연구윤리 과제 8주차

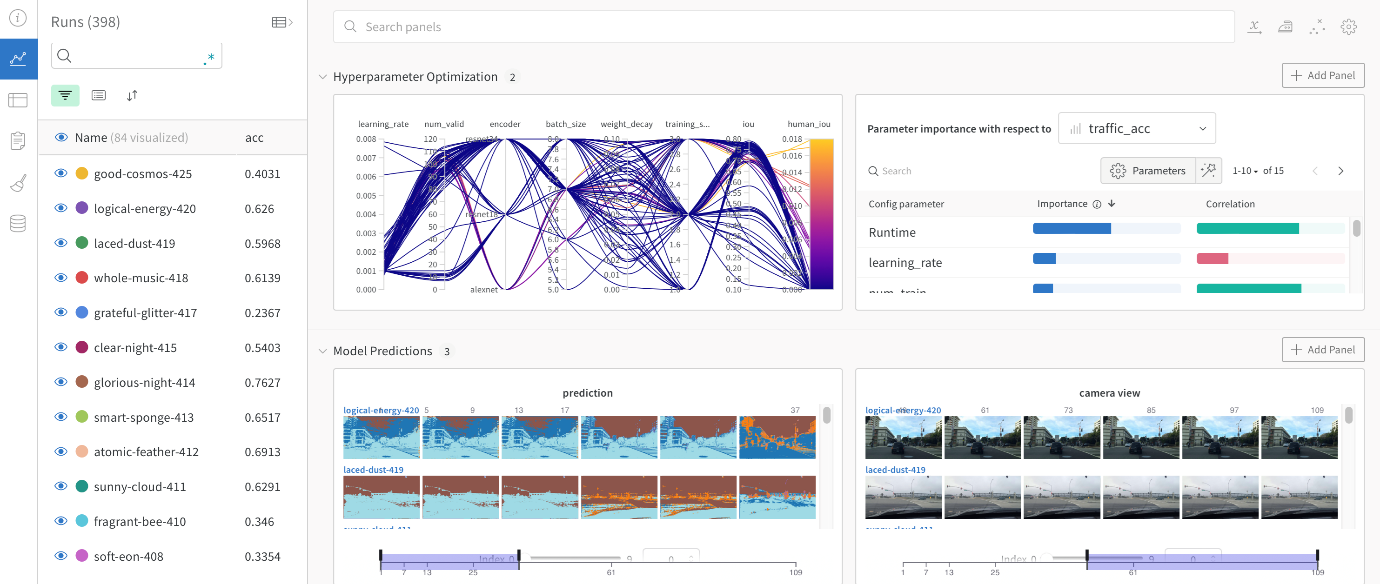
교수님 지시 사항

* Weight & bias API를 이용하여 관련 가중치 트랙킹
* 기본 데이터의 전처리 및 데이량 증가
* Train Loss: 0.101, Valid Loss: 0.155518, Accuracy: 0.95
* Train Loss: 0.072, Valid Loss: 0.147096, Accuracy: 0.96
* Train Loss: 0.024, Valid Loss: 0.153561, Accuracy: 0.95
* Waiting for W&B process to finish... **(success).**

### Run history:

|  |  |
| --- | --- |
| train/epoch | ▁▁▁▁▂▂▂▂▂▃▃▃▃▃▃▄▄▄▄▄▅▅▅▅▅▅▆▆▆▆▆▇▇▇▇▇▇███ |
| train/example\_ct | ▁▁▁▁▂▂▂▂▂▃▃▃▃▃▃▄▄▄▄▄▅▅▅▅▅▅▆▆▆▆▆▇▇▇▇▇▇███ |
| train/train\_loss | █▅▃▄▃▂▂▃▂▂▂▂▂▂▂▁▂▁▂▂▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁ |
| val/val\_accuracy | ▁▂▅▆▆▇▇▇█▇ |
| val/val\_loss | █▅▄▃▂▂▁▁▁▁ |

