



READING ASSISTANT FOR BLIND

Project Proposal for gPBL 2016

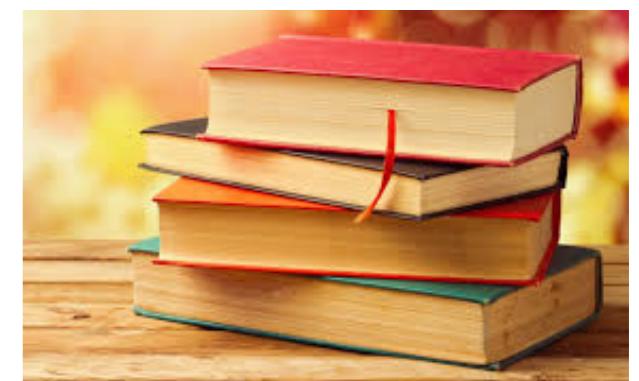
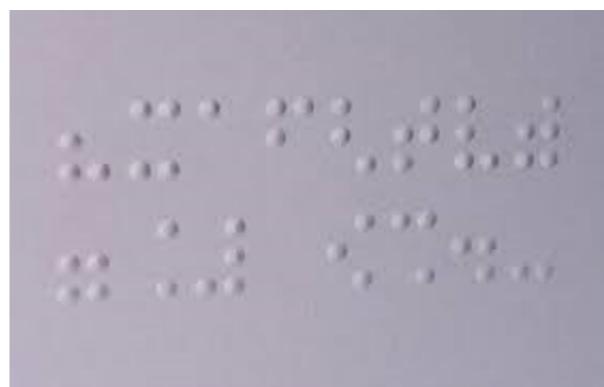
Introduction

4 %
→ the statistics of blinder in the world

2 8 5 million
→ the number of blinder in the world

They can't read words.
How read books?

1. Use braille books



2. Listen audio files provided for
blinders



The problem is ...

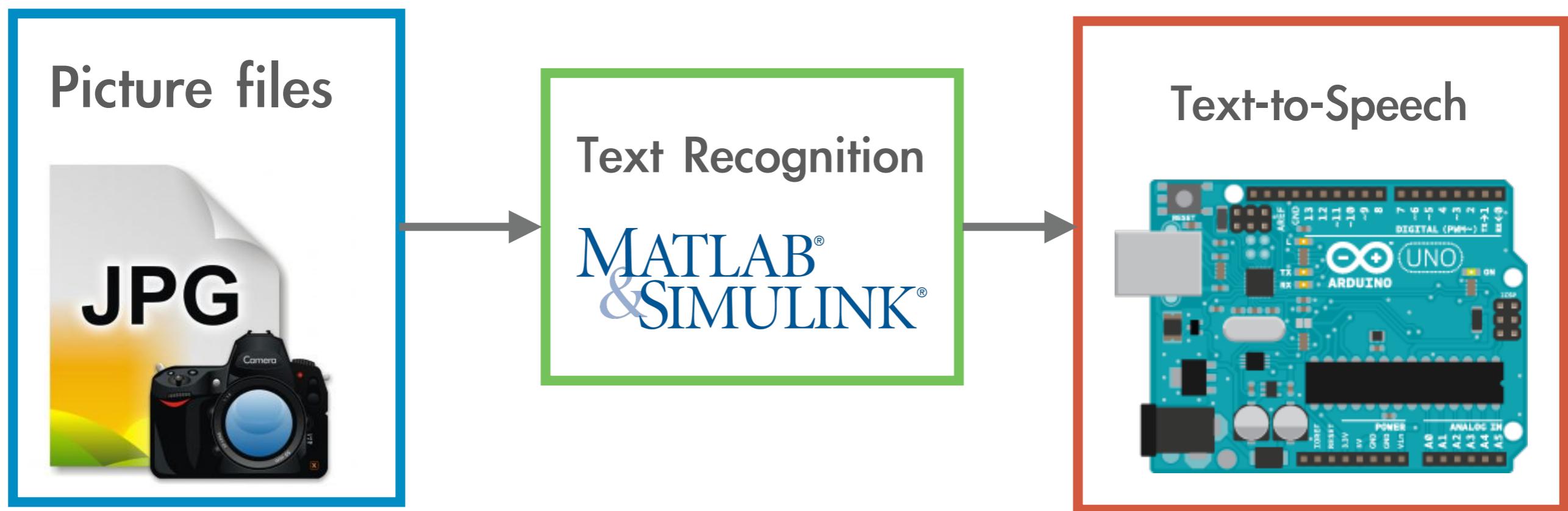
Too Slow to Read

Expensive!!



