

DATA ANALYTICS 04|18 MAD

Beauty is in the Eye of a Computer?

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Subjetividad

MACHINE LEARNING

El objetivo del proyecto es que nuestra máquina «red neuronal convolucional» aprenda a clasificar -por sí sola-, dada una nueva imagen de una persona, en un **ránking de 1 a 5** su nivel de atractivo (en base a unos datos preestablecidos).

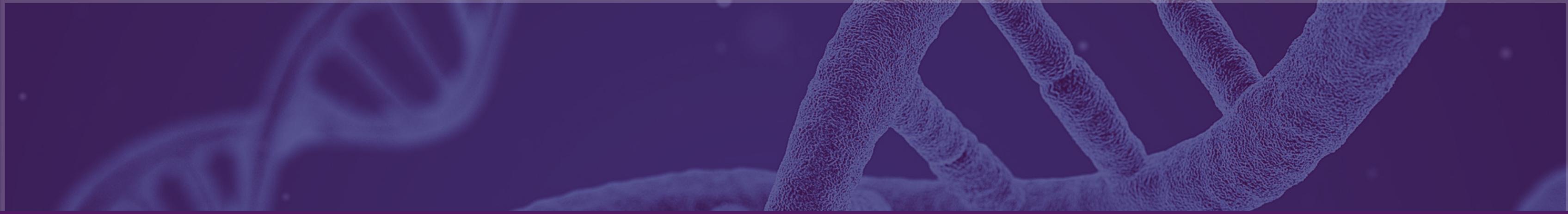
```
        selectedElements = previousElements;
        previousElements = [];
        previousElements.length = 0;
        previousElements.push(selectedElement);
        previousElements.length = 1;
    }

    if (selectedScope.$eval(watchExpr, func)) {
        var i, ii;
        for (ii = 0, ii = previousElements.length; ii >= 0; ii--) {
            previousElements[ii].remove();
        }
        previousElements.length = 0;
    }

