

SurrRoom 1.0 Dataset: Spatial Room Capture with Controlled Acoustic and Optical Measurements

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MOTIVATION

To develop methods for modeling or parameterising room acoustics for VR/AR, it is necessary to test reproduction of distance-related effects requiring both Ambisonic and binaural room impulse responses. These should be captured across rooms using a consistent measurement procedure. Previous datasets did not combine all of these attributes.

METHOD

- 7 rooms in 8 configurations.
- RT60s ranged from ~0.2 s to 1.0 s.
- Measurements from 1–3 m SRD in 0.5 m incr.
 - Audio: 10-ARIRs & BRIRs.
 - Optical: LiDAR scans & stereo 3D pictures.
- Analysis: RT60 T20 measurements and metrics described by ISO 3382-1:2009.

ANALYSIS

Room	V (m ³)	RT60 T20 (s)	EDT (s)	C50 (dB)	Bass Ratio
Listening Room	100	0.24	0.19	18.5	1.3
Pop Recording Studio	230	0.27	0.22	15.7	1.3
Living Room Lab	55	0.27	0.26	14.7	1.9
Large Lecture Theatre	1020	0.56	0.17	15.1	1.6
Large Classroom	330	0.70	0.21	11.4	1.8
Classical Recording Studio (CC)	1600	0.78	0.15	11.6	1.1
Small Lecture Theatre	470	0.82	0.43	9.0	1.1
Classical Recording Studio (CO)	1600	1.00	0.71	9.3	1.1

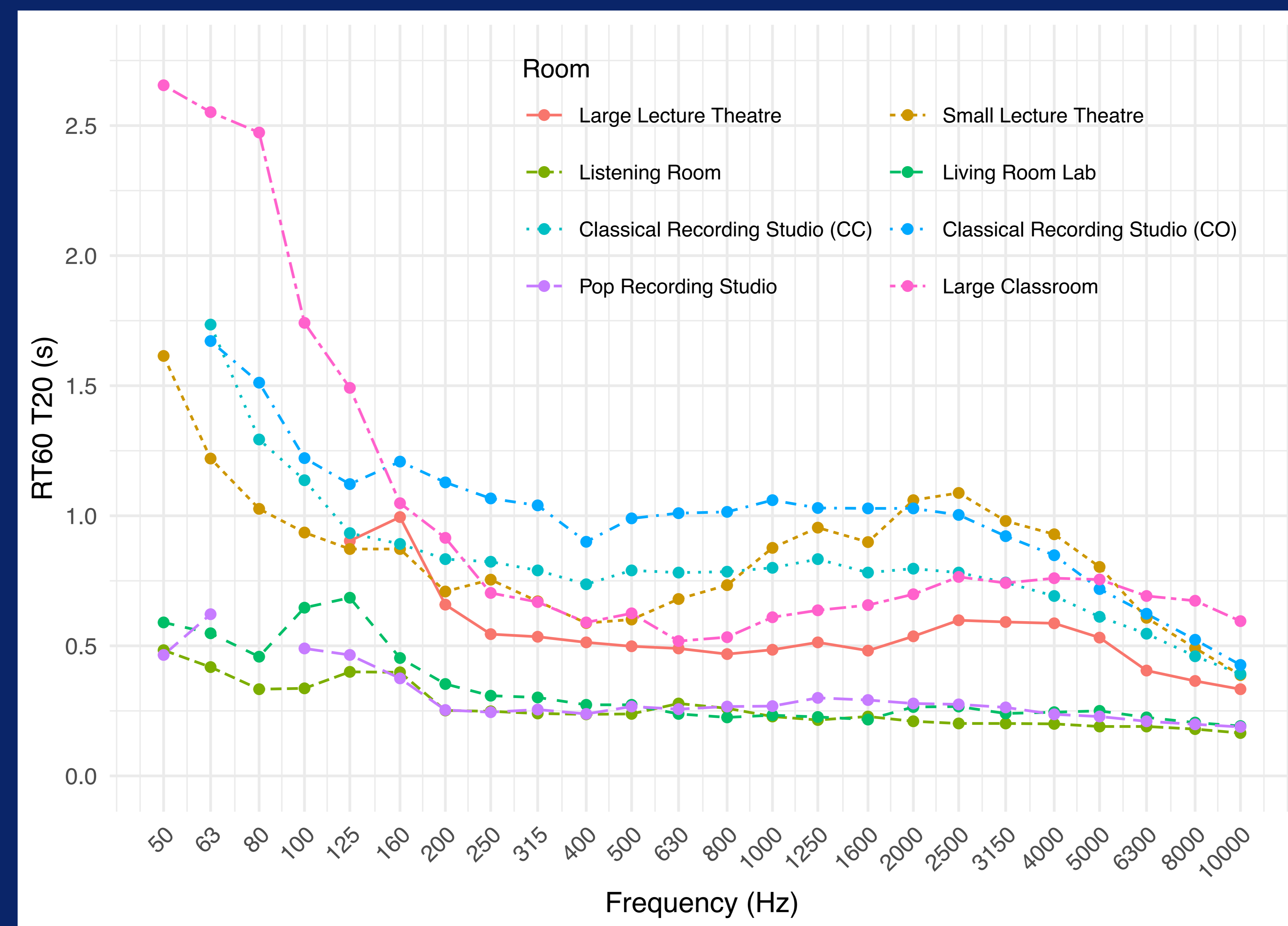
APPLICATIONS

- Parametric reverberation systems based on Ambisonic input.
- Approaches to estimation of room acoustical parameters from optical input.
- Testing acoustical simulations.

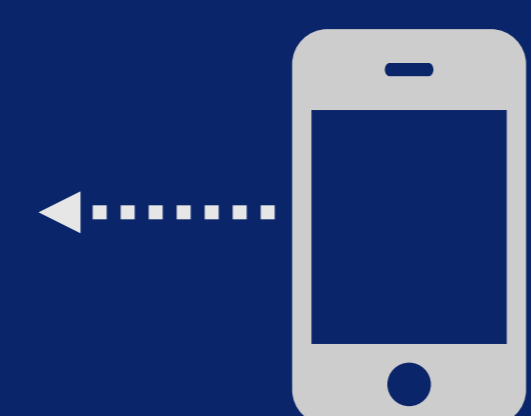
FUTURE WORK

Development of an automated system which would facilitate significantly denser capture of controlled acoustic and optical measurements.

New impulse response dataset with BRIRs, ARIRs, LiDAR scans & 3D images, captured consistently with varying distances, across 7 rooms.



Reverb time (RT60 T20) for each room in 3rd-Octave bands



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