Logo

Description automatically generated

**Project Title**

**Handwritten Signature Identification and Verification**

| **Name** | **ID** | **Section** |
| --- | --- | --- |
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**Under the supervision of**

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**Data Preparation**

**- There are 200 training images (40\*5) with 5 classes as output: PersonA, PersonB, PersonC, PersonD, and PersonE.**

**- We applied Augmentation to increase the dataset, we now have 991 training images (198\*5) and 200 validation images (40\*5) with 5 classes as output: PersonA, PersonB, PersonC, PersonD, and PersonE.**

**- Concatenate the training and test sets from the 5 folders.**

**- We tried to use gans model to create images but not enough efficient to use it.**

**Description of the models and techniques.**

**ResNet-50:**

**- Input shape:**

**input\_shape = (224, 224, 3), include\_top = False, weights = 'imagenet'**

**- Add some layers which match the dataset:**

**x = layers.Flatten()(base\_model.output)**

**x = layers.Dense(512, activation='relu')(x)**

**x = layers.Dropout(0.5)(x)**

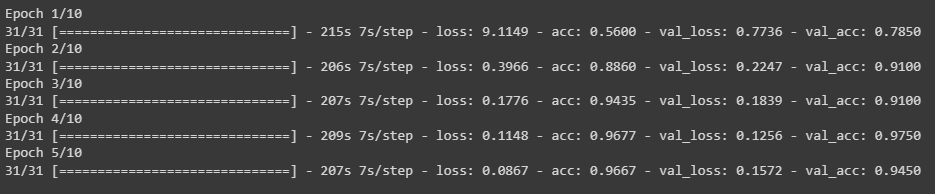
**x = layers.Dense(5, activation='Softmax')(x)**

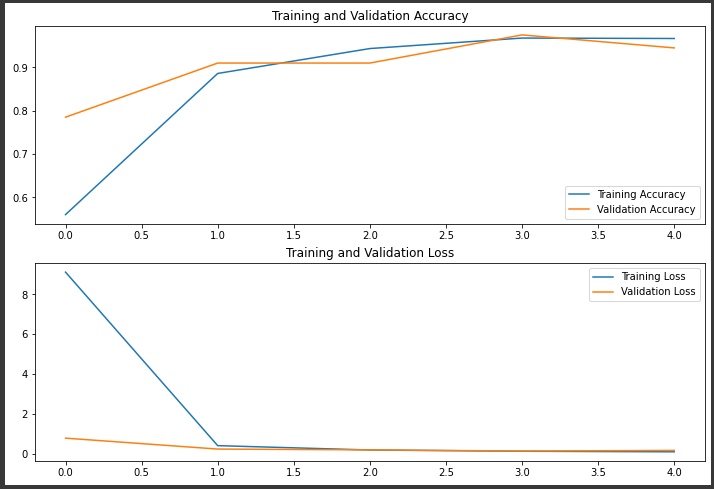
**model = tf.keras.models.Model(base\_model.input, x)**

**- Optimizer & Loss:**

**optimizer = 'adam', loss = 'categorical\_crossentropy'**

**- Fit Model:**

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**- History Plot:**

**Inception-V3:**

**- Input shape:**

**input\_shape = (150, 150, 3), include\_top = False, weights = 'imagenet'**

**- Add some layers which match the dataset:**

**x = layers.Flatten()(base\_model.output)**

**x = layers.Dense(512, activation='relu')(x)**

**x = layers.Dropout(0.2)(x)**

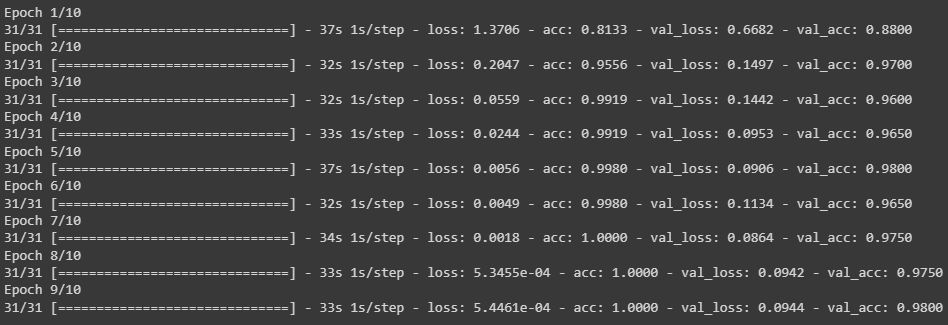
**x = layers.Dense(5, activation='Softmax')(x)**

