



SEER – A COMPUTER VISION AND MACHINE LEARNING BASED DEVICE FOR VISUALLY IMPAIRED

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ABSTRACT

The project is aimed at aiding the visually impaired people in their everyday routine. The project deploys computer vision and machine learning algorithms retrained over our own custom dataset to identify objects, faces and text encountered by the user. The output is conveyed to user in the form of audio. Major tools utilized in the project are OpenCV, Tensorflow and ImUtils.

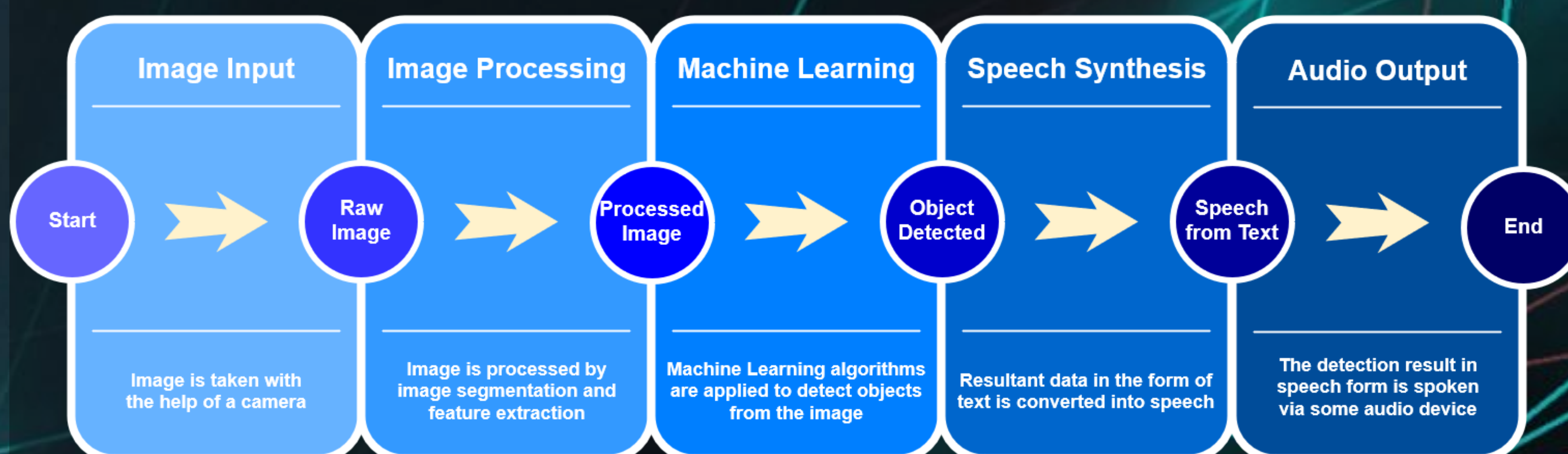
OBJECTIVES

- Identifying various common objects, familiar faces and readable text encountered by the user
- Conveying obtained information to the user via audio
- Achieving substantial accuracy for object, facial and text recognition
- Providing a low cost solution to the visual impairment problem

