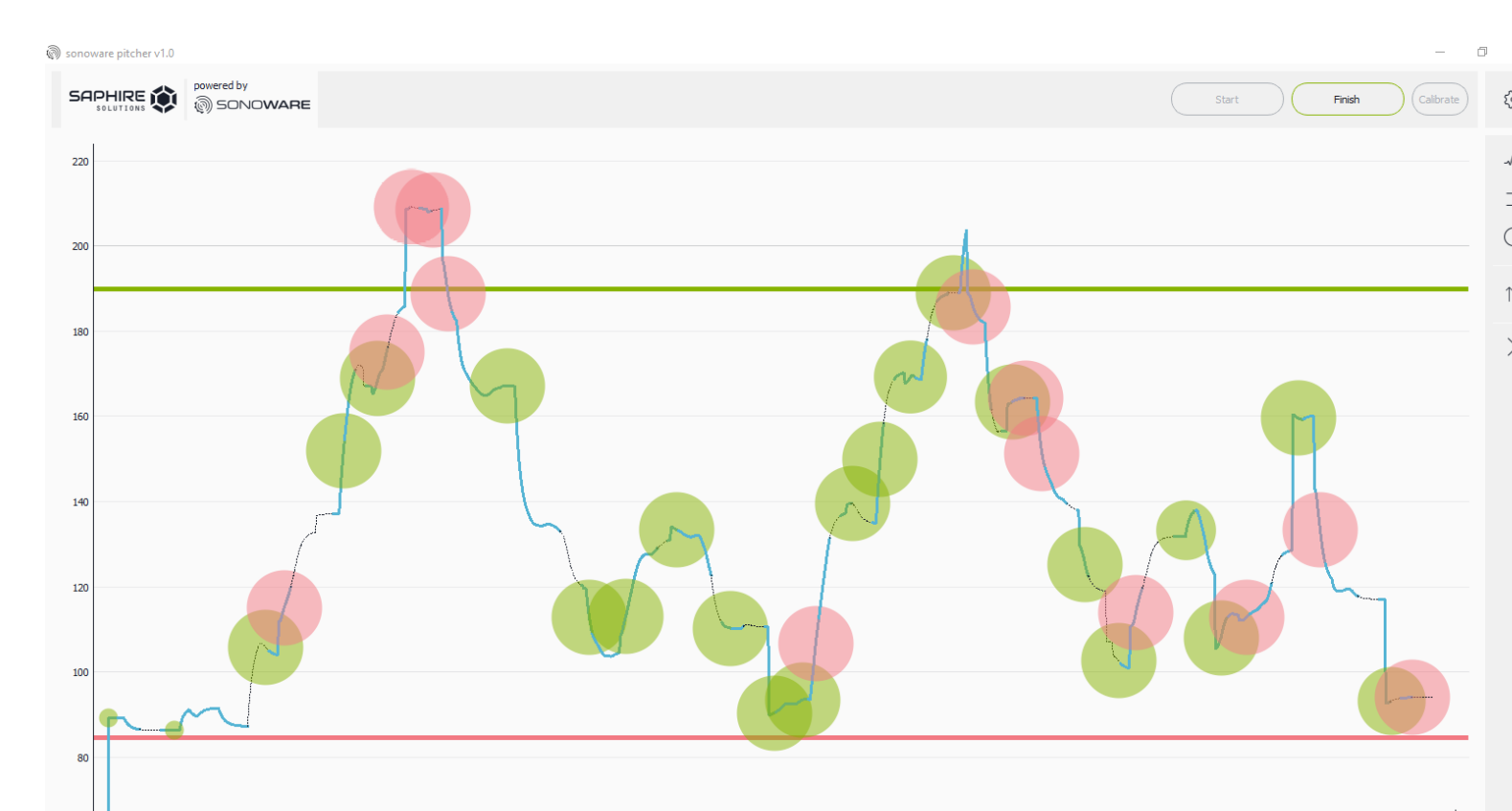
### AmPitch 1.2

- pitch tracker, voice-only line
- fixed time window function
- voice energy = thickness



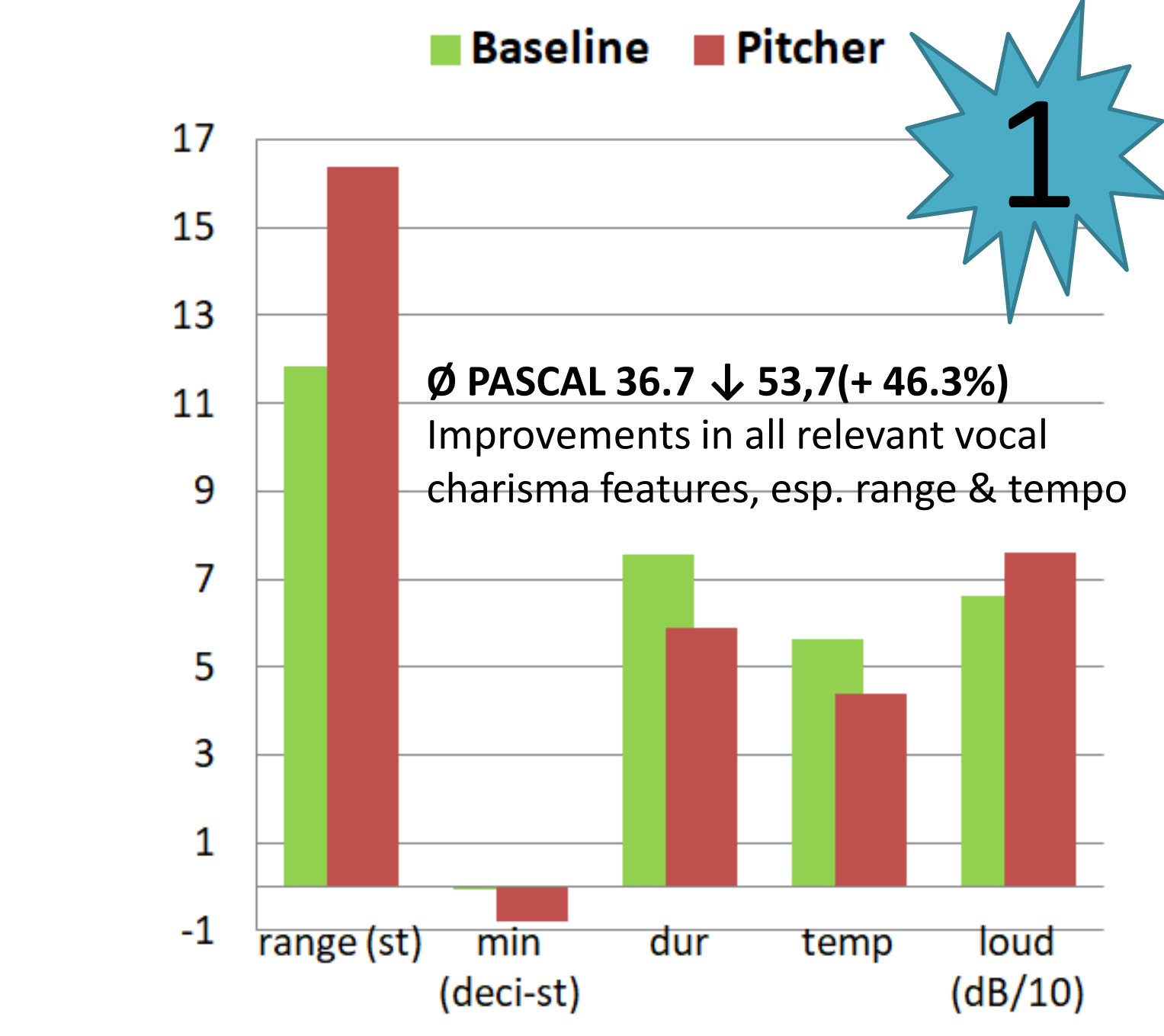
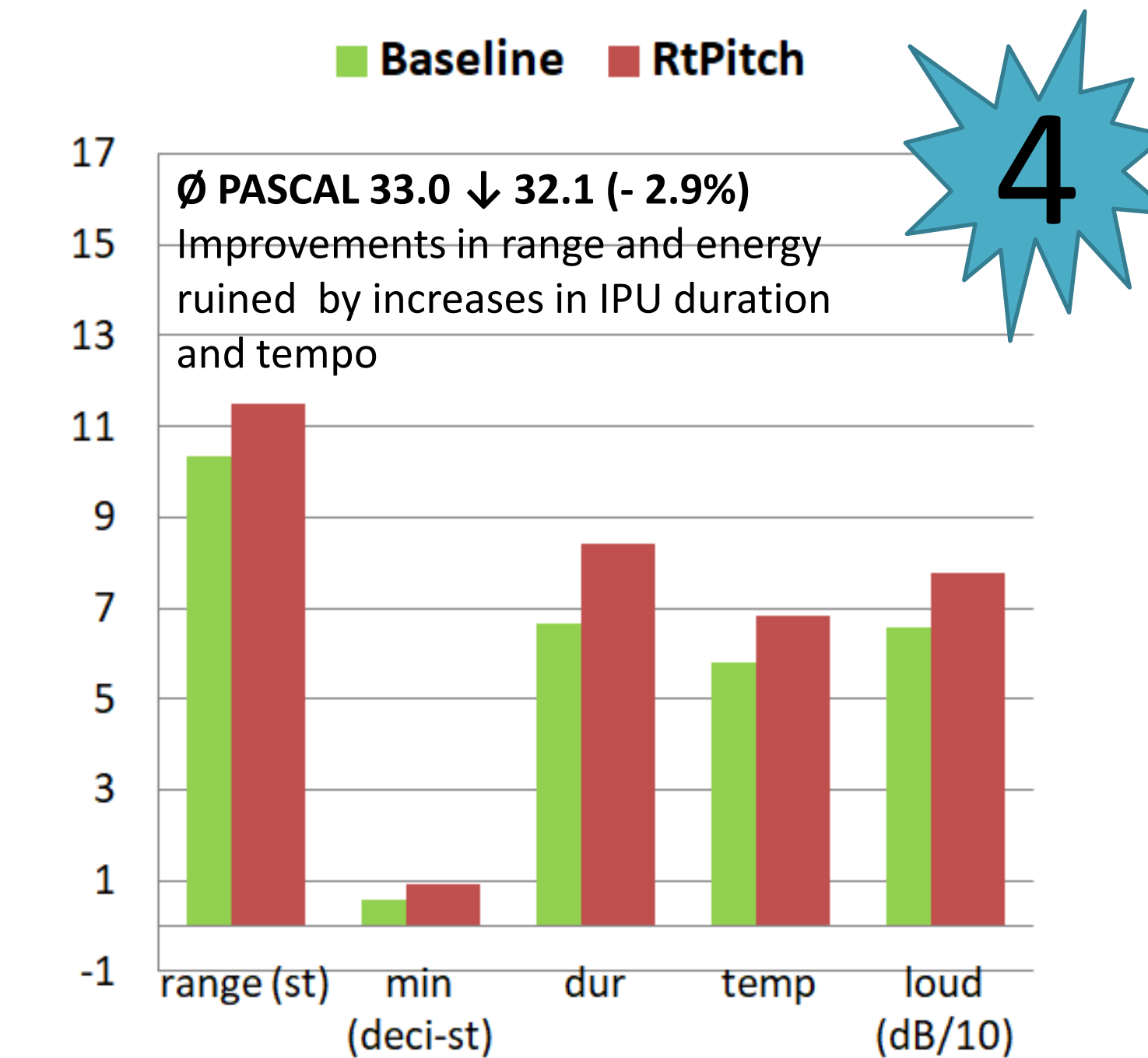
