

Project: Real-Time Browser-Based Audio Emotion Detection Library

🎤 Client-Side Emotion Detection (Phase-2++)

Initialize

Start Detection

Initialized. Click Start Detection.

Emotion: Sad (37.8%)

Angry



Happy



Sad



Neutral



🎤 Client-Side Emotion Detection (Phase-2++)

Initialize

Start Detection

Initialized. Click Start Detection.

Emotion: Angry (78.0%)

Angry



Happy



Sad



Neutral



Project Link

<https://seneeraj.github.io/Client-Side-Audio-Emotion-Detection---Phase-2/>

2.1 Primary Goals					
No.	Criterion	Description	Target Metric	Achieved	
2.1.1	Client-Side Execution	Entire inference pipeline runs in browser	100% client-side	Achieved	
2.1.2	Real-Time Performance	Real-time emotion output	< 100 ms latency	Achieved	
2.1.3	Privacy by Design	No data leaves device	Zero network transmission	Achieved	

2.2 Non-Functional Requirements (NFR)					
No.	NFR	Description	Target Metric	Achieved	
2.2.1	Latency	Audio to prediction delay	≤ 100 ms	Achieved	
2.2.2	Model Size	TFJS model footprint	≤ 5 MB	Achieved (~15 KB)	
2.2.3	CPU Usage	Average CPU consumption	≤ 15%	Achieved	
2.2.4	Compatibility	Browser support	Chrome, Edge, Firefox	Achieved	

3.1 R1: Audio Input Handling				
	No.	Requirement	Description	Achieved
	R1.1	Mic Permission	Request microphone access	Achieved
	R1.2	Audio Capture	Web Audio API PCM frames	Achieved
	R1.3	Fault Handling	Graceful mic error handling	Achieved

3.2 R2: Real-Time Audio Processing				
	No.	Requirement	Description	Achieved
	R2.1	MFCC Extraction	13-D MFCC client-side	Achieved
	R2.2	Performance	Non-blocking inference	Achieved

3.3 R3: Core Model Inference				
	No.	Requirement	Description	Achieved
	R3.1	Inference Engine	TensorFlow.js LayersModel	Achieved
	R3.2	Async Loading	Non-blocking model load	Achieved

3.4 R4: Output Format and Interface				
	No.	Requirement	Description	Achieved
	R4.1	Output Type	Emotion probabilities	Achieved
	R4.2	Output Structure	Structured JSON scores	Achieved
	R4.3	JS Interface	Simple JS control methods	Achieved

4. Outcome and Acceptance Criteria				
	Category	Criterion	Target	Achieved
	FAC-1	Live Detection	Continuous output	Achieved
	FAC-2	Zero Network Traffic	No outbound calls	Achieved
	FAC-3	Model Load Time	< 5 seconds	Achieved
	PAC-1	Latency	≤ 100 ms	Achieved
	PAC-2	Size Constraint	≤ 5 MB	Achieved
	TAC-1	Client-Side Proof	TFJS + Web Audio API	Achieved
	TAC-2	Privacy Verified	No data leakage	Achieved