S-72.630 Capacity enhancement methods for radio interface. Spring 2005

Home assigment: Comparison of soft decoding algorithms.

1   Task

You are given the simulator for simulating BER for 1/3 rate turbo code generated accordingly to the polynomial [7 5].

The given program uses logMAP decoder and allows to simulate BER for different SNR.

Your task is to implement two different versions of the decoders and to compare their performance.

1. Implement maxlogMAP decoder. You can do that easily by modifying given logMAP decoder. Into final report you should include the working code and e-mail it to me.

2. Implement Soft output Viterbi algorithm (SOVA) for decoding given code. Into final report you should include the working code and e-mail it to me.

3. Simulate the performance of all three decoders. Given logMAP, yor implementations of maxlogMAP, and SOVA. Yo should send me the figure of the SNR/BER performance curves.

4. Comment on the performance of different decoders. Why they operate differently. How different number of iterations impact the decoders performance and so on.

First three steps provide you 3.5 points, the last one provides 1.5 points.

Please collect all the files you are sending to me into one zip file.