

# Multimedia systems assignment

Thodoris Tyrovouzis 9369

February 16, 2022

## 1 Introduction

This document accompanies the code, providing some general guidance for the source code.

The assignment intends to give hands-on experience with implementing a multimedia coding standard.

My implementation follows the specification up to **Παραδοτέο Επιπέδου 3**, using simple and readable code. No file contains over 50 lines of code, thanks to the rich libraries of MATLAB.

## 2 Source code description

The source code contains the following utility functions.

**packFrmBitStrm, unpackFrmBitStrm**

Pack and unpack coded bitstream frame packets to and from parameters.

**lar, lar\_inv**

Transform LPC reflection coefficients to and from log area ratios

**LTP\_gain\_code, LTP\_gain\_decode**

Code and decode long term prediction gains  $b_j$ .

**preproc, postproc**

Preprocess and postprocess procedures (paragraphs 3.1.1, 3.1.2, 3.2.4 of the standard).

**acf**

Estimates the autocorrelation function from the samples.

The rest of the functions, **RPE\_frame\_coder, RPE\_frame\_decoder, RPE\_frame\_ST\_coder, RPE\_frame\_ST\_decoder, RPE\_frame\_SLT\_coder, RPE\_frame\_SLT\_decoder** are implemented as described in the assignment description.

The main function to test the codec is the **encode\_wav(file)** function. It takes a .wav file as an argument and plays the file after it has been coded and decoded. In the project folder, there is already a speech sample, so the project can be tested by running

```
encode_wav('OSR_us_000_0010_8k.wav')
```

on the MATLAB interpreter.

### 3 Conclusion