**Algorithm for Cyclone Intensity Estimation:**

1. **Input:** Insta 3D IR image dataset represented as *I* of shape (256,256,3).
2. **Output:** Cyclone intensity prediction model.
3. **Initialize input layer:** inputs = Input(shape=(256, 256, 3)).
4. **For each convolutional block *i*, where *i*=1,2,...,*N*:**
5. *y*(*i*)=*Conv*2*D*(*I*,*W*(*i*),*b*(*i*)) with kernel size 3×3 and padding "same", where *W*(*i*) and *b*(*i*) are weights and biases of the convolutional layer.
6. *y*(*i*)=*BatchNormalization*(*y*(*i*)).
7. *y*(*i*)=*ReLU*(*y*(*i*)).
8. *y*(*i*)=*MaxPool*2*D*(*y*(*i*)).
9. **Flatten the output from the last convolutional block:** *y*flat​=*Flatten*(*y*(*N*)).
10. **Generate output prediction:** outputs=Dense(*y*flat​,*W*out​,*b*out​), where *W*out​ and *b*out​ are weights and biases of the output layer.
11. **Apply L1L2 regularization to convolutional layers.**
12. **Return:** Cyclone intensity prediction model.

**Algorithm for Cyclone Direction Estimation:**

1. **Input:** INSAT 3D IR image dataset represented as *I* of shape (256,256,3).
2. **Output:** Cyclone direction prediction model.
3. **Initialize input layer:** inputs=Input(*shape*=(256,256,3)).
4. **For each convolutional block *i*, where *i*=1,2,...,*N*:**
   * **Convolutional Layer:** *y*(*i*)=Conv2D(*I*,*W*(*i*),*b*(*i*)) with kernel size 3×3 and padding "same", where *W*(*i*) and *b*(*i*) are weights and biases of the convolutional layer.
   * **Batch Normalization:** *y*(*i*)=BatchNormalization(*y*(*i*)).
   * **ReLU Activation:** *y*(*i*)=ReLU(*y*(*i*)).
   * **Max Pooling:** *y*(*i*)=MaxPool2D(*y*(*i*)).
5. **Flatten the output from the last convolutional block:** *y*flat​=Flatten(*y*(*N*)).
6. **Generate output prediction:** direction\_output=Dense(*y*flat​,*W*out​,*b*out​), where *W*out​ and *b*out​ are weights and biases of the output layer for direction prediction.
7. **Apply L1L2 regularization to convolutional layers.**
8. **Return:** Cyclone direction prediction model.