**Programming Assignment 3**

EE548: Matrix computations for signal processing

Due date: ~2023/04/21, 23:59

1. Introduction

In this assignment, you will implement various matrix factorization functions. For detailed requirements, please follow the comments in the MATLAB file. The parts of the code you need to implement are marked in comment as ‘Write down your code in the following block’.

1. Specifications

Language: MATLAB

Files:

* *DecompLDL.m, DecompLL\_Gaxpy.m, DecompLU\_OP\_wPP.m*: Your custom matrix factorization functions, each corresponding to LDLT factorization, Gaxpy version of Cholesky factorization, and LU factorization with partial pivoting. We recommend to refer to the lecture materials for implementing the code.
* *test.m*: Check the result of your custom functions. You should submit the result of this code. Do not modify this file

1. Submission
2. Explain your answer with a single pdf file, which should include follows:
   1. Code implementation
   2. Screenshot of *test.m*’s result
   3. Explain about the uniqueness of LDLT and Cholesky factorization and provide an example matrix that can be factorized into more than one way
3. The final submission would be a single zip file containing a single pdf file and all the matlab files. The name of the zip file should be ‘ID\_name.zip’, e.g. 20223303\_SeoungbinBae.zip