

EE121: Final Project

In the final project, you are expected to explore more advanced topics related to concepts you have learned in this class, and present your survey and understanding to an audience composed of your peers. You should (individually) pick a topic, find and read relevant papers, and write a survey. You are also highly encouraged (though not strictly required) to explore the boundaries of the fundamental results, try to extend them and/or experiment beyond what you read.

The Topics

The following is a list of possible topics that fits well with the class material we have covered. Note that these topics are still broad and we expect you to narrow it down and find your own focus. Additionally, please feel free to request additional topics related to your own interests. Discussions on specifics of these topics with the instructor and the GSI are welcome.

- Data compression
- Channel coding / compression duality
- Modern code constructions
 - Polar codes
 - Expander codes
 - LDPC codes
 - Rateless codes
- Algebraic code families (e.g., cyclic codes, Reed-Muller codes)
- Quantum Error-Correcting Codes
- Applications of error-correcting codes in wireless/optical channels.
- Distributed storage codes: regenerating codes, locally-repairable codes
- Network Coding

See Piazza for an extended list of topics and references.

Grading

Your grade will be based on the following two components:

1. Written survey. It should be interesting, thorough in its focus area, and accessible to your peers.
2. In-class presentation. Around 30 min, held during finals week.