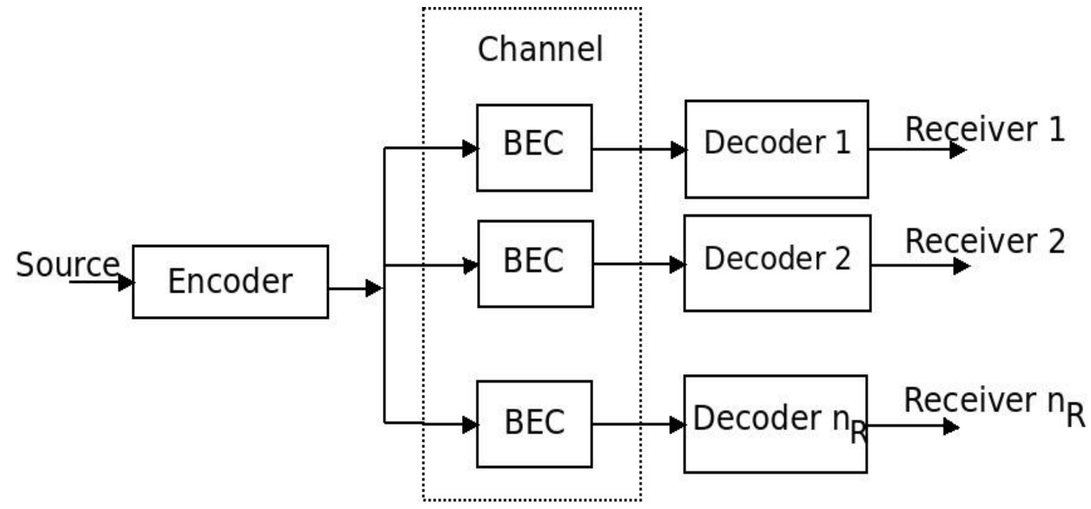
Statistical Characterization of Network Coding delay

Maricica Nistor, João Barros, Fausto Vieira and Tiago T. V. Vinhoza

Networking and Information Processing Group | Instituto de Telecomunicações| DEEC-FEUP

Motivation

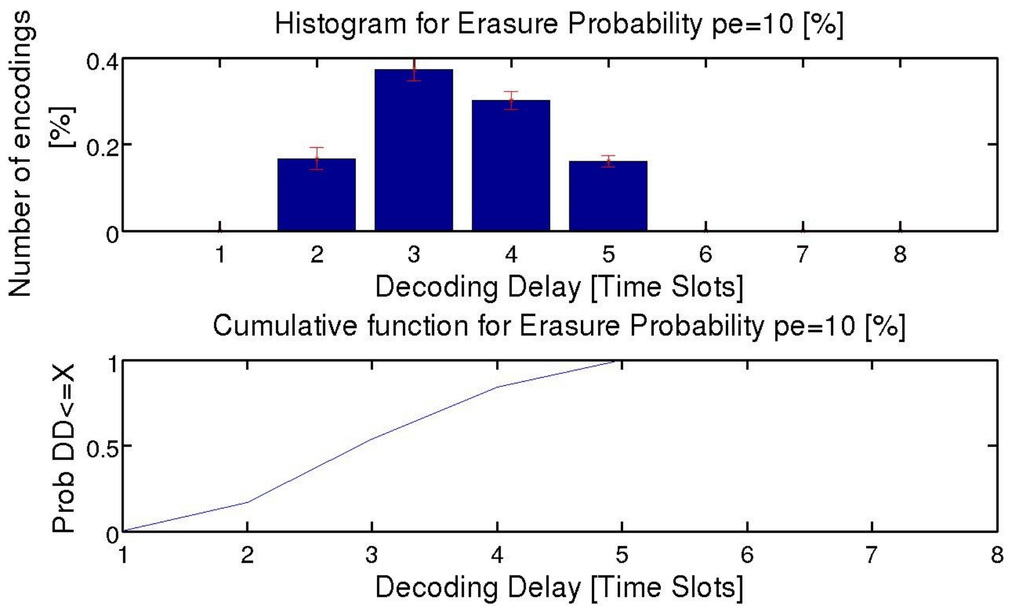
- Network coding delay in non-asymptotic settings
  - Decoding delay
  - In-order delivery delay
- Real-time streaming applications



