**Model Architecture Overview**

**🧠 Model Architecture (Keras Sequential)**

| **Layer Type** | **Output Shape** | **Parameters** | **Description** |
| --- | --- | --- | --- |
| **Input Layer** | (64, 64, 3) | 0 | Input: 64x64 RGB image |
| **Conv2D** | (62, 62, 32) | 896 | 32 filters, 3x3 kernel, ReLU |
| **MaxPooling2D** | (31, 31, 32) | 0 | 2x2 pooling |
| **Conv2D** | (29, 29, 64) | 18,496 | 64 filters, 3x3 kernel, ReLU |
| **MaxPooling2D** | (14, 14, 64) | 0 | 2x2 pooling |
| **Conv2D** | (12, 12, 64) | 36,928 | 64 filters, 3x3 kernel, ReLU |
| **Flatten** | (9216,) | 0 | Flattens the 3D output to 1D |
| **Dense** | (64,) | 589,888 | Fully connected, ReLU |
| **Dense (output)** | Varies (11/14/28) | ~700–1,800 | Softmax activation for classification |

**🔍 Output Layer Based on Dataset**

* **Dataset 1:** 11 output neurons (e.g., "Hi", "Bye", etc.)
* **Dataset 2:** 14 output neurons (health-related terms)
* **Dataset 3:** 28 output neurons (A–Z + Space + Nothing)