Gender Detection using Facial Features with Support Vector Machine
-Replication & Additive Work-

Base Paper:

- Hiremath et al. (2022) → Determined human gender
  - SVM (RBF Kernel) → 91.63 % Acc

Goal:

- SVM replication;

- Diferent techiques → CNN; Diferent SVM Kernels → Better results?

- Not only Gender but Age will also be classified as well.

Tools:

- Python 3 → Jupyter Notebook
  - Pandas; Numpy; Scikit-learn → Data Processing; Sample Selection
  - Matplotlib; Seaborn → Vizualization
  - PIL; OpenCV → Images Processing
  - Scikit-learn; Tensorflow → Model creation

Project Proposal - 2022/23

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Data set (UTKFACE):
- Same set as used in original work
- 20,000 instances (200 by 200 pixels each)
  - Images of faces labeled with respective age, gender and ethnicity (not considered)
  - Variation in terms of facial expression, illumination, resolution, and other more abstract features

Important considerations:
- Dimension problem:
  - 200 by 200 pixel image → arrays of floating points (RGB format) with one array per pixel
    - higher computational power
- Possible approach:
  - Using a sample of the dataset backed up by an analysis of the distribution of the original data set
    - More manageable computation cost + diminished loss of quality
  - Assignment of sets of images to a bin each per age range
    - Reduces incorrect classifications for possible less represented demographics

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