

Stairwell

The stairwell is located on the New Mexico State University campus in the Klipsch School of Electrical and Computer Engineering on the second floor. Figs. 1(a) and (b) show the stairwell from two view points.



(a)



(b)

Figure 1: Stairwell viewed from (a) upstairs and (b) downstairs.

Recording Conditions

Noisy

Strong reverberation

Recording Equipment

(1) Dell Dimension XPS R400 PC (Pentium II @ 400MHz, 128MB RAM, 40GB disk, Windows 98)
(www.dell.com)

(1) Echo Layla 20-bit multitrack recording system (www.echoaudio.com)

- (2) Shure omni-directional microphone Model VP64A2 (www.shure.com)
- (2) Shure miniature dynamic lavalier (clip-on) microphone Model SM11 (www.shure.com)
- (4) Applied Research And Technology (ART) Professional processor series tube preamp (www.artroch.com)
- (4) Balanced (XLR) microphone cables from microphones to preamps
- (2) Balanced (XLR) microphone cables from preamps to Layla

Recording/Editing Software

Syntrillium Software Corporation's Cool Edit Pro v1.2 for recording and (www.syntrillium.com)
 Aurora Plug-in vx.x for Cool Edit pro for impulse response measurements (aurora.ramsete.com/aurora/)
 Mathwork's MATLAB v5.2 for editing signals to desired lengths (www.mathworks.com)
 SoundApp PPC v2.7.3 for sample rate conversion to 16kHz from 48kHz (www-cs-students.stanford.edu/~franke/SoundApp/)

Recording Setup

Fig. 2 shows the schematic of recording setup with dimensions. Two omni-directional microphones are placed on the opposite corners in the stair well. Two speakers each wearing a Lavalier stands in the middle of the stairwell 2' apart and facing each other. A series of background noises (door slamming, whispering, footsteps, etc...) are included in the recordings. A three-minute recording sampled at 48kHz, 16 bit resolution was done for each of the following scenarios:

- Recording 1* – Male speaker and male speaker with background noise
- Recording 2* – Male speaker and female speaker with background noise
- Background Noise* – Background noise only

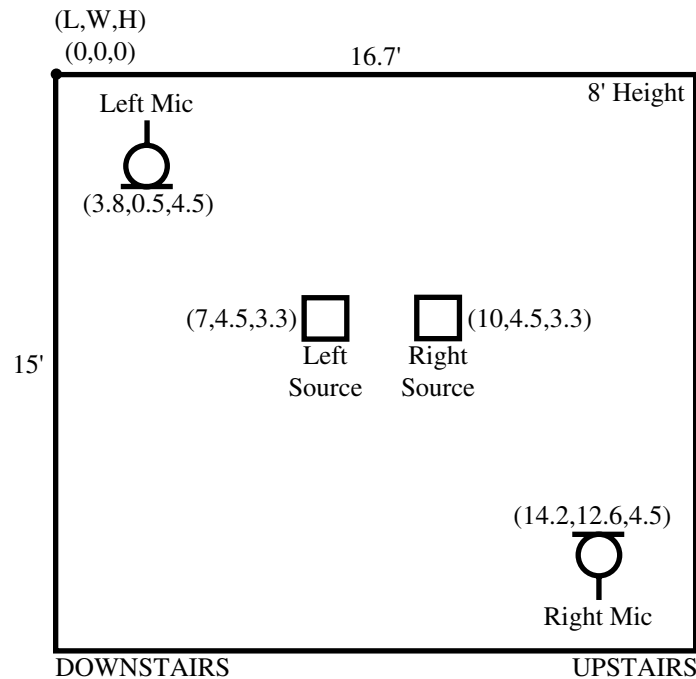


Figure 2: Schematic of recording setup.

Available Files

The file naming scheme is as follows.

aaaaaaaa_bc_dd_eee_fff.wav

- a = Acoustic environment
- b = (L)eft or (R)ight microphone

c = (C)lip-on or (O)mnidirectional Microphone
d = (M)ale(M)ale, (M)ale(F)emale, (F)emale(F)emale, (B)ackground(N)oise
e = fs, (16k) or (48k)
f = duration, (15) or (180) seconds

Files available for this recording environment are listed below.

Recording 1

Stairwell_LC_MM_16k_15.wav
Stairwell_LC_MM_16k_180.wav
Stairwell_LC_MM_48k_15.wav
Stairwell_LC_MM_48k_180.wav
Stairwell_LO_MM_16k_15.wav
Stairwell_LO_MM_16k_180.wav
Stairwell_LO_MM_48k_15.wav
Stairwell_LO_MM_48k_180.wav
Stairwell_RC_MM_16k_15.wav
Stairwell_RC_MM_16k_180.wav
Stairwell_RC_MM_48k_15.wav
Stairwell_RC_MM_48k_180.wav
Stairwell_RO_MM_16k_15.wav
Stairwell_RO_MM_16k_180.wav
Stairwell_RO_MM_48k_15.wav
Stairwell_RO_MM_48k_180.wav

Recording 2

Stairwell_LC_MF_16k_15.wav
Stairwell_LC_MF_16k_180.wav
Stairwell_LC_MF_48k_15.wav
Stairwell_LC_MF_48k_180.wav
Stairwell_LO_MF_16k_15.wav
Stairwell_LO_MF_16k_180.wav
Stairwell_LO_MF_48k_15.wav
Stairwell_LO_MF_48k_180.wav
Stairwell_RC_MF_16k_15.wav
Stairwell_RC_MF_16k_180.wav
Stairwell_RC_MF_48k_15.wav
Stairwell_RC_MF_48k_180.wav
Stairwell_RO_MF_16k_15.wav
Stairwell_RO_MF_16k_180.wav
Stairwell_RO_MF_48k_15.wav
Stairwell_RO_MF_48k_180.wav

Background Noise

Stairwell_LO_BN_16k_15.wav
Stairwell_LO_BN_16k_180.wav
Stairwell_LO_BN_48k_15.wav
Stairwell_LO_BN_48k_180.wav
Stairwell_RO_BN_16k_15.wav
Stairwell_RO_BN_16k_180.wav
Stairwell_RO_BN_48k_15.wav
Stairwell_RO_BN_48k_180.wav

Room Impulse Response Measurement

The Aurora plug-in for Cool Edit Pro utilizes a Chirp (sinusoidal sweep) stimulus in order to compute room impulse responses for the direct channels (left speaker to left microphone and right speaker to right microphone) and for the cross channels (left speaker to right microphone and right speaker to left microphone). Responses are sampled at 48kHz. Files are named `Stairwell_ImpResp_16k_ji.wav` where *ji* refers to the response from source (speaker) *i* to microphone *j*.