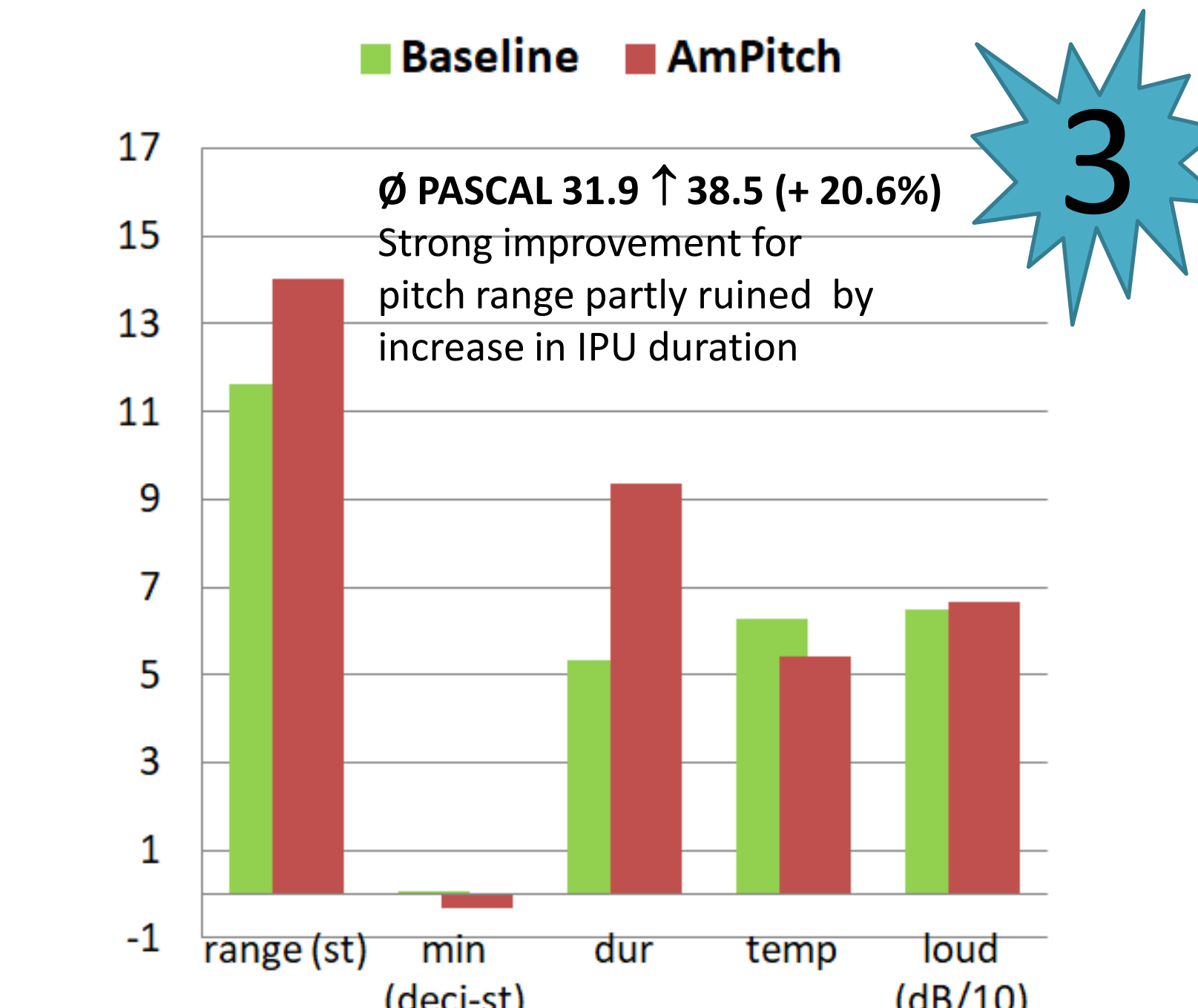
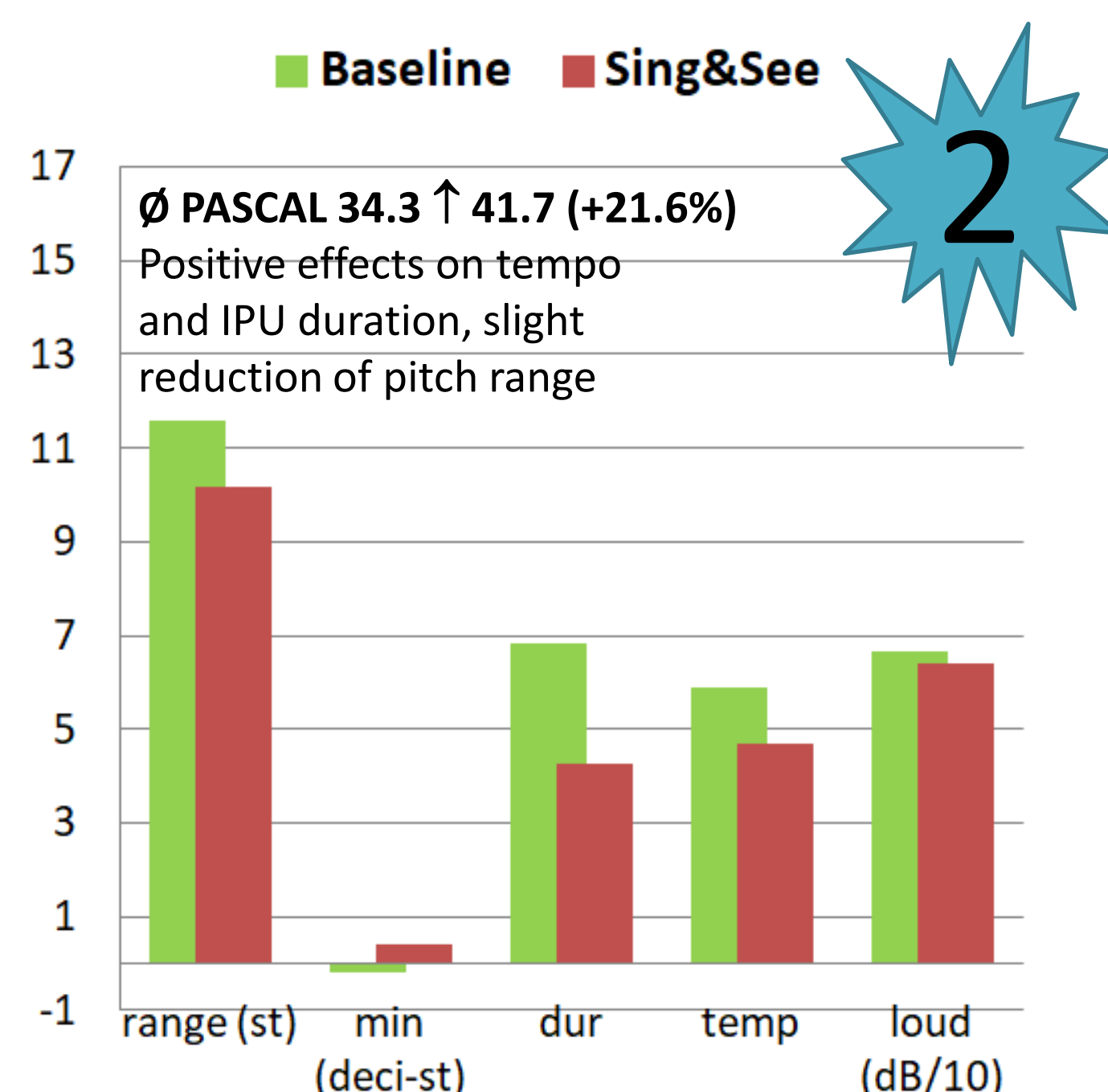
### RTPitch 1.3a

- pitch tracker, voice-only line
- hor. scrolling only
- voice energy = waveform (top)



### SDU-developed “Pitcher” 1.0

- color-coded vis. & assessment
- pitch range, tempo, IPU dur., final pitch, voice energy



- All groups start statistically at eye level, i.e. with the same vocal charisma skills in terms of PASCAL scores
- The 4 different acoustic visualization & feedback tools do indeed significantly effect vocal charisma skills – already after 1 h of training
  - The SDU-developed Pitcher is the clear winner, and results in a general improvement....
- ... followed by Sing&See (improves primarily temporal features) and AmPitch (improves primarily pitch features)

Careful: some tools can even make you worse! In particular, avoid tools with horizontal scrolling of pitch tracks; surprise: waveforms work!