

CT111 PROJECT

Name : Patel Aksh Bharatlal

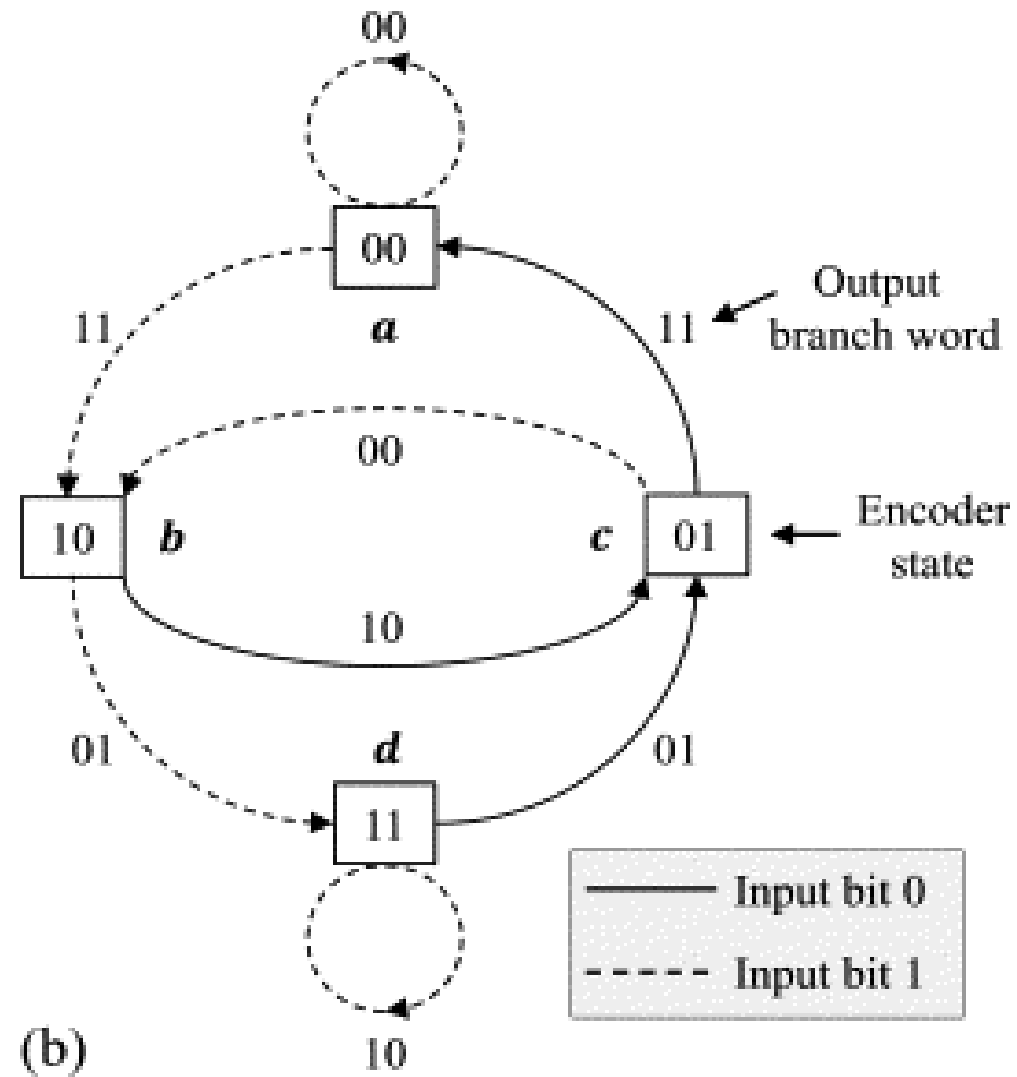
St Id : 201901005

Date : 17 / 04 / 2020

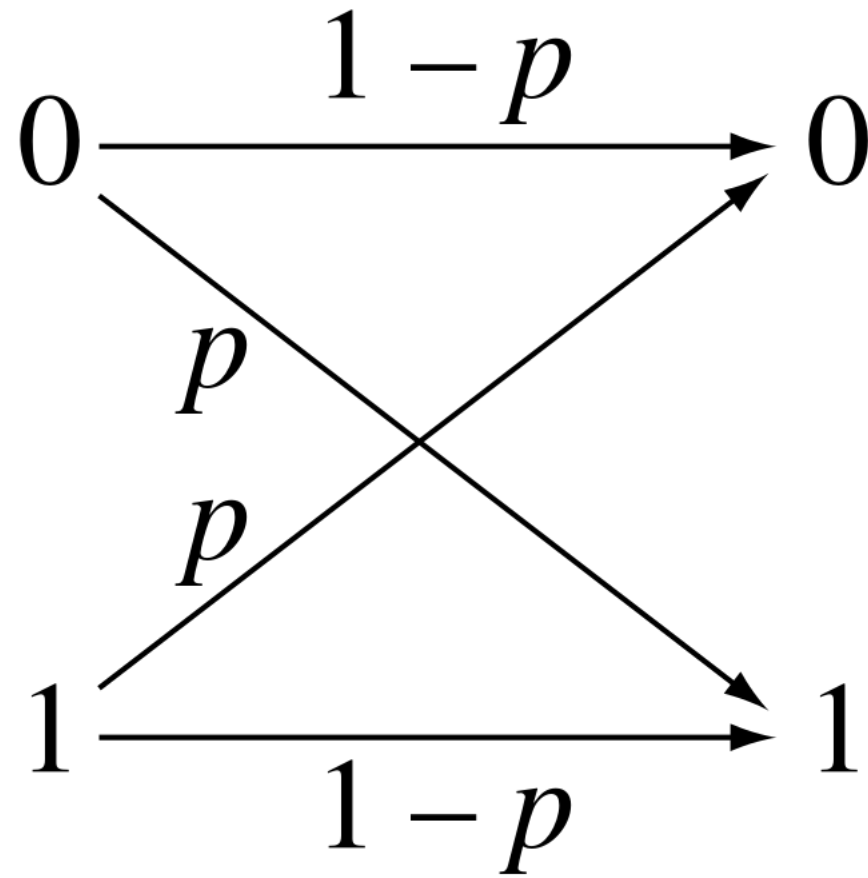
Honor Code

1. The work that we are presenting is our own work.
 2. We have not copied the work (the code, the results, etc.) that someone else has done.
 3. Concepts, understanding and insights we will be describing are our own.
 4. We make this pledge truthfully. We know that violation of this solemn pledge can carry grave consequences.
- Aksh Patel