    for (ii = 0, ii = selectedScopes.length; ii >= 0; ii--) {
        var selected = selectedElements[i];
        selectedScopes[ii].$destroy();
        previousElements[i] = selected;
        $animate.leave(selected, function() {
            previousElements.splice(ii, 1);
        });
    }
}

selectedElements.length = 0;
selectedScopes.length = 0;

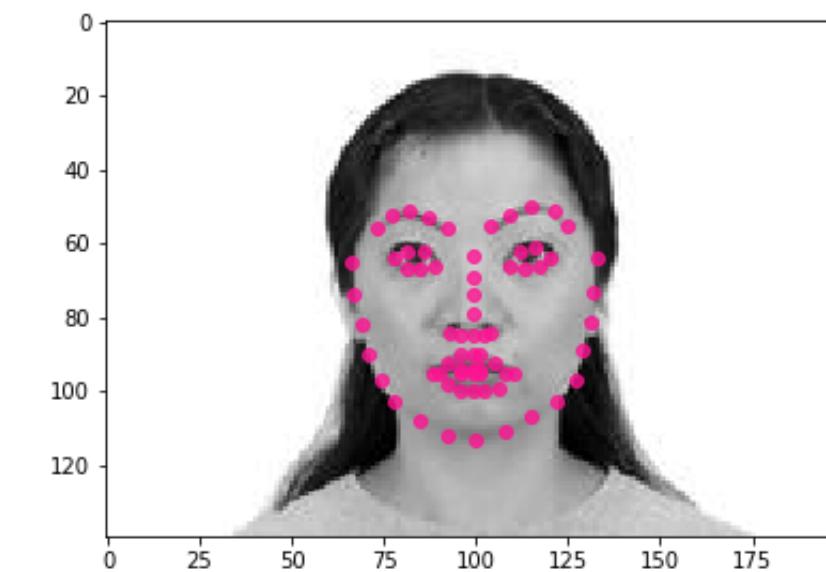
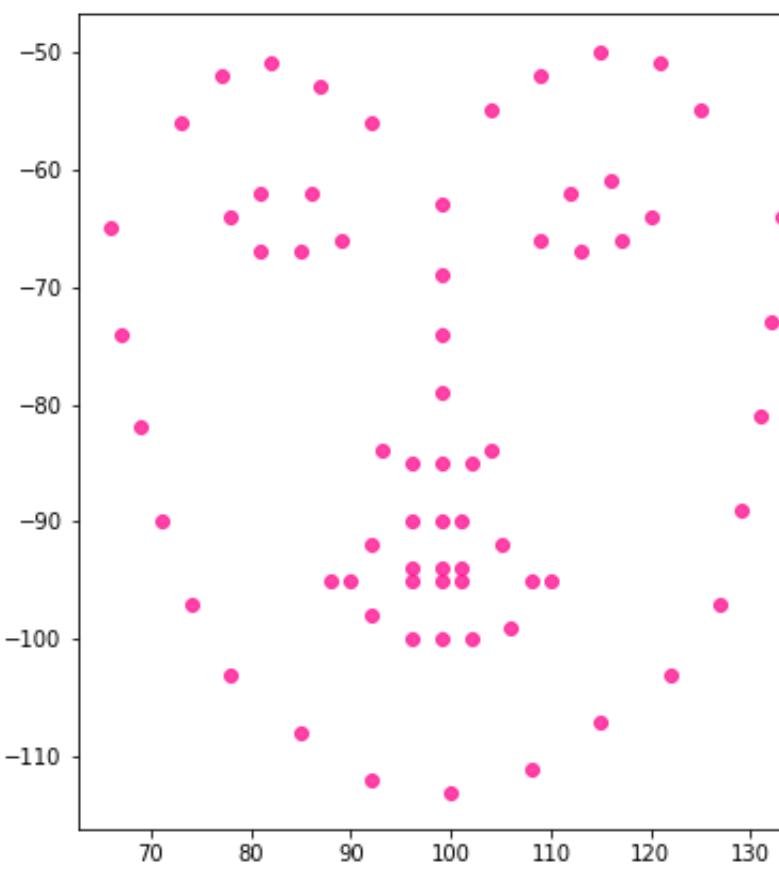
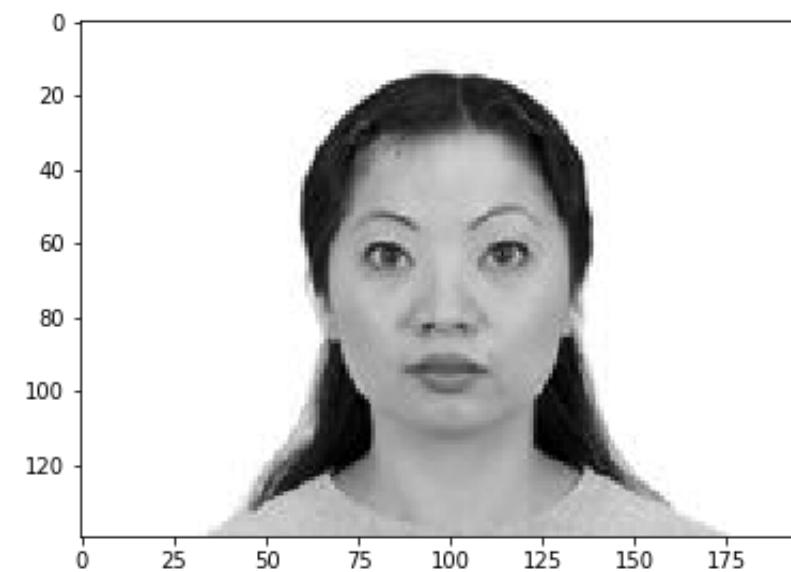
if (!selectedTranscludes) {
    scope.$eval(attr.change);
    forEach(selectedTranscludes, function(transclude) {
        var selectedScope = scope.$new();
        selectedScopes.push(selectedScope);
        transclude(scope, selectedScope);
    });
}
```



Procedimiento

FROM THEORY TO APPLICATION

Obtención de datos



- Extraemos las imágenes
- Las transformamos a blanco y negro
- Sacamos los píxeles