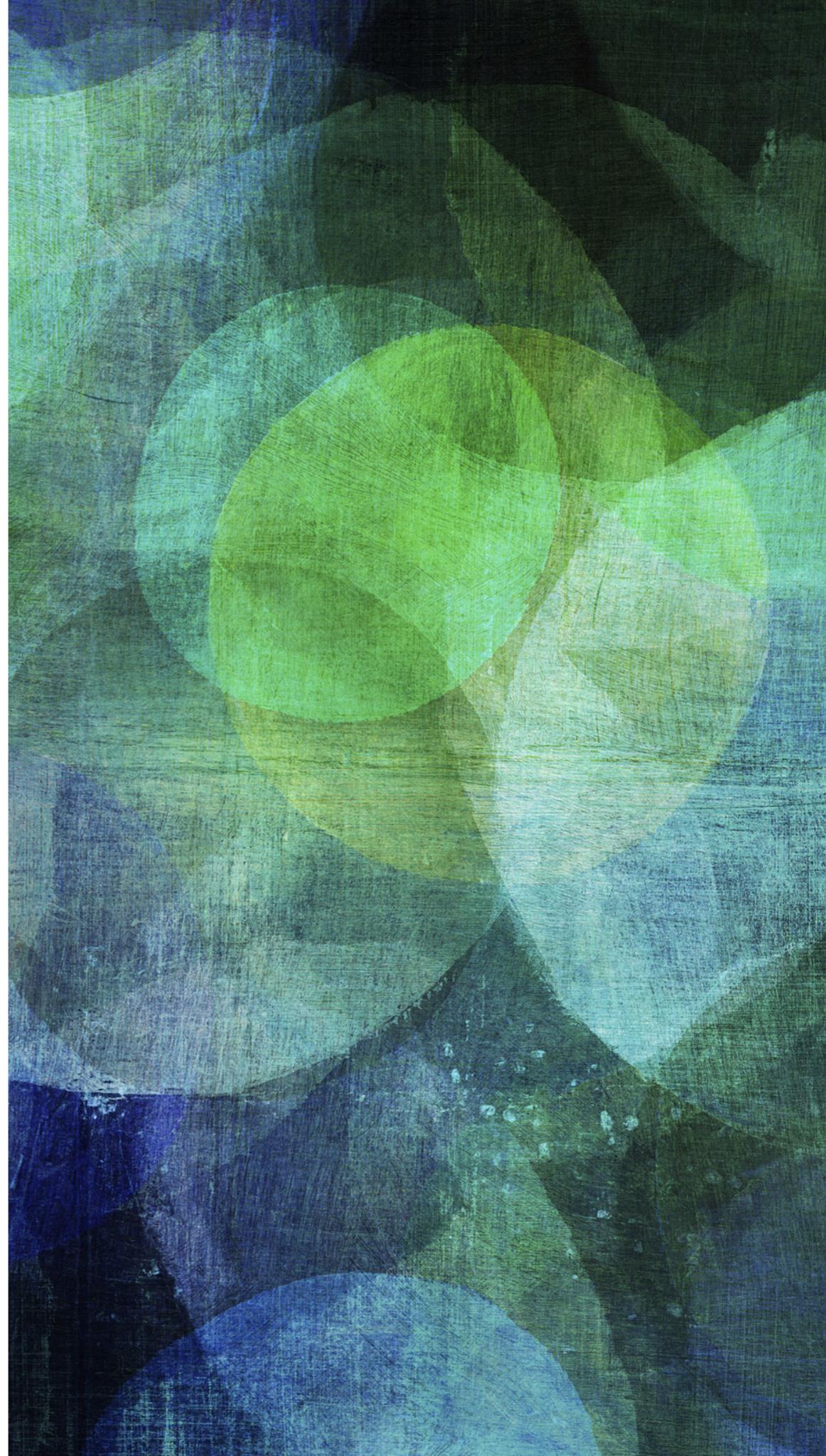
It causes the education of the blind slow

