

## Lecture 5, Tuesday w3, 2014-09-30

### Reminders:

- No lecture on Friday this week, 2014-11-03.
- Tutorials start next week. Please do the first tutorial question sheet.
- Ask questions on NB.

### Two things I didn't get around to mentioning last week:

- Sketching the Binary Entropy function. Understanding its features.
- How to compute  $\log \sum_i \exp(x_i)$  using standard floating point arithmetic, when  $\exp(x_i)$  are too small or large to be represented.

### Introduction to symbol codes:

- The idea: concatenate codewords without punctuation.
- Uniquely decodable.
- Instantaneously decodable.
- Prefix codes.
- Expected length per symbol. Compare computation to Entropy.
- Decomposition of Entropy.

### Recommended reading

We are part way through the **'week 3' slides**. I haven't quite finished up to where it says lecture 5 ends yet. Ask on NB if anything is unclear, or too compressed.

Ultimately you'll want to read all of **MacKay Chapter 5** in the next week or so. For now, I've talked about the material on roughly pp90-94.