- Adquirimos los puntos faciales o landmarks
- Los landmarks son únicos para cada imagen

REDES NEURONALES

Test loss: 1.50
Test accuracy: 0.40

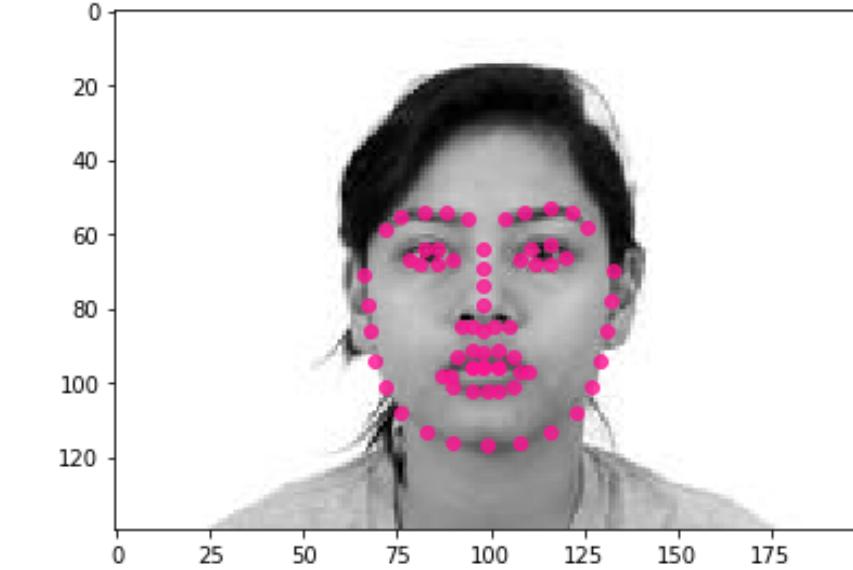
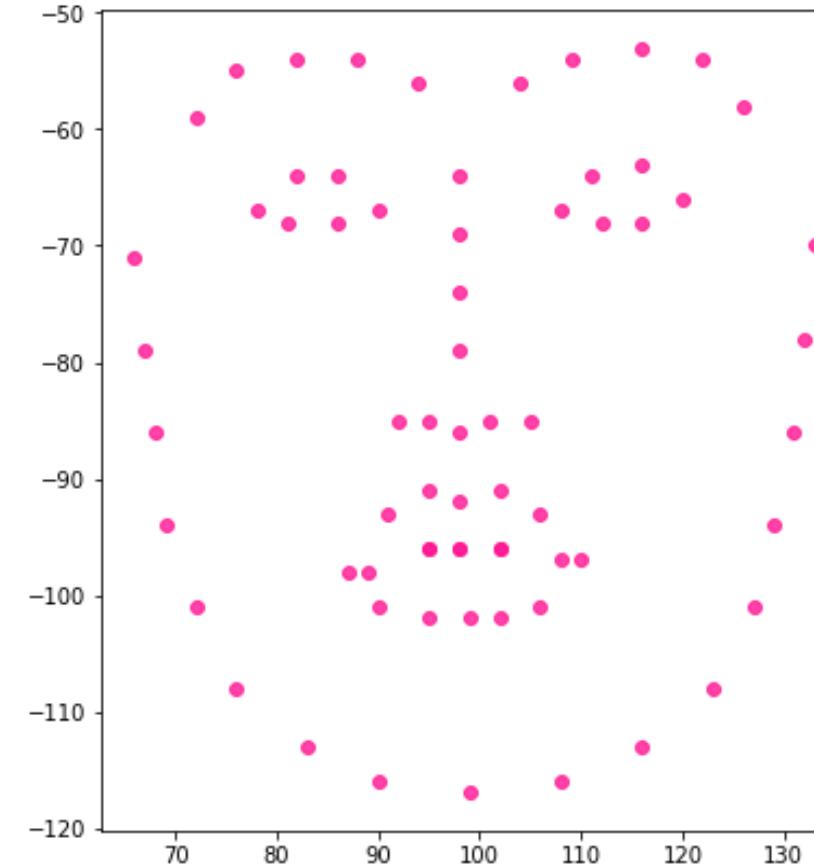
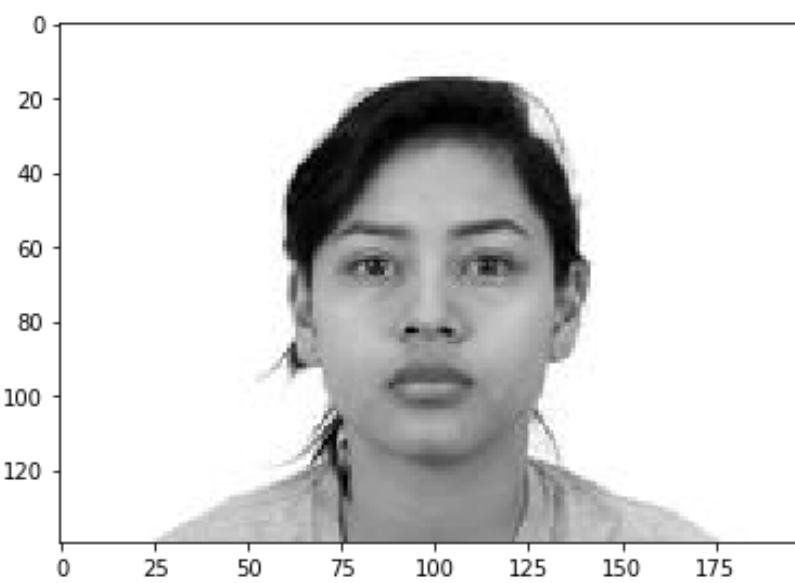
```
Train on 477 samples, validate on 120 samples
Epoch 1/10
477/477 [=====] - 403s 846ms/step - loss: 1.7772 - acc: 0.3585 - val_loss: 1.7606 - val_acc: 0.4083
Epoch 2/10
477/477 [=====] - 406s 850ms/step - loss: 1.7462 - acc: 0.3920 - val_loss: 1.7305 - val_acc: 0.4083
Epoch 3/10
477/477 [=====] - 405s 850ms/step - loss: 1.7168 - acc: 0.3962 - val_loss: 1.7019 - val_acc: 0.4083
Epoch 4/10
477/477 [=====] - 405s 848ms/step - loss: 1.6887 - acc: 0.3962 - val_loss: 1.6745 - val_acc: 0.4083
Epoch 5/10
477/477 [=====] - 403s 845ms/step - loss: 1.6619 - acc: 0.3962 - val_loss: 1.6484 - val_acc: 0.4083
Epoch 6/10
477/477 [=====] - 404s 847ms/step - loss: 1.6365 - acc: 0.3836 - val_loss: 1.6237 - val_acc: 0.4083
Epoch 7/10
477/477 [=====] - 405s 850ms/step - loss: 1.6124 - acc: 0.3962 - val_loss: 1.6004 - val_acc: 0.4083
Epoch 8/10
477/477 [=====] - 405s 850ms/step - loss: 1.5896 - acc: 0.3962 - val_loss: 1.5783 - val_acc: 0.4083
Epoch 9/10
477/477 [=====] - 406s 850ms/step - loss: 1.5679 - acc: 0.3962 - val_loss: 1.5572 - val_acc: 0.4083
Epoch 10/10
477/477 [=====] - 406s 852ms/step - loss: 1.5473 - acc: 0.3732 - val_loss: 1.5373 - val_acc: 0.4083
<keras.callbacks.History at 0x7f5eee2eaa58>
```