THE OVERVIEW

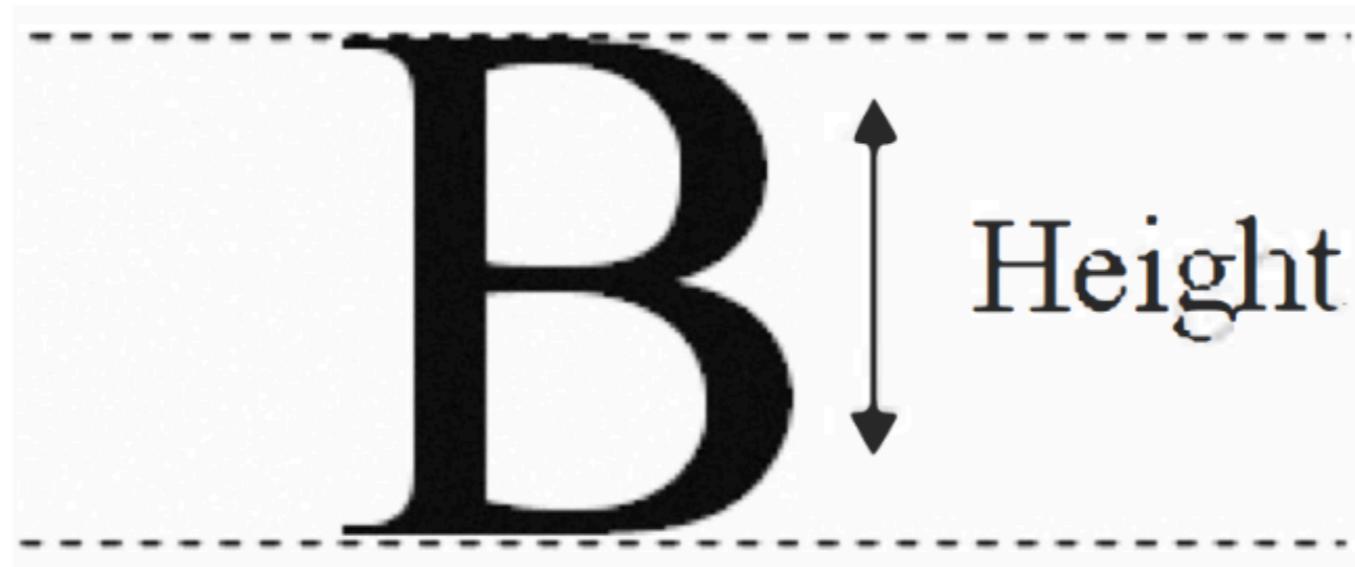


TEXT RECOGNITION

*a-Soft: An English
Language OCR*



α -SOFT: AN ENGLISH LANGUAGE OCR



Height of the character is the difference between the first and last black pixel encounter in the top to bottom scan of the character.

