Alpha Zero Architecture:

1. Deep Neural Network (Convolutional Neural Network)
    - Architecture:
        - The board state is received as an imagelike tensor(multi dimensional array)
        - Spatial features are extracted using a convolutional layer
        - Residual Network blocks which contain which contain two convolutional layers along with batch activation and non-linear activation follow. Residual connections help in training very deep networks by mitigating the vanishing gradient problem
        - The network has two heads: a policy head, which produces a probability distribution over all possible moves, and a value network, which represents the evaluation of the expected outcome from that position

2. Monte Carlo Tree Search (See Other Document)

3. Self Play
    - AlphaZero plays games against itself using Monte Carlo Tree Search and CNN for move selection
    - Each Self Play game generates training data, which is used to enhance move probabilities
    - Loss function is designed to minimize policy loss (network probabilities to Monte Carlo probabilities), value loss (game outcome to network's predicted outcome), and regularization to prevent overfitting