I. INTRODUCTION

Now that smartphones have advanced from the first generation (1G) to the fourth generation (4G), they use Orthogonal Frequency Division Multiple Access (OFDMA) as a server that can support numerous clients, replacing the earlier frequency division multiple access (FDMA) technology.

Then, by adopting the use of OFDMA, 5G was created as a replacement for 4G. The urgent necessity to move from 4G to 5G for the requirements of numerous IoT users and the vastly rising number of smartphone users led to the development of 5G. A new 5G strategy is required because OFDMA is still ineligible to cover 5G. Sparse Code Multiple Access (SCMA) and Coded Random Access are the new schemes available (CRA).

SCMA and CRA are Non-Orthogonal Multiple Access, unlike OFDMA, which is Orthogonal based (NOMA). Serving several users simultaneously in a single resource block, such as a time slot, subcarrier, deployment code, or space, is the fundamental idea of NOMA.

Compared to Orthogonal Multiple Access (OMA) approaches, NOMA thus encourages huge connection, reduces latency, enhances user fairness and spectrum efficiency, and boosts reliability [11]. Moreover, access to information is made possible through telecommunications networks [2].

The use of the Message-Passing Algorithm (MPA) is to be a detector of user information on SCMA. With the hope of being the optimal algorithm for SCMA, with increasing complexity as users increase. MPA detects information by finding the smallest bit error rate (BER) in SCMA [19].