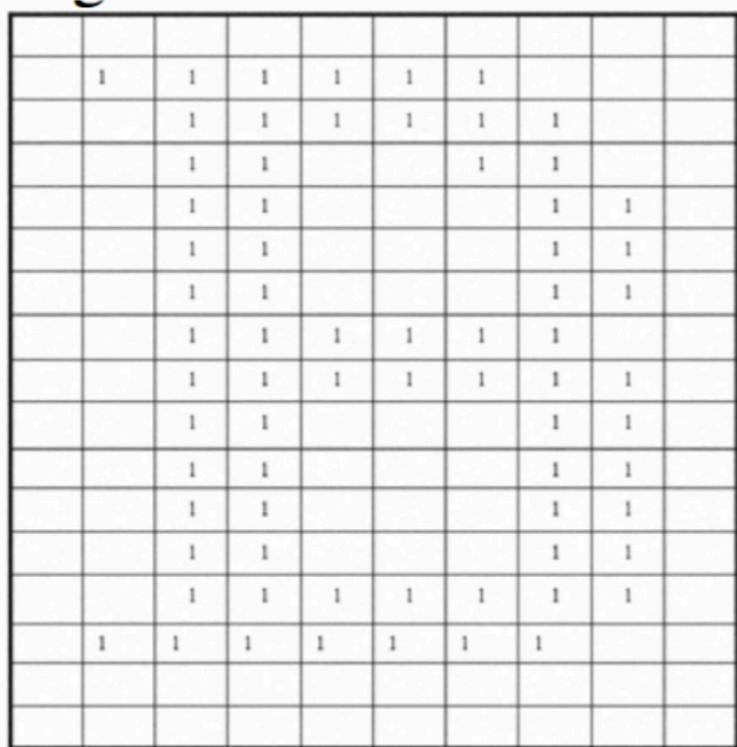
α -SOFT: AN ENGLISH LANGUAGE OCR



Width of the character is the difference between the first and last black pixel encounter in the left to right scan of the character.

