# Embracing Sphere: A Critical Approach to the Adoption of Immersive Audio Technologies in Sound Art

Mehmet Colak

01.05.2025

## Contents

1	Intr	oducti	ion	1
	1.1	Backg	round, State of Art	1
		1.1.1	Immersion and Presence	1
		1.1.2	Immersive Audio Technologies	1
		1.1.3	Space and Audio	1
	1.2	Resear	rch Question and Objectives	1
		1.2.1	Benefits of Audio in Immersive Media	1
		1.2.2	Conservatism in Technology Adoption	1
		1.2.3	Stigmatization and Social Perceptions	1
	1.3	Frame	ework and Core Concepts	1
		1.3.1	Abbreviatons and Key Terms	1
		1.3.2	Technologies and Concept Overviews	1
<b>2</b>	$\operatorname{Lit}\epsilon$	erature	e Review	2
	2.1	Evolut	tion of Audio Technologies	3
		2.1.1	History in Recorded Audio	3
		2.1.2	Theoretical Foundations of Spatial Sound	3
		2.1.3	Immersive Audio Standarts and Frameworks	3
		2.1.4	Open-Source Contributions	3
	2.2	Artisti	ic and Practical Applications	3
		2.2.1	Immersive Audio in Media Art	3
		2.2.2	Augmented and Virtual Reality	3
	2.3	Artwo	rk Examples	3
		2.3.1	Pioneering Sound Artist and Works	3
		2.3.2	Cross-Disciplinary Artworks	3
		2.3.3	Sonic Interaction and Sound Installations	3
	2.4	Challe	enges in Adoption	3
		2.4.1	Economic Barriers	3
		2.4.2	Technical Complexity	3
		2.4.3	Cultural and Educational Gaps	3
	2.5	Future	e Directions	3

		2.5.1	Artificial Intelligence and Generative Adversarial Networks
3	Me	thodol	ogy and Case Study
J	3.1		Collection Analysis
	0.1	3.1.1	
	3.2		ic Experimentation
	0.2	3.2.1	•
		3.2.1 $3.2.2$	Description of Proposed Artwork
		3.2.2	Human Interaction Goals
	3.3		ical Methods and Sound Approach
	5.5	3.3.1	Screen Based Eye Tracking
		3.3.2	Generative RIR, Interactive Environments I
		3.3.2	Spatial Audio System, Interactive Environments II
		3.3.4	Sonic Environmental Narration Endpoints
	3.4		Collection Tools
	5.4	3.4.1	Eye Tracking Heat Maps
		3.4.1	User Unique Audio Narration Sequences
		3.4.2 $3.4.3$	Questionnaire
	3.5		rsis Framework
	5.5	3.5.1	
		3.5.1	
		3.5.2 $3.5.3$	
	_	<b>.</b>	
4			d Discussions
	4.1		ence Feedback and Analysis
		4.1.1	8
	4.0	4.1.2	1
	4.2		Themes and Observations
		4.2.1	
		4.2.2	On the Francisco
	4.3		earison with Literature
		4.3.1	Alignment with Prior Research
		4.3.2	Identified Differences
	4.4		ence Engagement
		4.4.1	Interactive Pattern and Behaviours
		4.4.2	Role of Artistic Expression
5	Cor	ıclusio	n
	5.1	Summ	nary of Findings
	5.2		cations for Artist and Developers

5.3	Limitations of Research	7
5.4	Final Thoughts	7

#### Abstract

This thesis is about...

#### Introduction

TIT Dackground, Dudge of 11	1.1	Background,	State	of	Ar
-----------------------------	-----	-------------	-------	----	----

- 1.1.1 Immersion and Presence
- 1.1.2 Immersive Audio Technologies
- 1.1.3 Space and Audio
- 1.2 Research Question and Objectives
- 1.2.1 Benefits of Audio in Immersive Media
- 1.2.2 Conservatism in Technology Adoption
- 1.2.3 Stigmatization and Social Perceptions
- 1.3 Framework and Core Concepts
- 1.3.1 Abbreviatons and Key Terms
- 1.3.2 Technologies and Concept Overviews

#### Literature Review

2.1 Evolution of Audio Technologie
------------------------------------

- 2.1.1 History in Recorded Audio
- 2.1.2 Theoretical Foundations of Spatial Sound
- 2.1.3 Immersive Audio Standarts and Frameworks
- 2.1.4 Open-Source Contributions
- 2.2 Artistic and Practical Applications
- 2.2.1 Immersive Audio in Media Art
- 2.2.2 Augmented and Virtual Reality
- 2.3 Artwork Examples
- 2.3.1 Pioneering Sound Artist and Works
- 2.3.2 Cross-Disciplinary Artworks
- 2.3.3 Sonic Interaction and Sound Installations
- 2.4 Challenges in Adoption
- 2.4.1 Economic Barriers
- 2.4.2 Technical Complexity
- 2.4.3 Cultural and Educational Gaps
- 2.5 Future Directions
- 2.5.1 Artificial Intelligence and Generative Adversarial Networks

## Methodology and Case Study

3.1	Data Collection Analysis
3.1.1	Purpose and Scope
3.2	Artistic Experimentation
3.2.1	A Glimpse from Tannhauser Gate
3.2.2	Description of Proposed Artwork
3.2.3	Human Interaction Goals
3.3	Technical Methods and Sound Approach
3.3.1	Screen Based Eye Tracking
3.3.2	Generative RIR, Interactive Environments I
3.3.3	Spatial Audio System, Interactive Environments II
3.3.4	Sonic Environmental Narration Endpoints
3.4	Data Collection Tools
3.4.1	Eye Tracking Heat Maps
3.4.2	User Unique Audio Narration Sequences
3.4.3	Questionnaire

**Analysis Framework** 

**Identified Barriers and Biases** 

**Self Observations** 

3.5

3.5.1

3.5.2

#### Result and Discussions

- 4.1 Audience Feedback and Analysis
- 4.1.1 Statistical Insights
- 4.1.2 Expectations and Questionnaire Results
- 4.2 Key Themes and Observations
- 4.2.1 Intuitivenes of Interaction
- 4.2.2 Technical Challenges and Opportunities
- 4.3 Comparison with Literature
- 4.3.1 Alignment with Prior Research
- 4.3.2 Identified Differences
- 4.4 Audience Engagement
- 4.4.1 Interactive Pattern and Behaviours
- 4.4.2 Role of Artistic Expression

## Conclusion

- 5.1 Summary of Findings
- 5.2 Implications for Artist and Developers
- 5.3 Limitations of Research
- 5.4 Final Thoughts