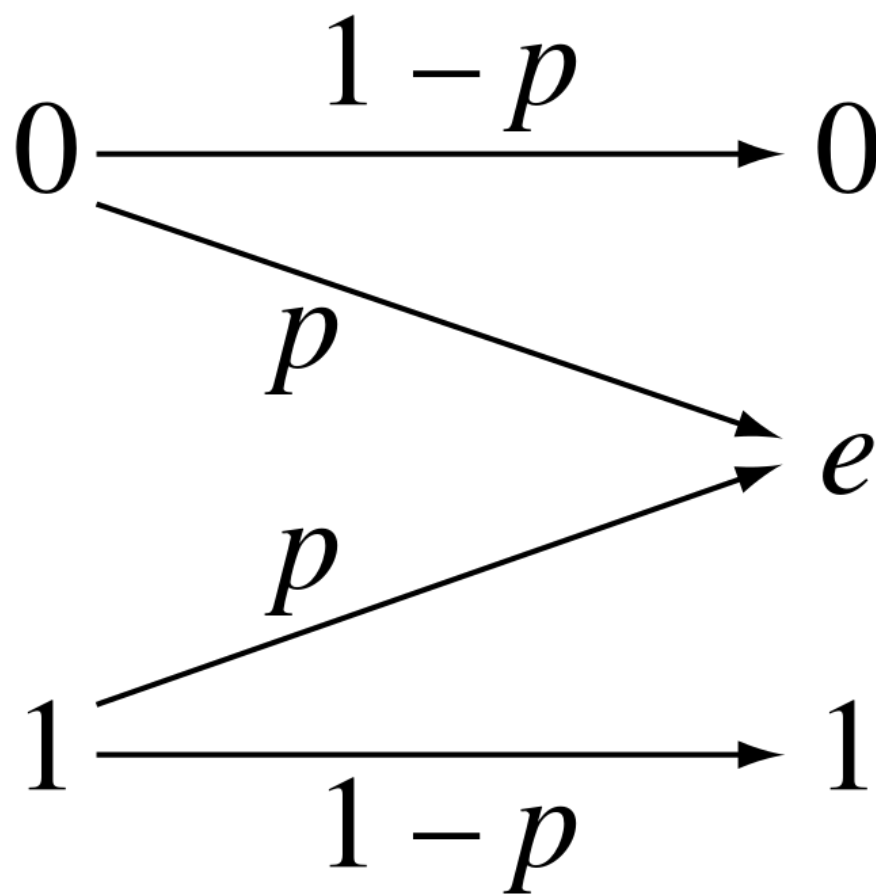
Encoder



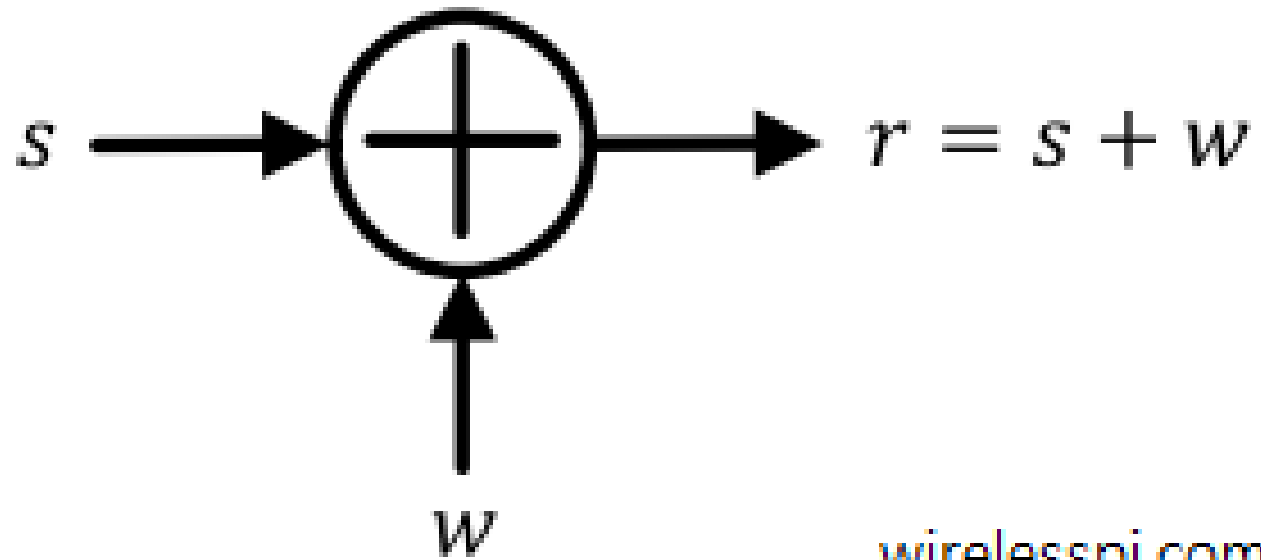
BSC Channel



BEC Channel



Gaussian Channel

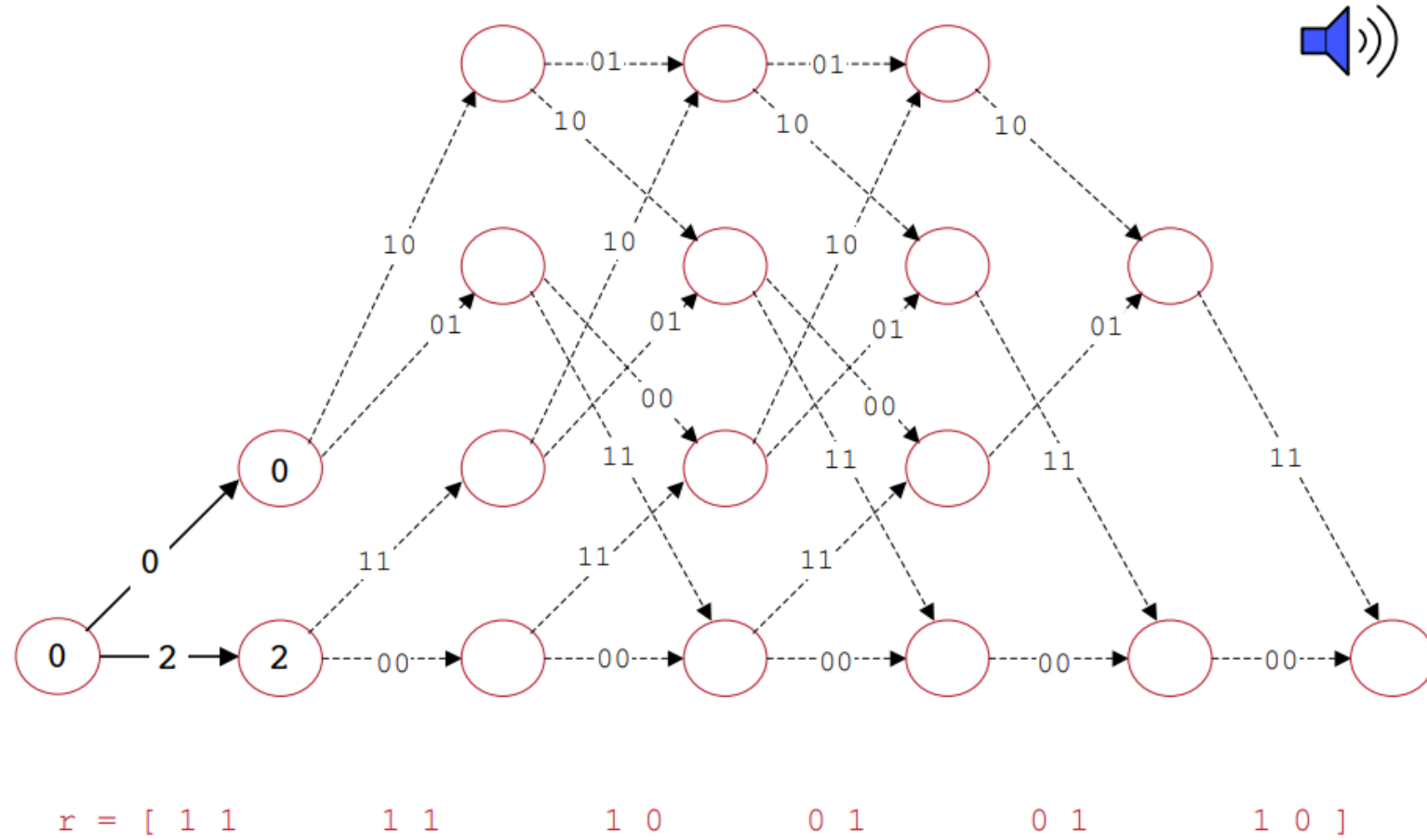


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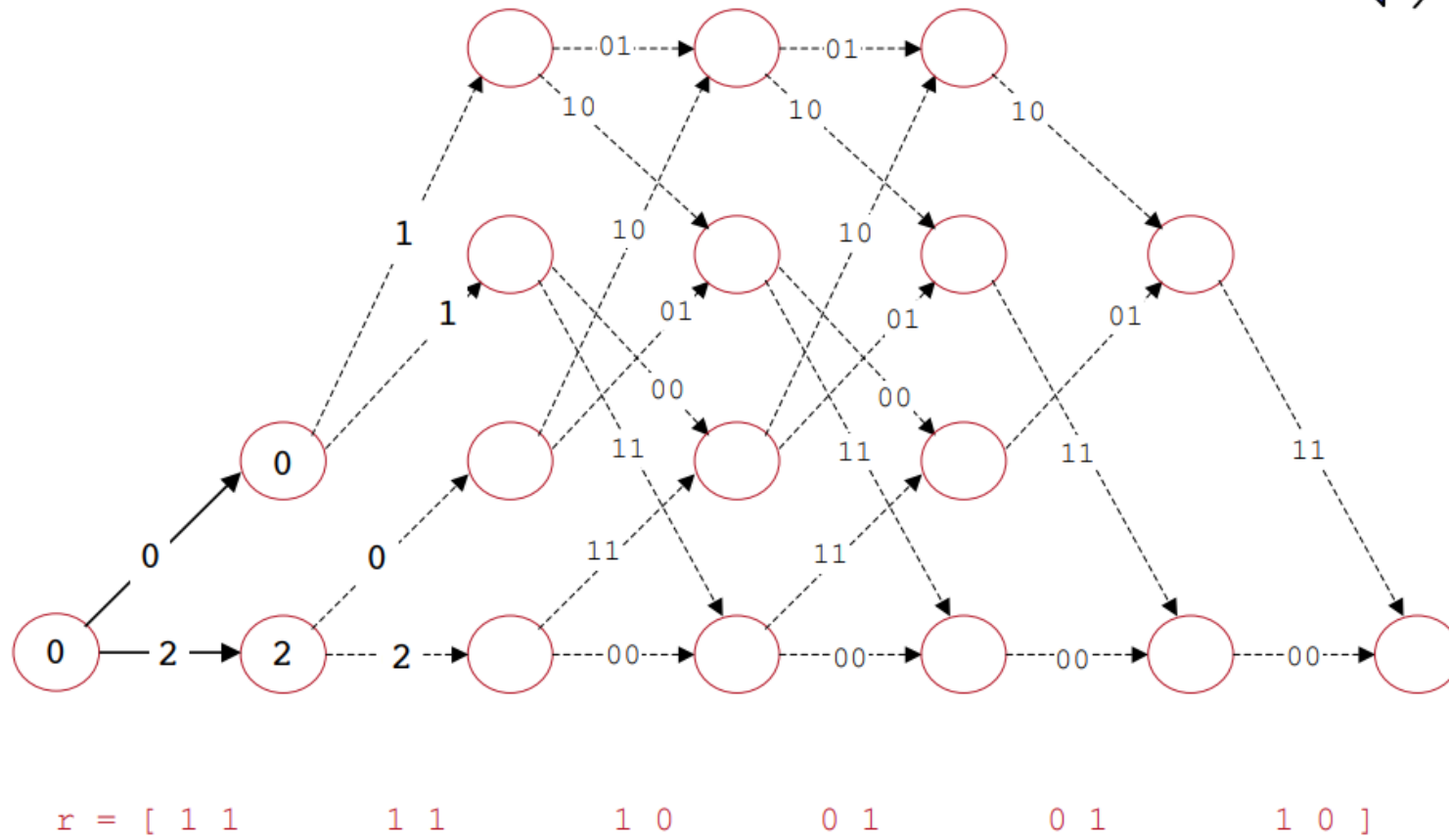
Decoder

- In decoder part we have 2 metrics Branch and Path metrics.
- The Trellis has eight branches connecting the four states at bit index i to the four states at bit index $i + 1$. The branch metric of each branch is calculated as the distance between the channel output and the branch output. This distance is the Hamming distance for the BEC and the BSC channels and it is the Euclidean distance for the Gaussian channel.
- The path metric computation may be thought of as an add-compare-select procedure:
 1. Add the branch metric to the path metric for the old state.
 2. Compare the sums for paths arriving at the new state (there are only two such paths to compare at each new state because there are only two incoming arcs from the previous column).
 3. Select the path with the smallest value, breaking ties arbitrarily. This path corresponds to the one with fewest errors.