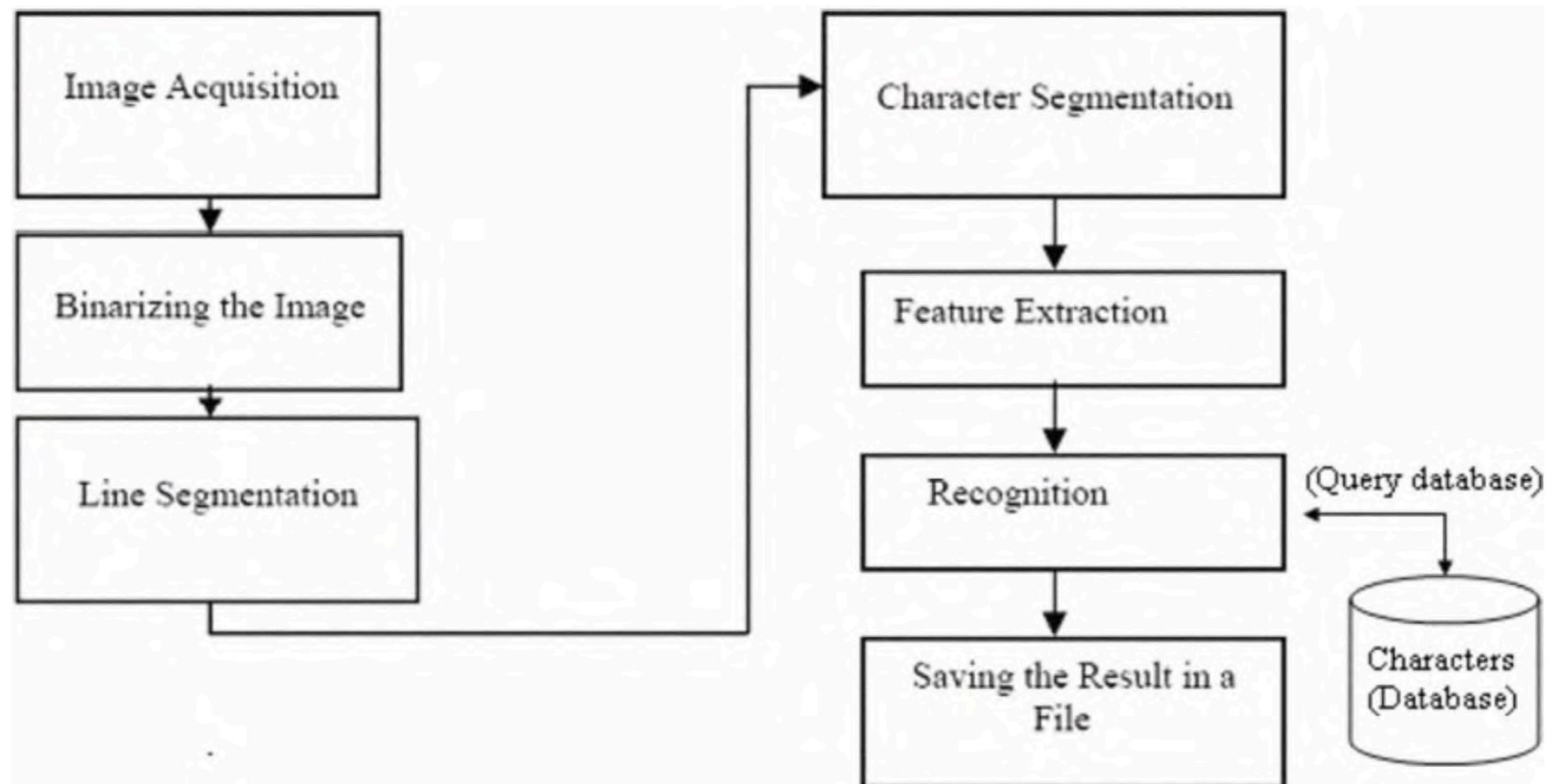
α -SOFT: AN ENGLISH LANGUAGE OCR

B ←

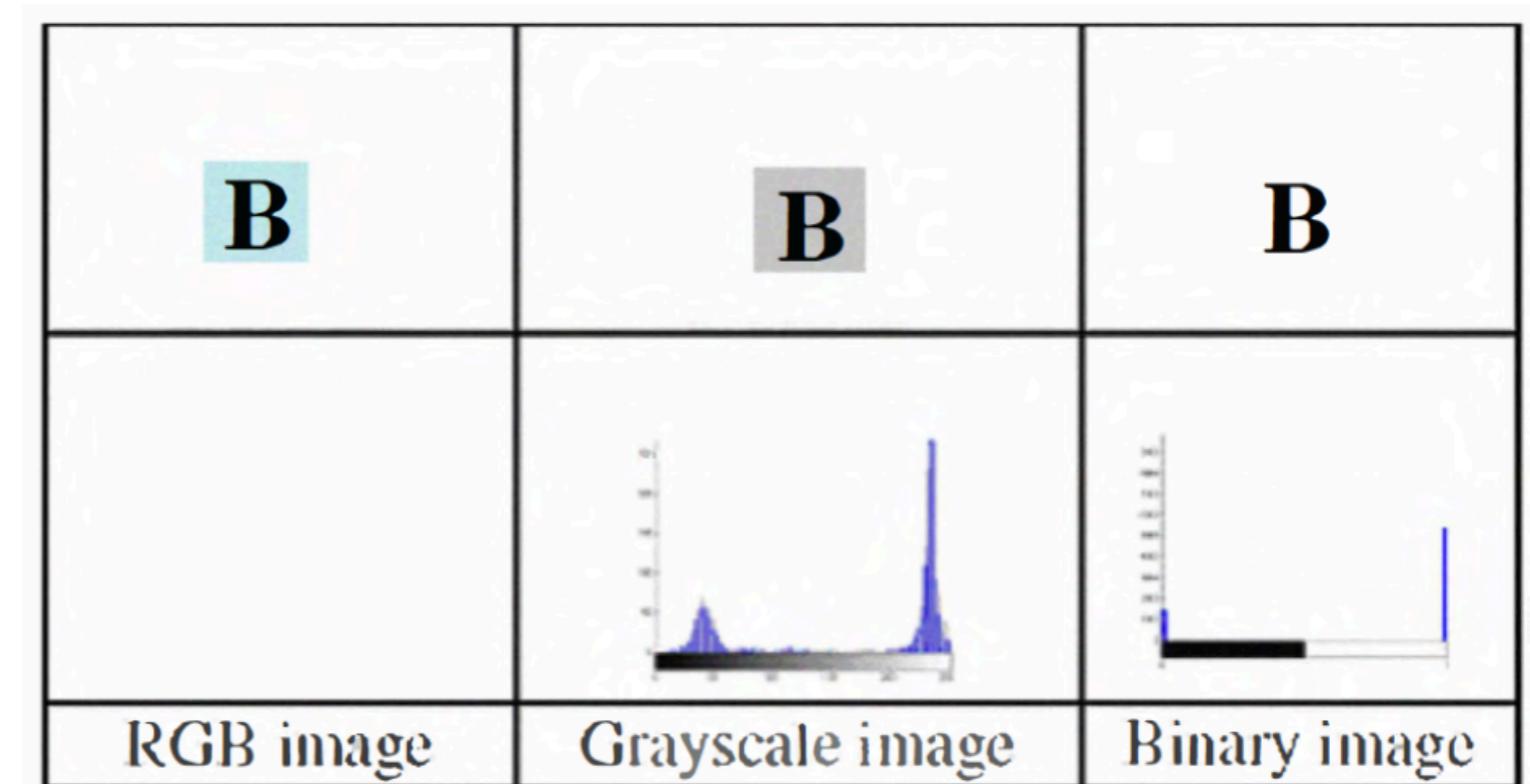
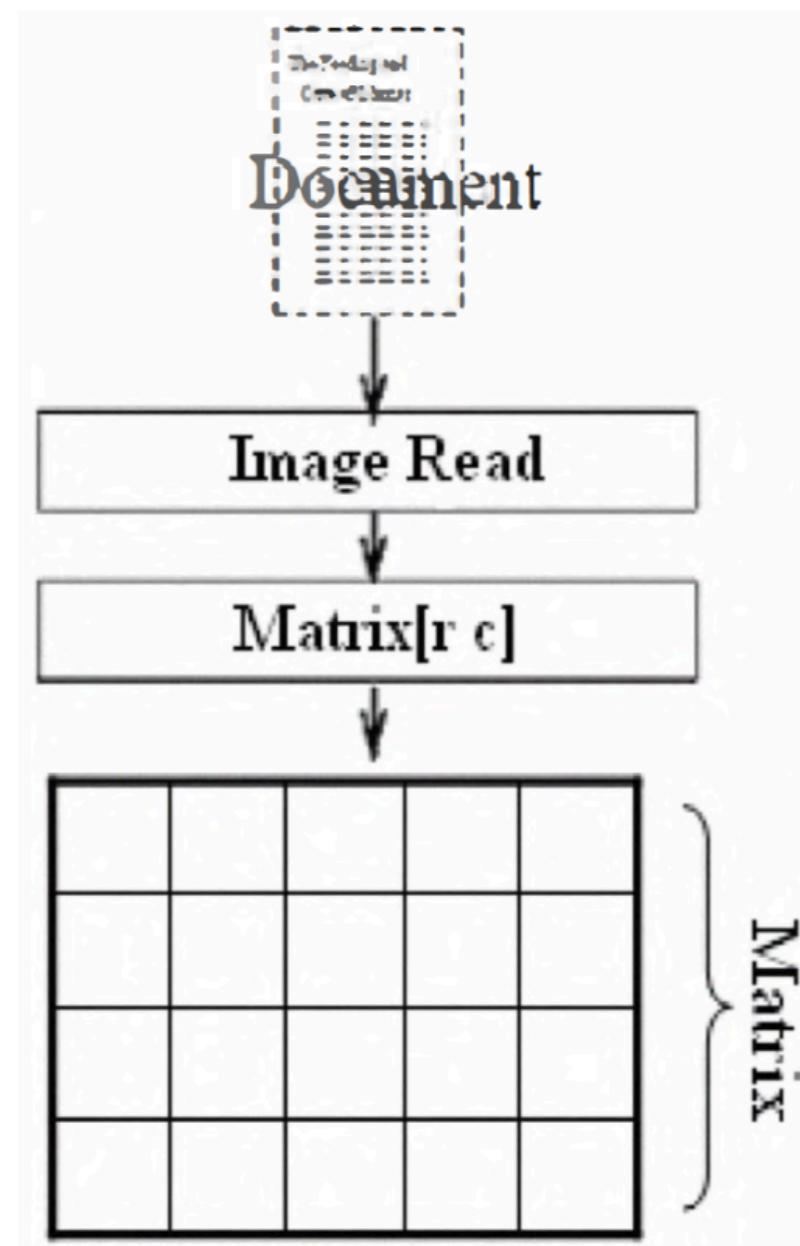


Checksum of the character is the sum of all the pixels that form the shape/ body of the character.
Checksum can also be referred as the sum of character bitmap.