BEC: Binary Erasure Channel

Features

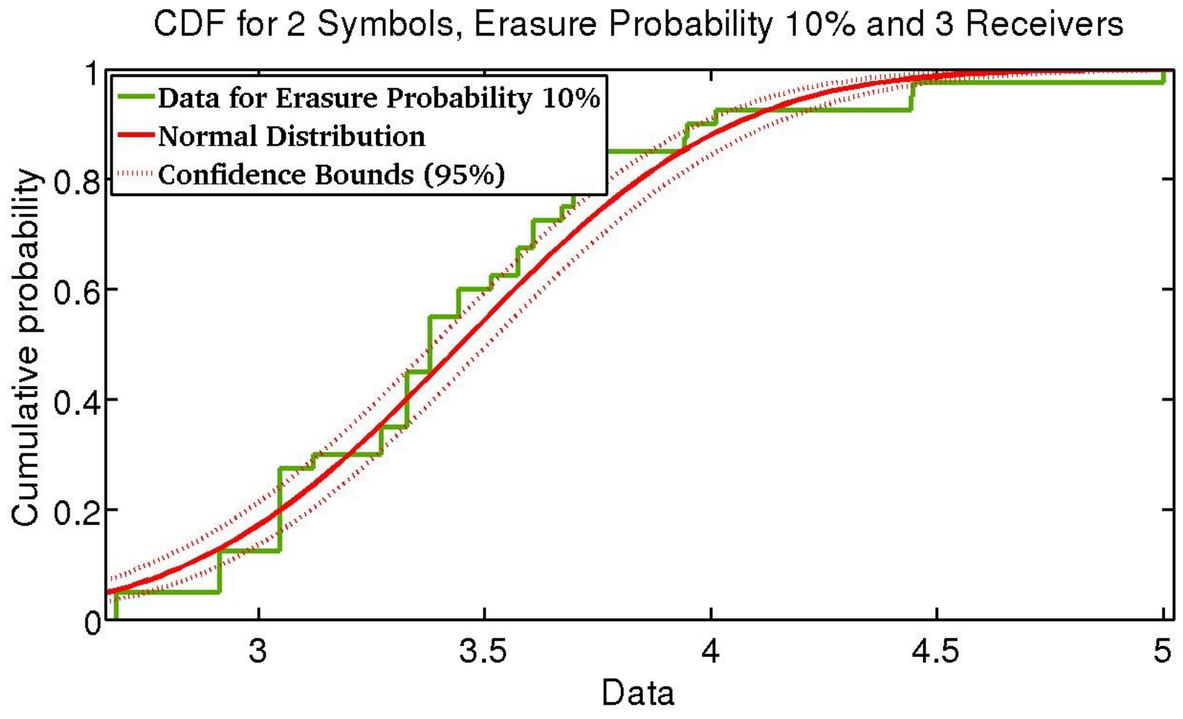
- Random Linear Network Coding
- Brute-force search analysis
  - All encodings + erasure patterns with probability of occurrence more than 90%
  - Various number of symbols and receivers
  - Erasure probabilities: 5%, 10% and 20%
  - Number of time-slots guarantees 99% of symbols are received



- In-order delivery:
  - 2 symbols: the percentage varies between 66.66% and 83.33%
  - 3 symbols: the percentage varies between 38.04% and 44.90%

Research interests

- Maximum Decoding Delay
  - Number of time-slots between the first transmission of the encoding of the symbols and successful decoding at all the receivers
- Probability of not decoding
- Decoding delay distribution well fitted by a normal distribution
- Optimize the network coding protocol with respect to average or worst case delay
- Define the required buffer size at the receivers



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