Proposed solution : Optimization

18-03-2019

Expected outcomes

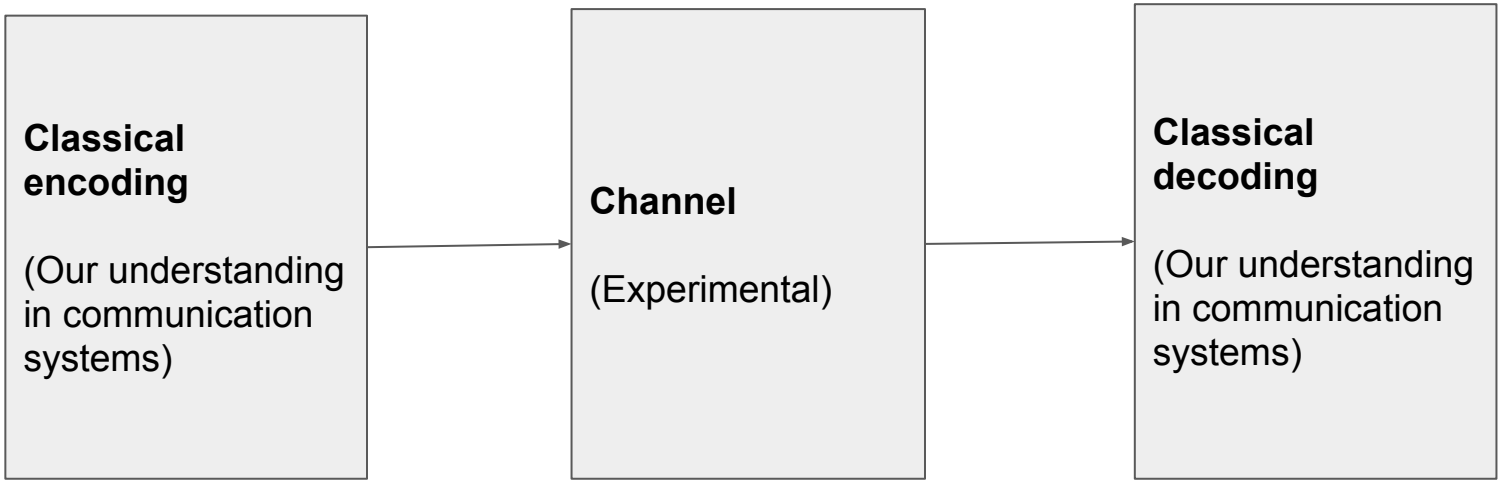
Comparison to previous work:

Chromocode 2018 (Tsinghua):	700kbps, FAKE
Hilight 2015 (Dartmouth):	1 word per several seconds, DOABLE

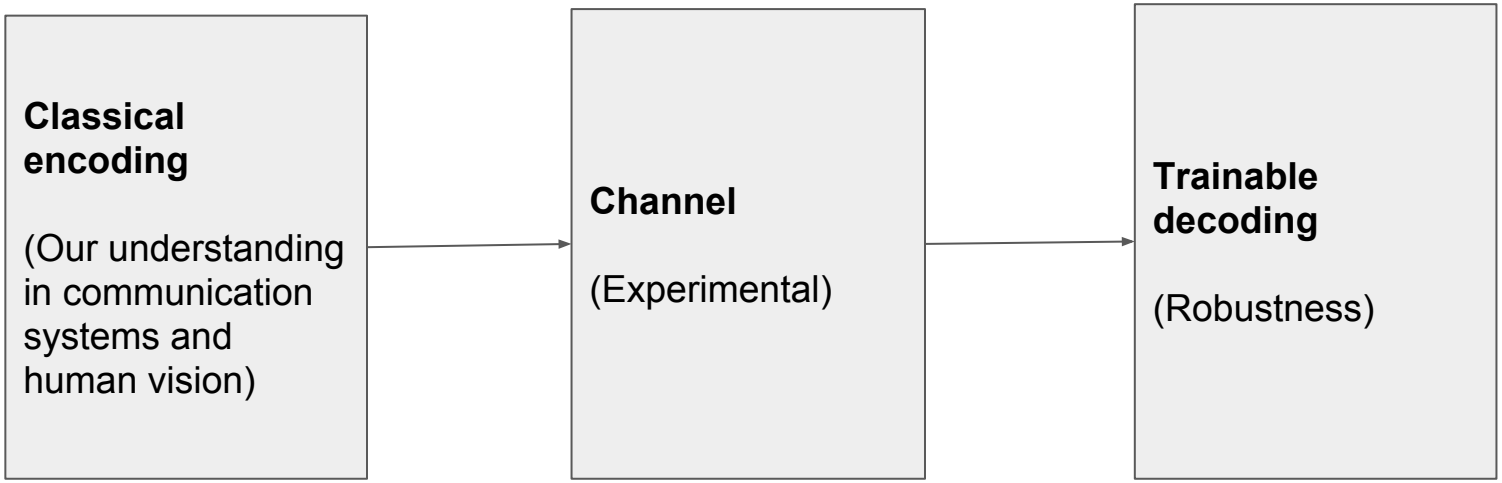
Chromocode paper does not propose the integration of all the error correcting mechanisms they propose.