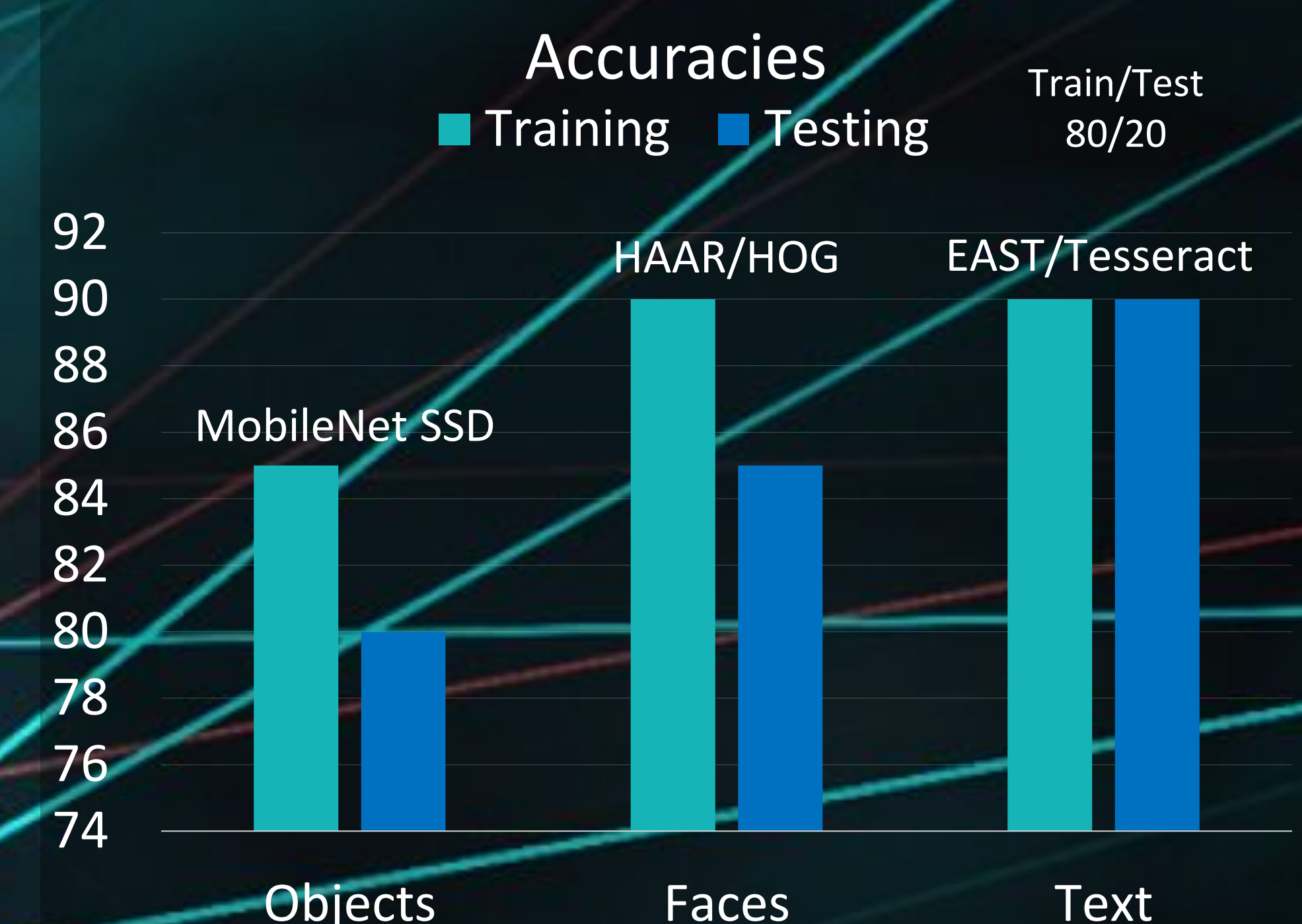
RESULTS

- The accuracy for object recognition on 30 objects with 50 images per category is in the vicinity of 80%
- The accuracy achieved for facial recognition on 10 persons with 50 images per person is around 85%
- The accuracy for text detection and recognition is around 90%

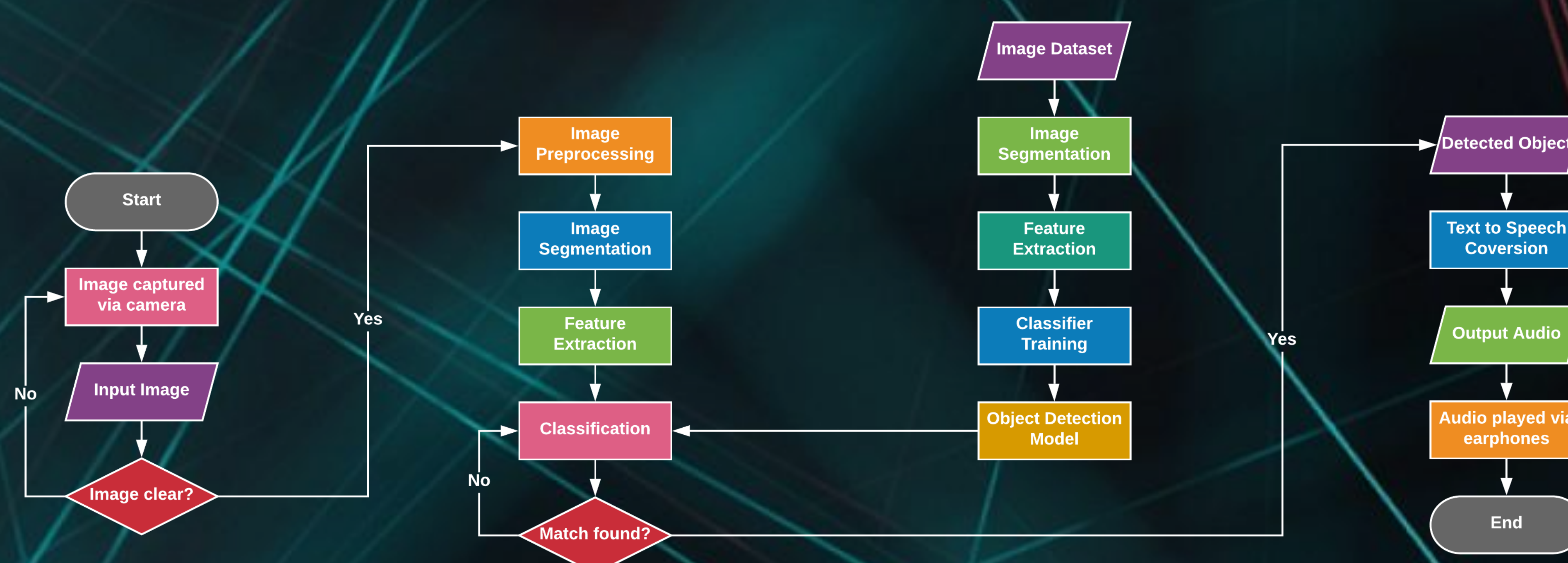
METHODOLOGY



GRAPH



FLOW CHART



SUMMARY

The purpose of the project is to help the people with visual disabilities to recognize everyday objects, faces and textual information in their line of sight to make them more independent in their daily chores. The solution is cheap, compact and wearable with no side effects.

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REFERENCES

- N. Dalal and B. Triggs, "Histograms of Oriented Gradients for Human Detection", In: IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2005
- K.M.M. Rao, "Overview of Image Processing", In: Readings in Image Processing Fundamentals Of Digital Image Processing, Prentice-Hall, 1989