QAC239: Final Project Proposal

Nelson Lin

Research question(s)

Analyzing Deep Learning Models to Predict the Ages of Faces

The importance of your research question(s) or the project

I believe that age detection is useful in a variety of applications, including:

- Age Verification: purchasing alcohol and event tickets, as well as changing content depending on age restrictions.
- Human-Computer interaction: improving user experiences in applications based off their age group.
- Market Research: helping companies understand the demographic of their audience.

The datasets you are going to use

The pretrained model uses a built in dataset, the OUI-Adience dataset, but I am also hoping to incorporate an additional labelled face image dataset, curated by Kaggle user Fazle Rabbi, to help evaluate the model.

Methods you will use to answer the question(s) or solve the problem(s)

Face recognition models: I will be utilizing the models we have learnt in class (i.e. Haar cascades, HoG, and Deep Learning models) and analyzing their effects on the resulting age prediction of the final model

Age prediction models: I will be using a deep learning age detector model, provided through OpenCV, and I will analyze the accuracy of the model in both static and real-time settings.

Potential challenges you may encounter

The pretrained model is heavily biased towards the age group of 25-32, which could impact predictions. Also, a general problem faced in face detection research is an underrepresentation of minority groups, which could also affect the training of the model and affect its overall accuracy. In both cases, I am hoping to use the additional dataset to further train and test the model.

References

- Tutorial: https://pyimagesearch.com/2020/04/13/opencv-age-detection-with-deep-learning/
- Initial Publication: https://talhassner.github.io/home/publication/2015_CVPR

- Model Dataset: https://talhassner.github.io/home/projects/Adience/Adience-data.html#agegender
- Kaggle Dataset: https://www.kaggle.com/datasets/frabbisw/facial-age