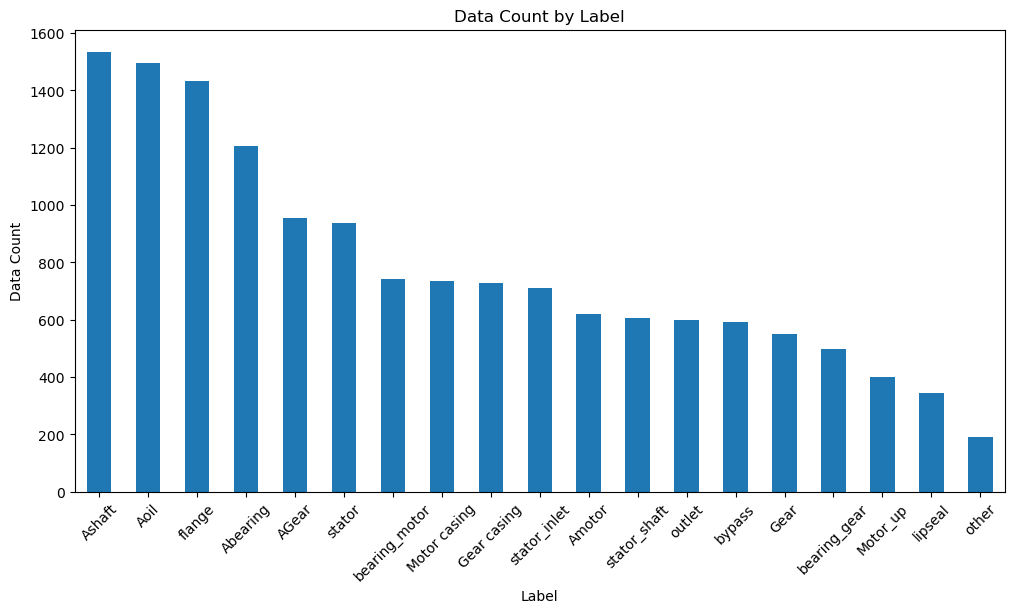
|  |  |
| --- | --- |
| test\_accuracy | 0.8 |
| train/epoch | 10.0 |
| train/example\_ct | 120000 |
| train/train\_loss | 0.02394 |
| val/val\_accuracy | 0.9525 |
| val/val\_loss | 0.15356 |



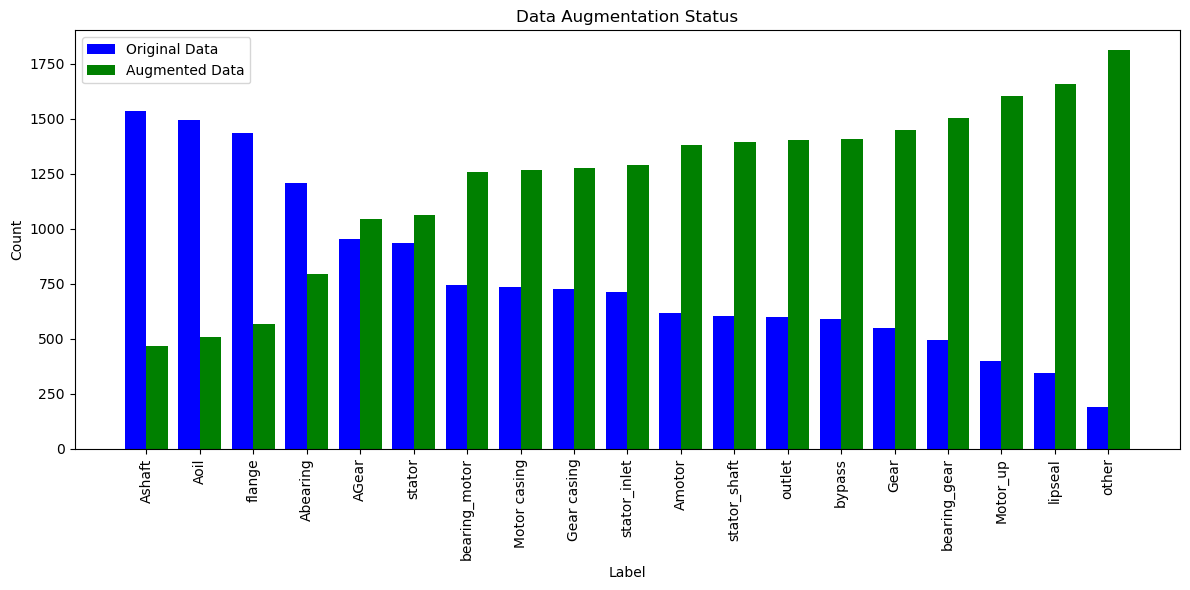
2. 데이터 전처리 및 증량

|  |  |
| --- | --- |
| Label | Q'ty |
| Ashaft | 1535 |
| Aoil | 1494 |
| flange | 1434 |
| Abearing | 1207 |
| AGear | 954 |
| stator | 937 |
| bearing\_motor | 742 |
| Motor casing | 734 |
| Gear casing | 726 |
| stator\_inlet | 712 |
| Amotor | 618 |
| stator\_shaft | 605 |
| outlet | 597 |
| bypass | 591 |
| Gear | 550 |
| bearing\_gear | 496 |
| Motor\_up | 933 |
| lipseal | 343 |
| other | 189 |

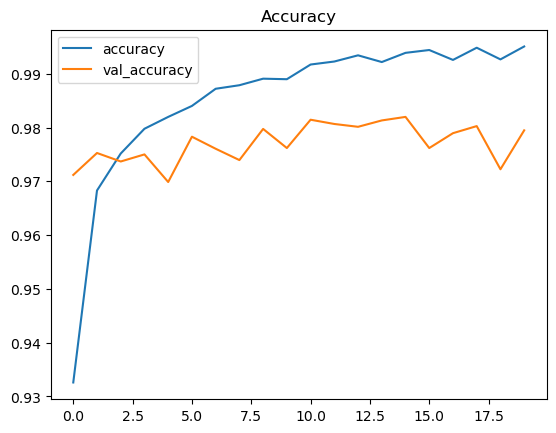
|  |  |
| --- | --- |
| train | test |
| (13376, 2) | (1487, 2)) |

