FINAL YEAR PROJECT REPORT

AUDIO ARCHITECT

In fulfillment of the requirement
For degree of
BS (COMPUTER SCIENCES)

By

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SUPERVISED

BY
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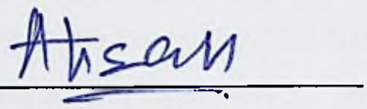
BAHRIA UNIVERSITY (KARACHI CAMPUS)

FALL-2024

DECLERATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previouslyand concurrently submitted for any other degree or award at Bahria University or other institutions.

Signature : 

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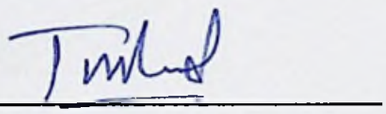
Signature : 

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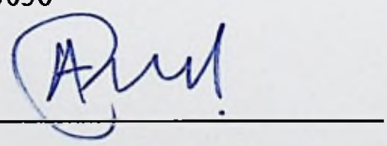
Signature : 

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APPROVAL FOR SUBMISSION

We certify that this project report entitled **"Audio Architect"** was prepared by **Muhammad Ahsan Riaz, Tamheed Aakas** and**Muhammad Askari** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of **Computer Science** at Bahria University.

Approved by,

Signature : FOR _____

Supervisor : Mr. Maroof

Date: 13/12/24

ACKNOWLEDGEMENT

We would like to thank everyone who had contributed to the successful completion of this project and would like to express our gratitude to our research supervisor, Mr. Muhammad Maroof for his invaluable advice, guidance, and his enormous patience throughout the development of the research.

In addition, we would also like to express our gratitude to our loving parents and friends who had helped and given us encouragement.

ABSTRACT

The Audio Architect initiative is driven by the increasing prevalence of blended audio recordings in modern multimedia landscapes. From intricate musical compositions to environments requiring clear speech extraction amidst noise and interference, the need for effective sound separation is critical. This initiative seeks to address this challenge by advancing sound demising algorithms, specifically leveraging the potential of the Wave-U-Net model. The goal is to tackle real-world problems across music production, assistive technology for individuals with hearing impairments, speech recognition enhancement, forensic applications, and acoustic research.

The project employs a rigorous and meticulous approach to the development and evaluation of sound separation algorithms. Using cutting-edge techniques, particularly the Wave-U-Net model, the initiative ensures a robust foundation for precise audio signal separation. Furthermore, the commitment to open-source principles fosters collaboration and knowledge sharing, enabling academic and professional communities to contribute and benefit from the work. This ensures transparency, innovation, and widespread accessibility of the tools and methodologies developed.

Audio Architect is to democratize the transformative potential of sound separation, thereby revolutionizing the analysis and manipulation of audio content across diverse academic and practical landscapes. Audio Architect aims to democratize the transformative potential of sound separation technologies by revolutionizing the analysis and manipulation of audio content. The initiative focuses on making advanced tools widely accessible, enabling enhanced capabilities in music production, providing support for individuals with hearing impairments, improving speech recognition systems, facilitating applications in forensic and surveillance domains, and contributing to the growing field of acoustic exploration.

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