Individualising Head-Related Transfer Functions with Principal Components Analysis and Simulated Annealing based on localization errors in 3D space

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- Binaural audio
- HRTFs as a model
- History
- Current importance

Individualising Head-Related Transfer Functions with Principal Components Analysis and Simulated Annealing based on localization errors in 3D space

- Measurement of HRTFs
- Using non-individualised HRTFs
- Existing individualisation methods/models
- Why is continuing work into this important?

Individualising Head-Related Transfer Functions with Principal Components Analysis and Simulated Annealing based on localization errors in 3D space

- UX is the problem
- Proposed solution
- Why this?
- Why now?

Individualising Head-Related Transfer Functions with Principal Components Analysis and Simulated Annealing based on localization errors in 3D space

- What is PCA?
- PCA on HRTF data
- PCA > other models

Individualising Head-Related Transfer Functions with Principal Components Analysis and Simulated Annealing based on localization errors in 3D space

- What is Simulated Annealing?
- Why choose SA?
- SA with PCA

Final Implementation

LOCAL

VR/AR ENVIRONMENT

Custom HRTFs

Localisation Data

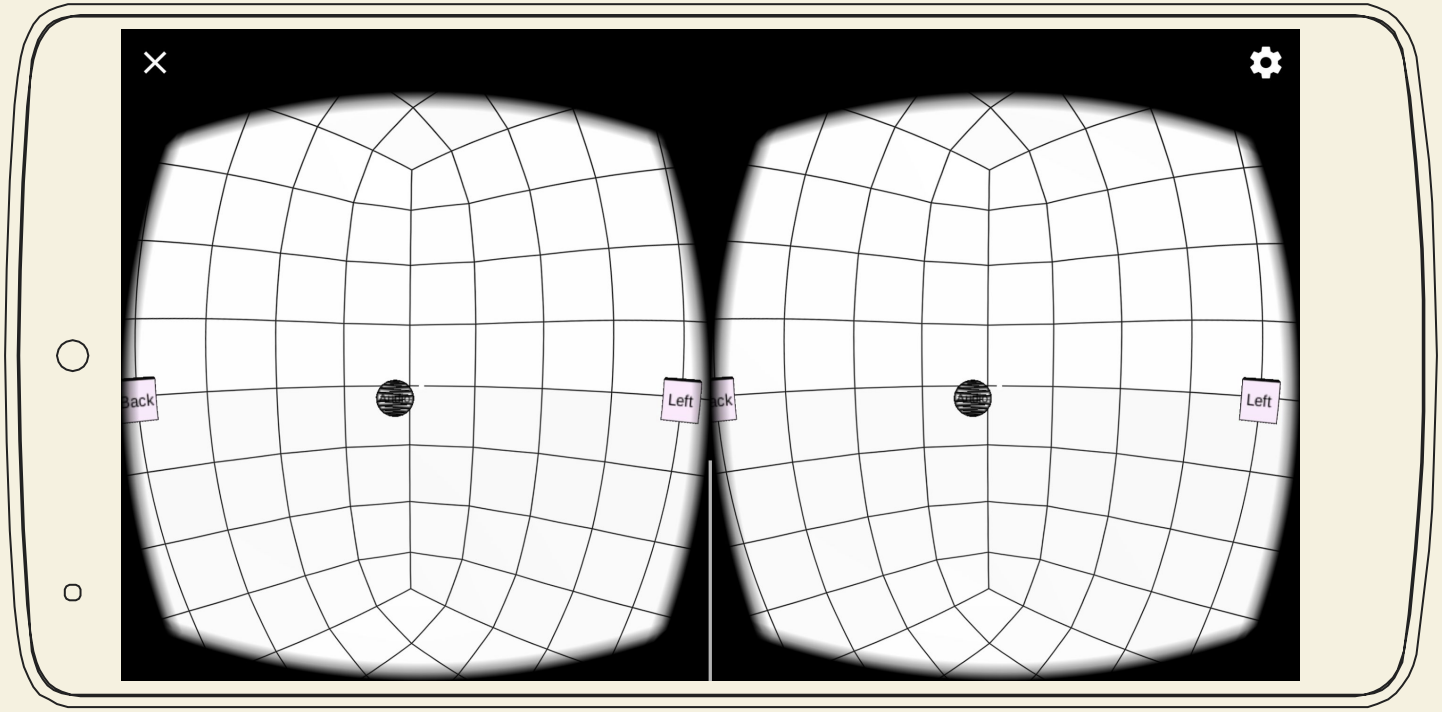
DATA STORE

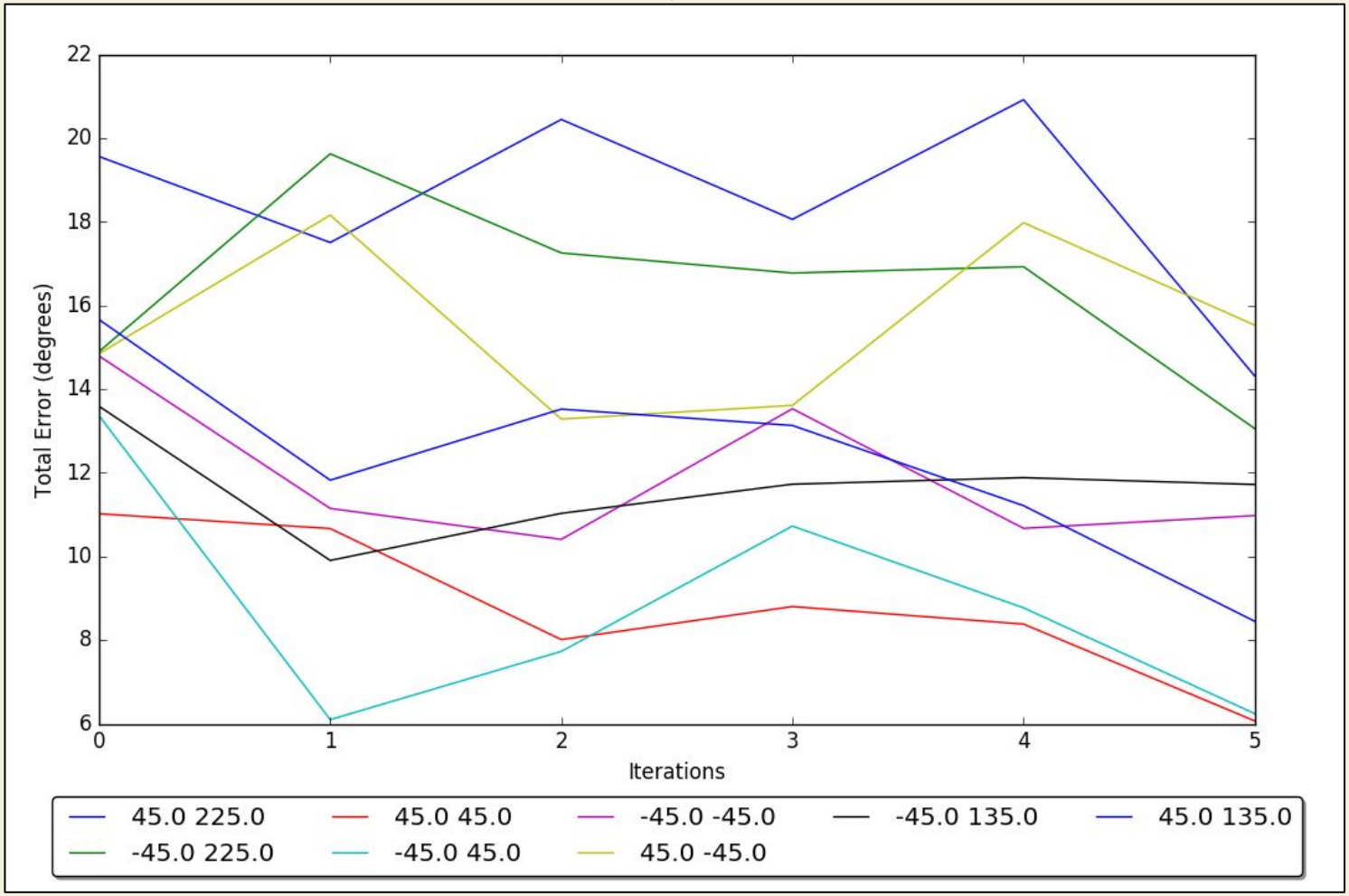
HRTF data, details of changes made

INDIVIDUALISER

REMOTE

Testing and Results


Left
Left


Total Error (degrees)
Iterations
22
20
18
16
14
12
10
8
6
0
1
2
3
4
5
45.0 225.0
45.0 45.0
-45.0 -45.0
-45.0 135.0
45.0 135.0
-45.0 225.0
-45.0 45.0
45.0 -45.0

To The Future!

- Localisation errors vs. PCW modification
- Get hype for big data
- Less input data, better output
- Inevitably... Machine learning

Any

Questions?