

Tasks(★) in ICL

Part-of-Speech tagging

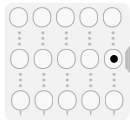
\mathbb{Z} = Noun, Verb, ... Adjective

Bitwise arithmetic

\mathbb{Z} = AND, OR, ..., NAND

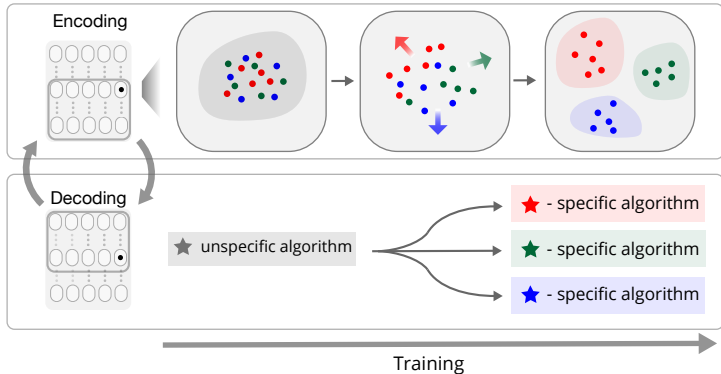
Q. How do task vectors emerge?

LLM



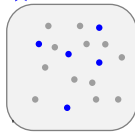
ICL tasks

Coupled Emergence of Task Encoding-Decoding



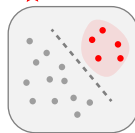
Task Decodability predicts ICL Performance

★ : Not decodable



TD = 0

★ : Decodable



TD = 1