Hilight has a public codebase and a good demonstration video.

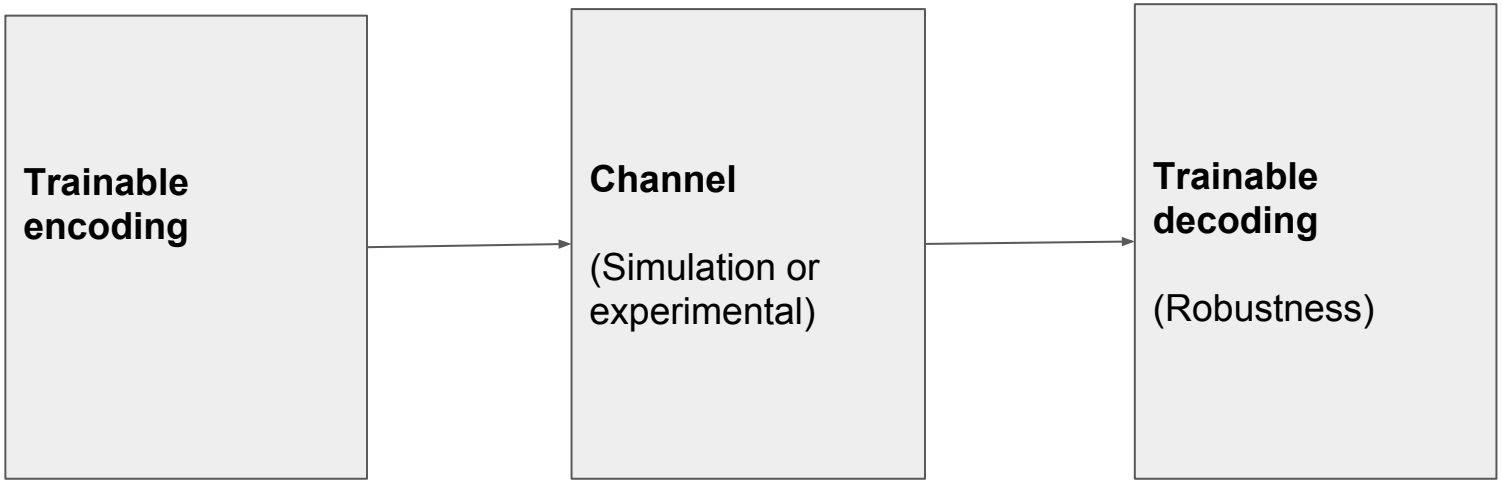
Solution from previous work

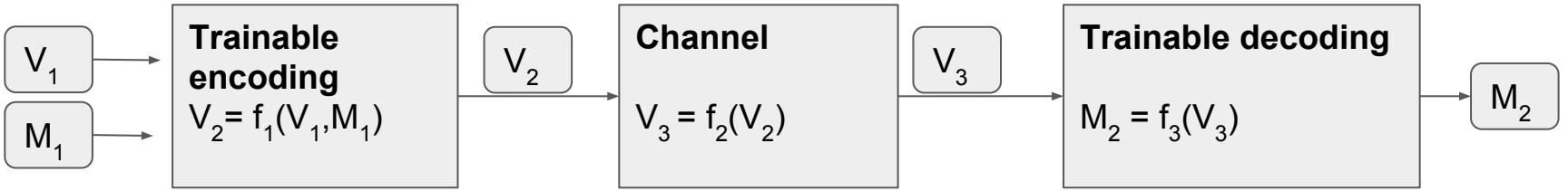


What we were working on



Proposed solution





Outer loop : Optimize f_1 to minimize $|V_2-V_1|$ and $|M_1-M_2|$

Inner loop: Optimize f_3 to minimize $|M_1-M_2|$ given f_1

Note: The losses being optimized should not necessarily be the first norms. They can be functions

$f(V_1,V_2)$: Our understanding of the sensitivity of human vision

$f(M_1,M_2)$: How easy it is to reconstruct M1 from M2 with error correction algo.

Channel

Simulation	Program a simulation environment for the channel from our knowledge
Approximating with NN	Use experimental data from the computer monitor + mobile phone setup to train a model to mimic the channel
Experimental	Use the experimental setup for every step of the encoder/decoder optimization

Approaches

1. Exploration/exploitation techniques: Expensive sampling

2. Generative adversarial networks (GAN)