



STQ Workshop

SUBJECTIVE EVALUATION OF MUSIC SOURCE SEPARATION

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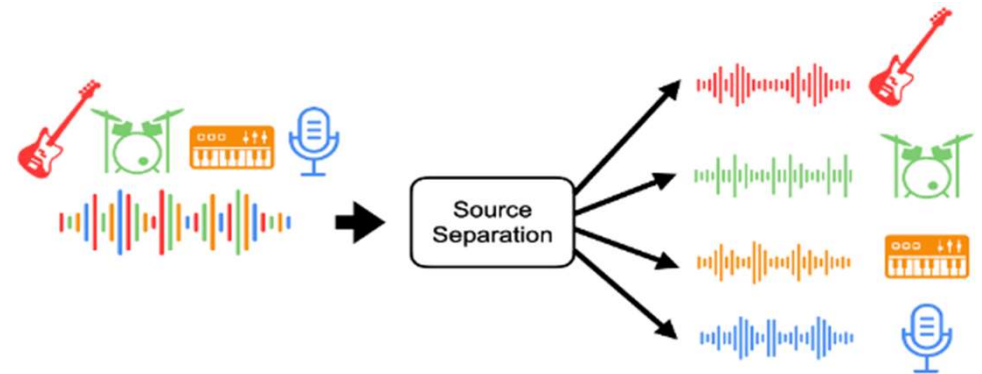
LABORATORY OF
AUDIO SIGNAL PROCESSING

22/11/2022

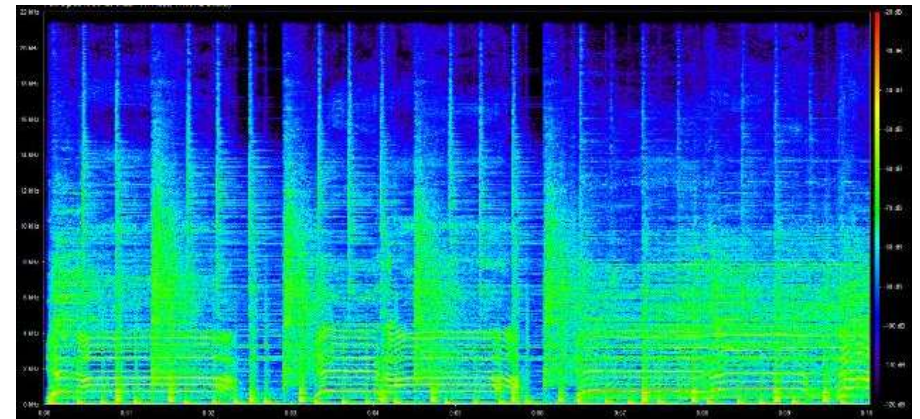


INTRODUCTION

- MUSICAL SOURCE SEPARATION (MSS)
- SEPARATION OF HARMONIC PART
- HUMAN SEPARATION CAPABILITY
- NON-EXISTING RECOMMENDATIONS
- UNIQUE PROCEDURE
- ADAPTATION OF EXISTING METHODOLOGY
- CRUCIAL CHOOSE OF PARTICIPANTS
- EFFECTIVENESS OF PROCEDURE
- SEPARATION OF HARMONIC CONTENT



SEPARATION – INVERSE PROCESS OF MIXING



ANISOTROPIC SOURCES

FIRST ROUND OF LISTENING TEST

- ADAPTED MUSHRA (ITU-BS.1534)
- EQUIPMENT:
 - NOTEBOOK MSI GL 9SFK
 - SOUND INTERFACE FOCUSRITE SCARLETT 2i2
 - OVER-EAR FOCUSRITE HEADPHONES
 - webMUSHRA GUI
- PRE-TEST
- 30 PARTICIPANTS
- 20 TRIALS (10 s) + TRAINING
- PRESENTED STIMULI:
 - REFERENCE SIGNAL (TARGET SOURCE)
 - HIDDEN REFERENCE (UNPROCESSED)
 - ANCHOR SIGNAL (UNPROCESSED MIX)
 - OUTPUT OF 5 SEPARATION ALGORITHMS
- FEEDBACK FROM PARTICIPANTS
- BACKGROUND FORM