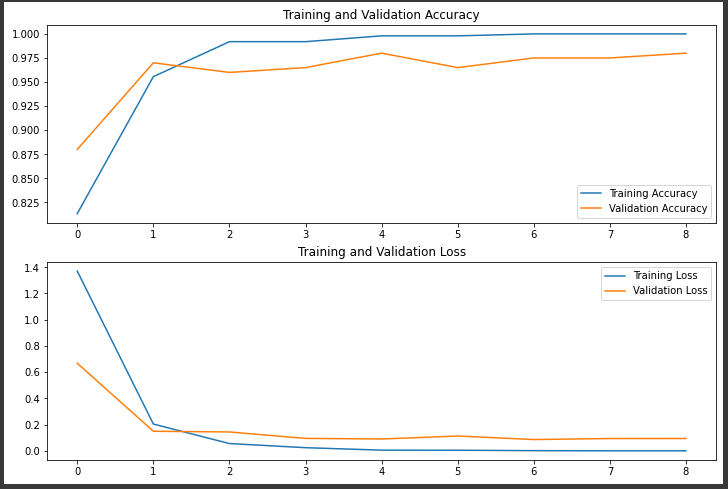
**model = tf.keras.models.Model(base\_model.input, x)**

**- Optimizer & Loss:**

**optimizer = 'adam', loss = 'categorical\_crossentropy'**

**- Fit Model:**

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**- History Plot:**

**VGG-16:**

**- Input shape:**

**input\_shape = (224, 224, 3), include\_top = False, weights = 'imagenet'**

**- Add some layers which match the dataset:**

**x = layers.Flatten()(base\_model.output)**

**x = layers.Dense(512, activation='relu')(x)**

**x = layers.Dropout(0.5)(x)**

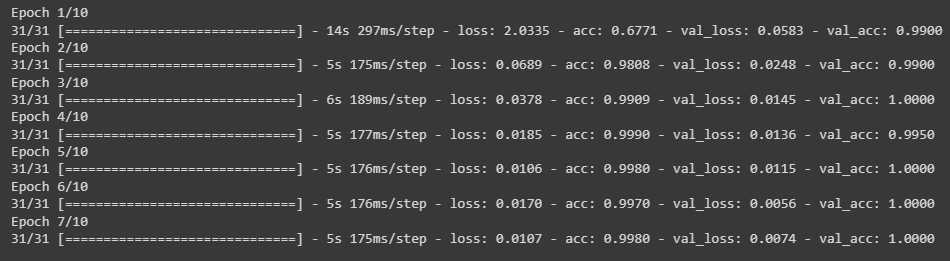
**x = layers.Dense(5, activation='Softmax')(x)**

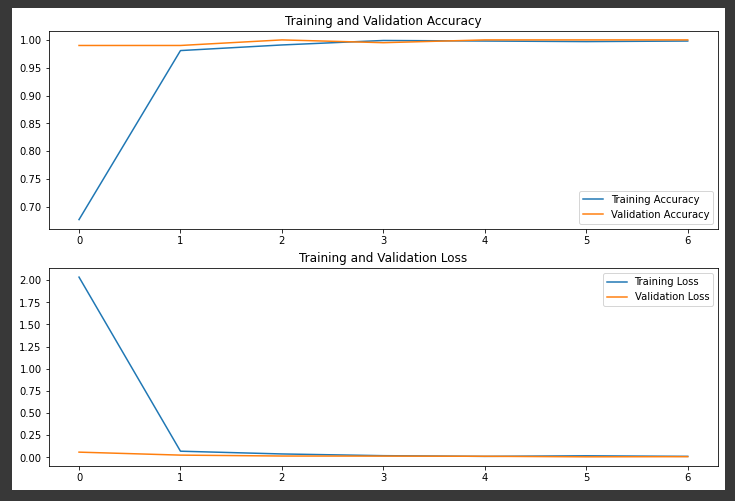
**model = tf.keras.models.Model(base\_model.input, x)**

**- Optimizer & Loss:**

**optimizer = 'adam', loss = 'categorical\_crossentropy'**

**- Fit Model:**

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**- History Plot:**

**Vision Transformers:**

**- Input shape:**

**- Add some layers which match the dataset:**

**- Optimizer & Loss:**

**- Fit Model:**

**- History Plot:**

**Bag Of Words (BOW):**

**- Input shape:**

**- Add some layers which match the dataset:**

**- Optimizer & Loss:**

**- Fit Model:**

**- History Plot:**

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**- Input shape:**

**- Add some layers which match the dataset:**

**- Optimizer & Loss:**

**- Fit Model:**

**- History Plot:**

**Object Detection using YOLO:**

**- Input shape:**

**- Add some layers which match the dataset:**

**- Optimizer & Loss:**

**- Fit Model:**

**- History Plot:**