

ECE503 Bonus Midterm Project

Due by 8:50pm on Monday 12-Mar-2012

This project is optional and is worth 25 points. If you decide to do the project, you simply need to submit your Matlab code to the instructor and grader via email (drb@wpi.edu, jbacon@wpi.edu). You do not need to submit any paper report. This project is to be completed individually. Please refer to the course website for course policies regarding collaboration.

1 Problem Statement

The problem is to write a Matlab function with the following prototype:

```
[del,gam] = makelattice(h,g)
```

where \mathbf{h} and \mathbf{g} are both length- N vectors containing the impulse response of the FIR filters \mathcal{H} and \mathcal{G} , respectively, and \mathbf{del} and \mathbf{gam} are the δ_i and γ_i lattice coefficients that are computed via backward recursion.

2 Requirements

To receive full credit for the assignment, your code must:

1. Be written in Matlab and use standard Matlab functions (any toolbox available on computers at WPI is fine).
2. Generate the correct lattice coefficients (see example 8.16 for a test case). You may want to try some of the cases in Problems 8.53 and 8.54 as well.
3. Handle all four of the special cases discussed on pages 454-455.
4. Be well-commented with a descriptive Matlab-style help header that prints when the user types `help makelattice` in Matlab.

3 Function Template

To help you get started, a typical Matlab function template is shown below.

```
function [ output_args ] = untitled( input_args )
%UNTITLED Summary of this function goes here
% Detailed explanation goes here
```

```
end
```