webMUSHRA GUI



FIRST ROUND RESULTS

- BEST ALGORITHM: HPSS
- CONFUSION ON H/P CLASSIFICATION
- LOSS OF CONCENTRATION (> 30 min)
- THE MOST EFFECTIVE INDICATOR – ANCHOR
- INCREASE THE EXCLUDING CRITERION
- SUCCESSFUL ASSESSMENT:

EXCLUDED: 8/8 EXPERIENCE IN MIXING

INCLUDED: 15/22 NON-EXPERIENCE IN MIXING

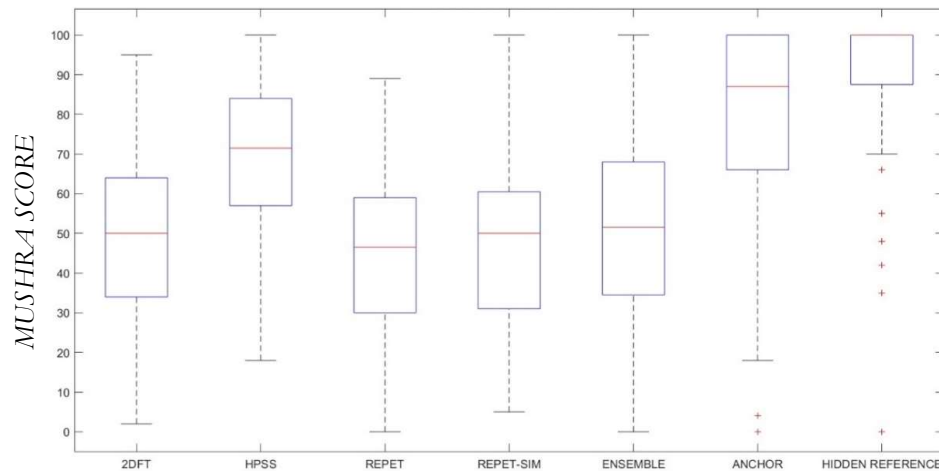
ALGORITHM	OBJECTIVE METRICS	SUBJECTIVE METRICS
HPSS	5,57 dB	76
ENSEMBLE	5,25 dB	72
2DFT	12,02 dB	31
REPET	13,35 dB	30
REPET - SIM	12,96 dB	24