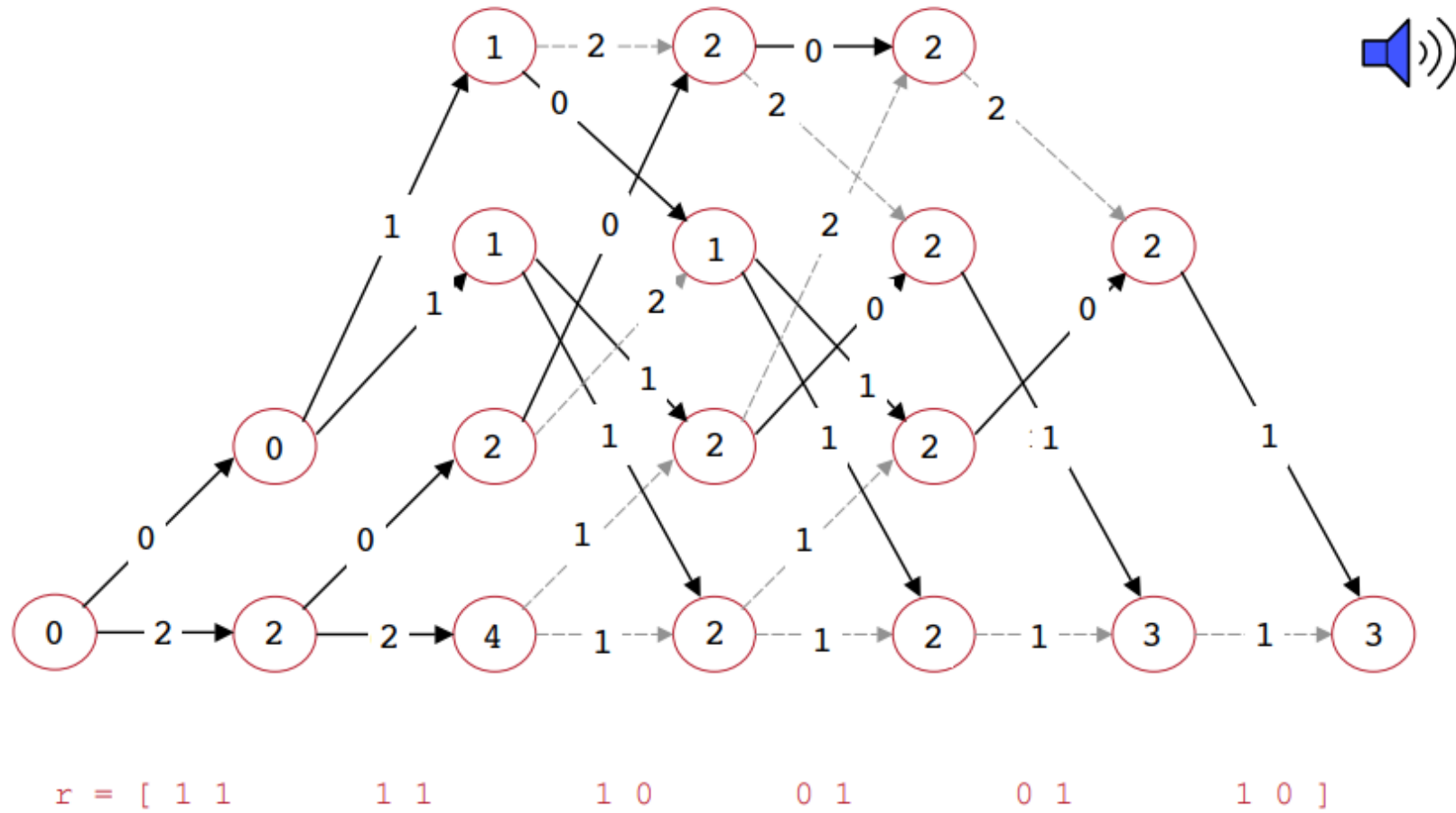
Decoder