Modelando en muestra



Rating: 3.653846154

Probs -> 1: 0.11271 2: 0.11887 3: 0.24499 4: 0.24479 5: 0.16211



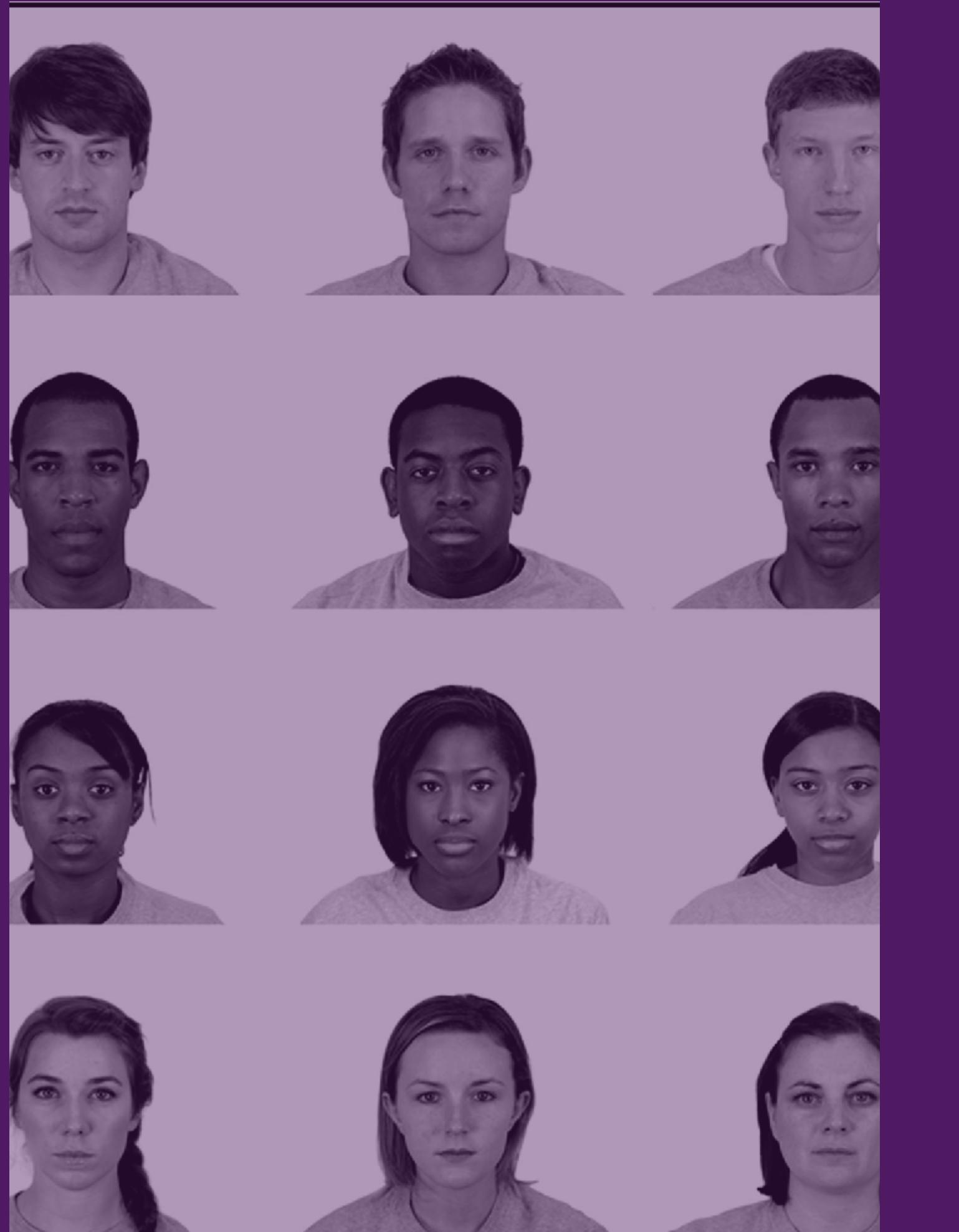
Uso de imagen de test

- Rating en el dataset (3,65)
- Rating que obtenemos del modelo:
 - 3: 24,50%
 - 4: 24,50%



FUTUROS AVANCES

- Mejora del nivel de acierto
- Aplicación de un recomendador de cirugía estética para incrementar el resultado del ranking



DATASET USADO:
Chicago Face Database
v. 2.0.3 Julio '16

¡Gracias!