SDR / SUBJECTIVE RESULTS

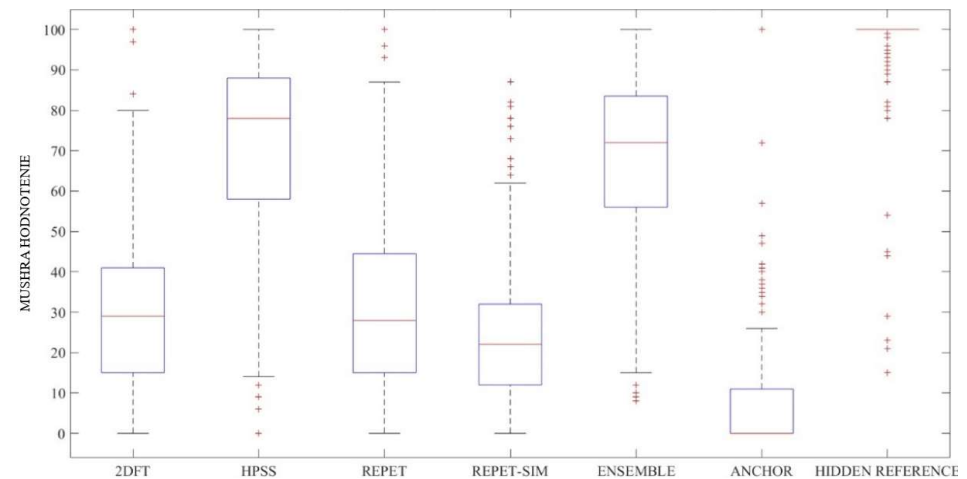
GROUP OF PARTICIPANTS	P-SCORE
EXCLUDED	0,9976
INCLUDED	4,27e-8

ANOVA TEST

EXCLUDED PARTICIPANTS

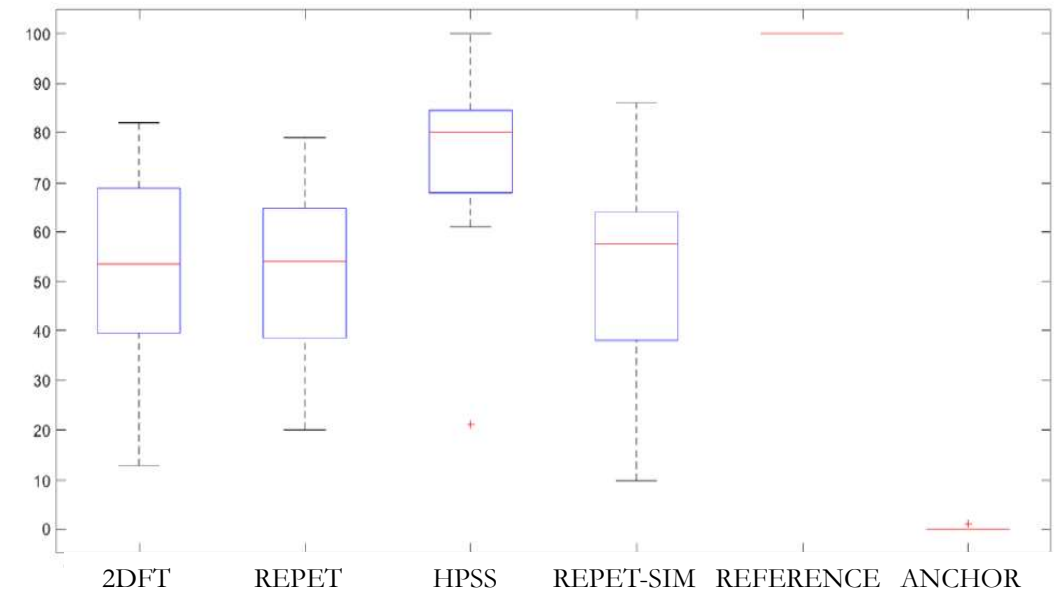


INCLUDED PARTICIPANTS



SECOND ROUND OF LISTENING TEST AND RESULTS

- 8 PARTICIPANTS
 - 4 NEW WITH MIXING EXPERIENCE
 - 4 SUCCESSFUL FROM ROUND 1
- PROPOSED METHODOLOGY
- EXPERIENCED IN MUSIC MIXING
- DIFFERENT 20 MUSIC SAMPLES
- PREDOMINANCE OF INSTRUMENTS
- 4 ALGORITHMS
- AVERAGE TIME 32 MINUTES
- ANCHOR AND REFERENCE



CONCLUSION

- SELECTION OF PARTICIPANTS FOR MSS EVALUATION
 - EXPERIENCE IN MUSIC MIXING
- MAXIMUM TIME OF TEST 45 MINUTES
 - CONCENTRATION PROBLEM
- IDENTIFICATION OF DIFFICULTIES:
 - PROBLEM OF CLASSIFICATION
- PREDOMINANCE OF INSTRUMENTS IN STIMULI
 - INSTRUMENT PREDOMINANCE IN H/P
- INCREASE EXCLUDING CONDITIONS
 - AT LEAST 50 SCORE OF MUSHRA
- GOOD CORRELATION WITH OBJECTIVE SIR RESULTS
 - UNDERSTANDING THE INSTRUCTIONS





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THANK YOU FOR YOUR ATTENTION

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