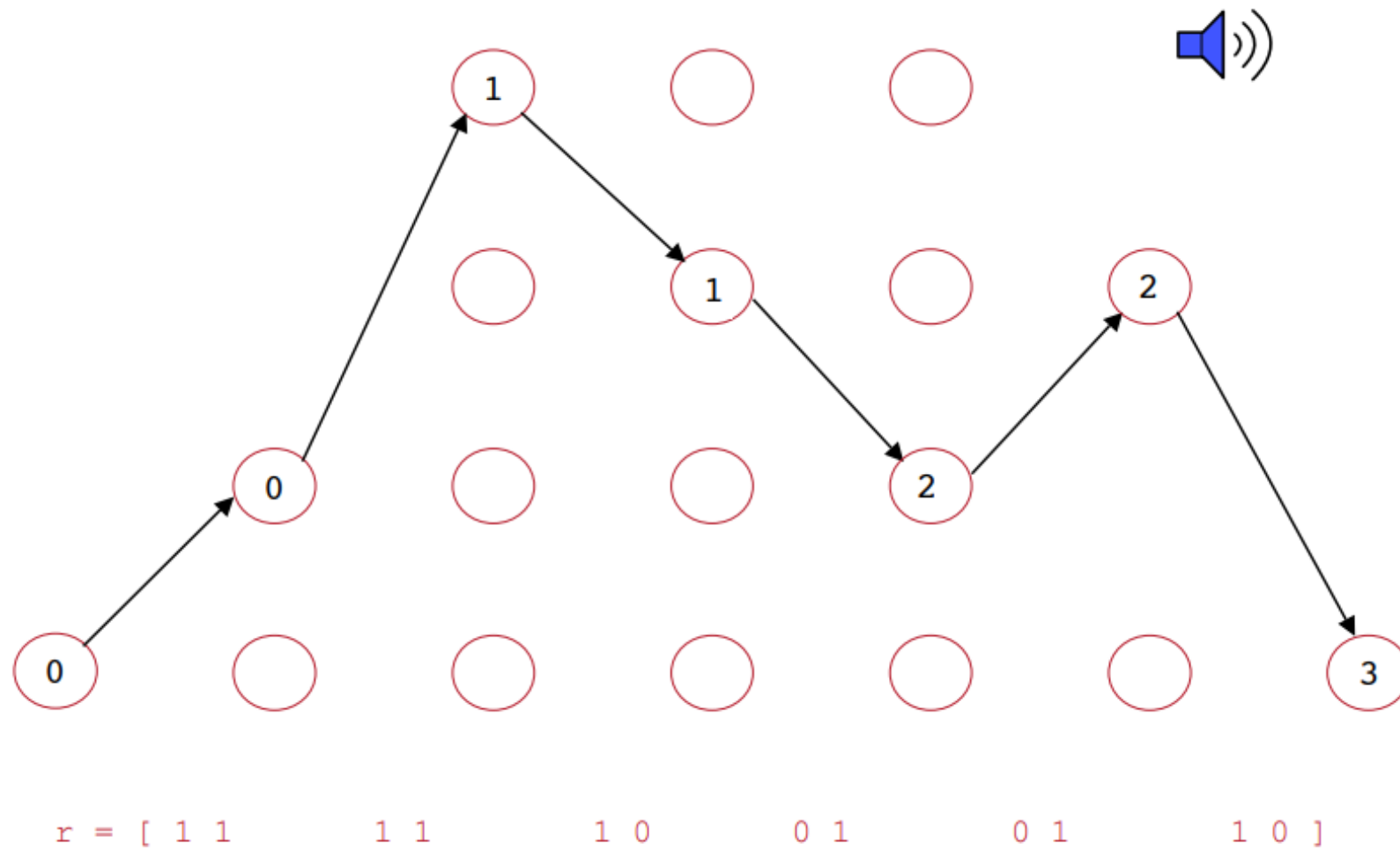
Decoder



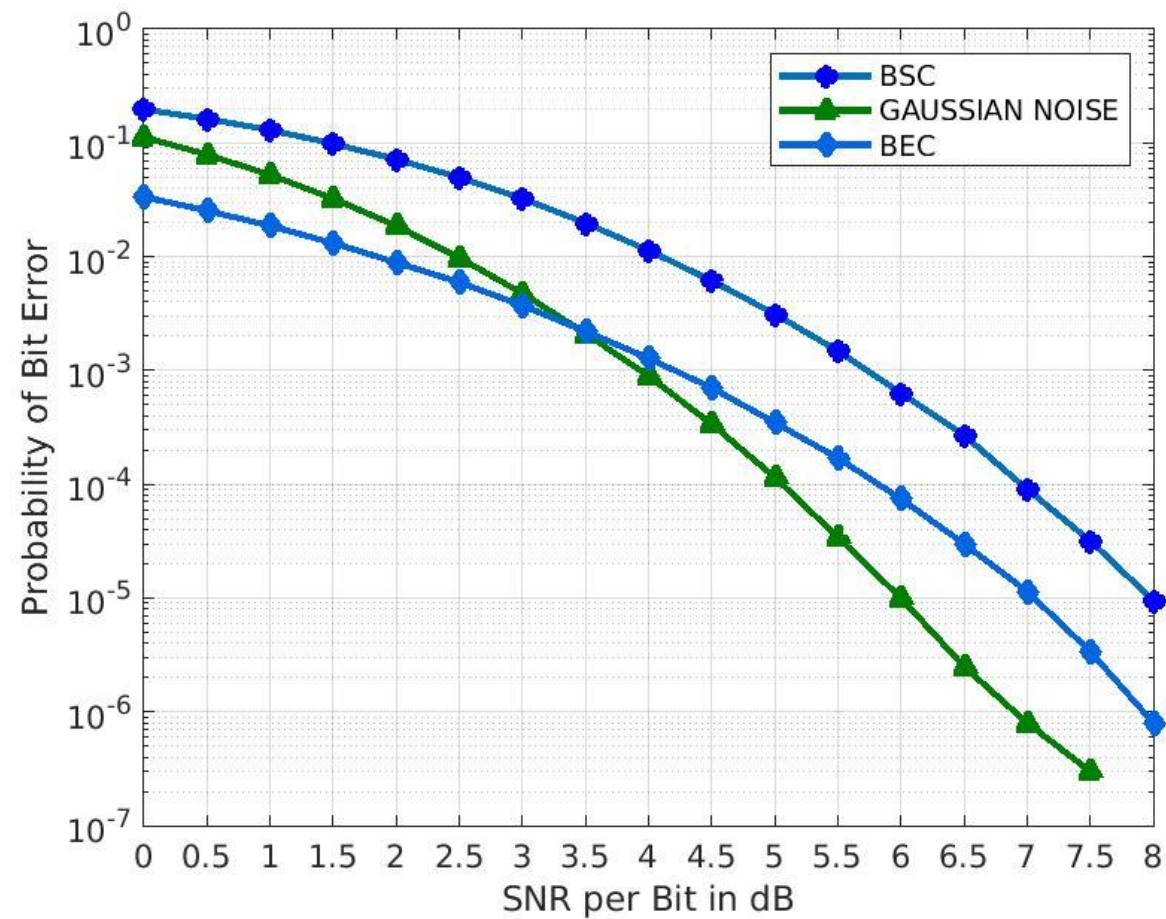
Decoder



Decoder



Results



Thank You