Chair of Communications Engineering
TUM Department of Electrical and Computer Engineering
Technical University of Munich

Forschungspraxis

Successive cancellation inactivation decoding of single parity-check product codes (and a non-trivial extension to improve finite-length performance)

The task of the student is to implement an efficient successive cancellation (SC) inactivation decoder for single parity-check product codes, which is (probably) an efficient MAP decoder for such codes over the erasure channels. At the end of the internship, the aim is to assess the MAP performance of very long product codes. Note that this has strong ties with a conjecture that some product codes might be capacity-achieving (although we are just after a numerical evidence for now). If the time permits, we consider the modifications to these codes to enable a better finite-length performance. Related literature is below [1,2].

[1] https://arxiv.org/abs/2004.05969

[2] https://arxiv.org/abs/2008.06938

Advisors

Mustafa Coskun