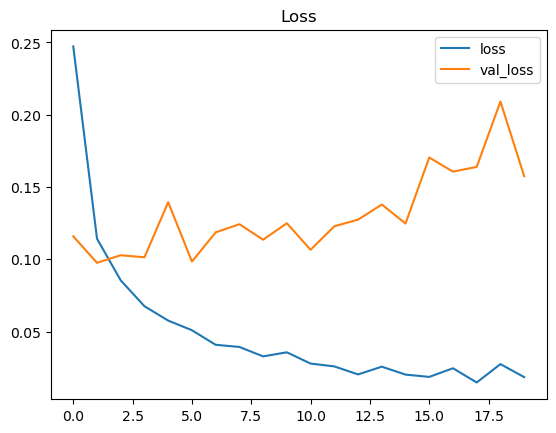


|  |  |  |  |
| --- | --- | --- | --- |
| **train** | validating |  |  |
| **Found 11899 images belonging to 19 classes.** | | | |
| **Found 2964 images belonging to 19 classes.** | | | |



|  |  |
| --- | --- |
| model = tf.keras.Sequential([ | |
| base\_model, | |
| tf.keras.layers.GlobalAveragePooling2D(), | |
| tf.keras.layers.Dense(128, activation='relu'), | |
| tf.keras.layers.Dense(128, activation='relu'), | |
| tf.keras.layers.Dense(num\_classes,activation='softmax') | |
| ]) |  |
| Model trained in 36137.2 sec | | |
| Validation Accuracy: [0.9712, 0.9753, 0.9737, 0.975, 0.9699, 0.9783, 0.9761, 0.9739, 0.9797, 0.9762, 0.9814, 0.9807, 0.9801, 0.9813, 0.982, 0.9762, 0.9789, 0.9803, 0.9722, 0.9795] | | |





model = tf.keras.Sequential([

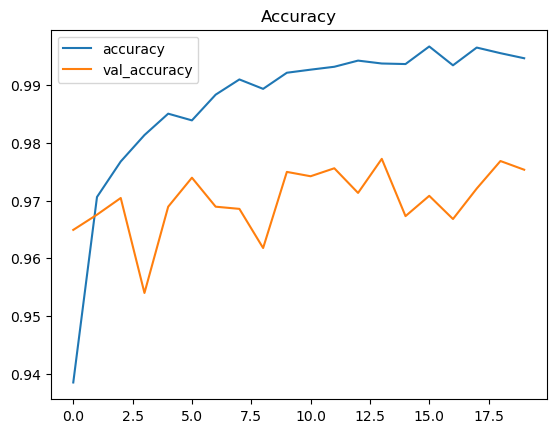
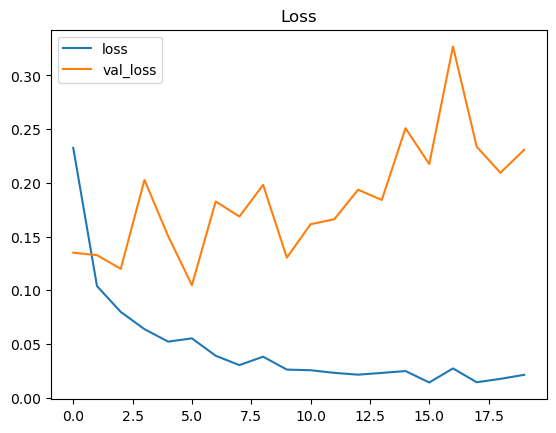
base\_model,

tf.keras.layers.GlobalAveragePooling2D(),

tf.keras.layers.Dense(1024, activation='relu'),

tf.keras.layers.Dense(num\_classes, activation='softmax')

])



클래스별로

노드 개수 별로 늘려서

런닝 레이트 조절

옵티마이저 변경

모델 만들어서 병렬로 시험하기

클래스 두개만 만들어서 구별

Model trained in 8520.1 sec

Validation Accuracy: [0.9709, 0.9835, 0.976, 0.9808, 0.9775, 0.9777, 0.9868, 0.9879, 0.9901, 0.9894, 0.9841, 0.9839, 0.9866, 0.9881, 0.9854, 0.983, 0.981, 0.9859, 0.985, 0.9879]

Labels: ['outlet' 'flange' 'Motor casing' 'Aoil' 'Gear casing' 'AGear' 'Ashaft'

'stator\_inlet' 'bearing\_motor' 'stator' 'Abearing']

Model trained in 10389.65 sec

Validation Accuracy: [0.9854, 0.9817, 0.9812, 0.9738, 0.9773, 0.9852, 0.971, 0.985, 0.9823, 0.9782, 0.9793, 0.9784, 0.9832, 0.985, 0.9841, 0.9871, 0.9749, 0.9887, 0.985, 0.9823]