**Hyperparameter tuning**

Hyperparameters we have tuned are:

1. Optimizer: Adam, RMSProp, SGD

Learning Rate:0.001, 0.01,0.1

**For Model1 (Fish Localization):**

|  |  |  |  |
| --- | --- | --- | --- |
| Optimizer | Learning Rate | Drop Ratio | Intersection over Union (IoU) for Validation |
| RMSProp | 0.001 | 0.5 | 0.05916595828038941 |
| RMSProp | 0.001 | 0.7 | 0.06697892062915273 |
| RMSProp | 0.001 | 0.8 | 0.027552860364718882 |
| SGD | 0.001 | 0.5 | 0.04918212063674736 |
| SGD | 0.001 | 0.7 | 0.03084469545491272 |
| SGD | 0.001 | 0.8 | 0.04635634851225526 |
| ADAM | 0.001 | 0.5 | 0.009074315957180164 |
| ADAM | 0.001 | 0.7 | 0.013103915474366392 |
| ADAM | 0.001 | 0.8 | 0.009850858354809816 |
| RMSProp | 0.01 | 0.5 | 0.017100379249480338 |
| RMSProp | 0.01 | 0.7 | 0.007527862805291865 |
| RMSProp | 0.01 | 0.8 | 0.018675593822314058 |
| SGD | 0.01 | 0.5 | 0.05836305138366047 |
| SGD | 0.01 | 0.7 | 0.005256330440361491 |
| SGD | 0.01 | 0.8 | 0.09444243644789639 |
| ADAM | 0.01 | 0.5 | 0.006079822701755217 |
| ADAM | 0.01 | 0.7 | 0.04960293784174007 |
| ADAM | 0.01 | 0.8 | 0.00695820973055734 |
| RMSProp | 0.1 | 0.5 | 0.01226741332893041 |
| RMSProp | 0.1 | 0.7 | 0.0062498116810106264 |
| RMSProp | 0.1 | 0.8 | 0.006043347785166556 |
| SGD | 0.1 | 0.5 |  |
| SGD | 0.1 | 0.7 |  |
| SGD | 0.1 | 0.8 |  |
| ADAM | 0.1 | 0.5 |  |
| ADAM | 0.1 | 0.7 |  |
| ADAM | 0.1 | 0.8 |  |

**ForModel2 (Fish Classification):**

|  |  |  |
| --- | --- | --- |
| **Optimizer** | **Learning Rate** | **Log Loss for Validation** |
| RMSProp | 0.001 | 2.461715246314433 |
| SGD | 0.001 | 3.595411736507719 |
| Adam | 0.001 | 2.676518795239816 |
| RMSProp | 0.01 | 6.10315287503572 |
| SGD | 0.01 | 3.2645895830286085 |
| Adam | 0.01 | 2.70410889689602 |
| RMSProp | 0.1 | 10.522447322125708 |
| SGD | 0.1 | 3.0928670043563227 |
| Adam | 0.1 | 2.98967542104468 |