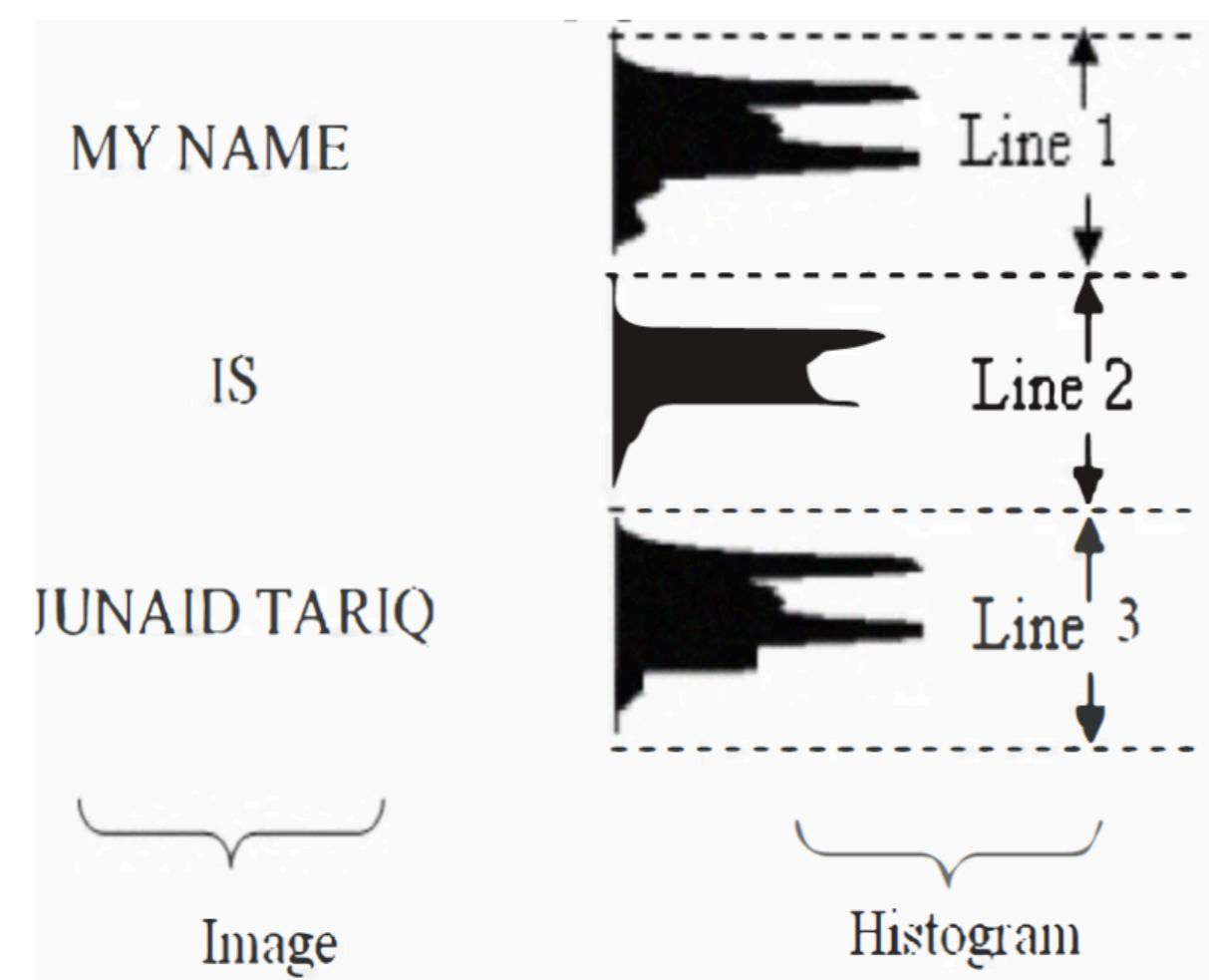
α -SOFT: ARCHITECTURE



α -SOFT: IMAGE ACQUISITION



α -SOFT: LINE & CHARACTER SEGMENTATION



α -SOFT: FEATURE EXTRACTION

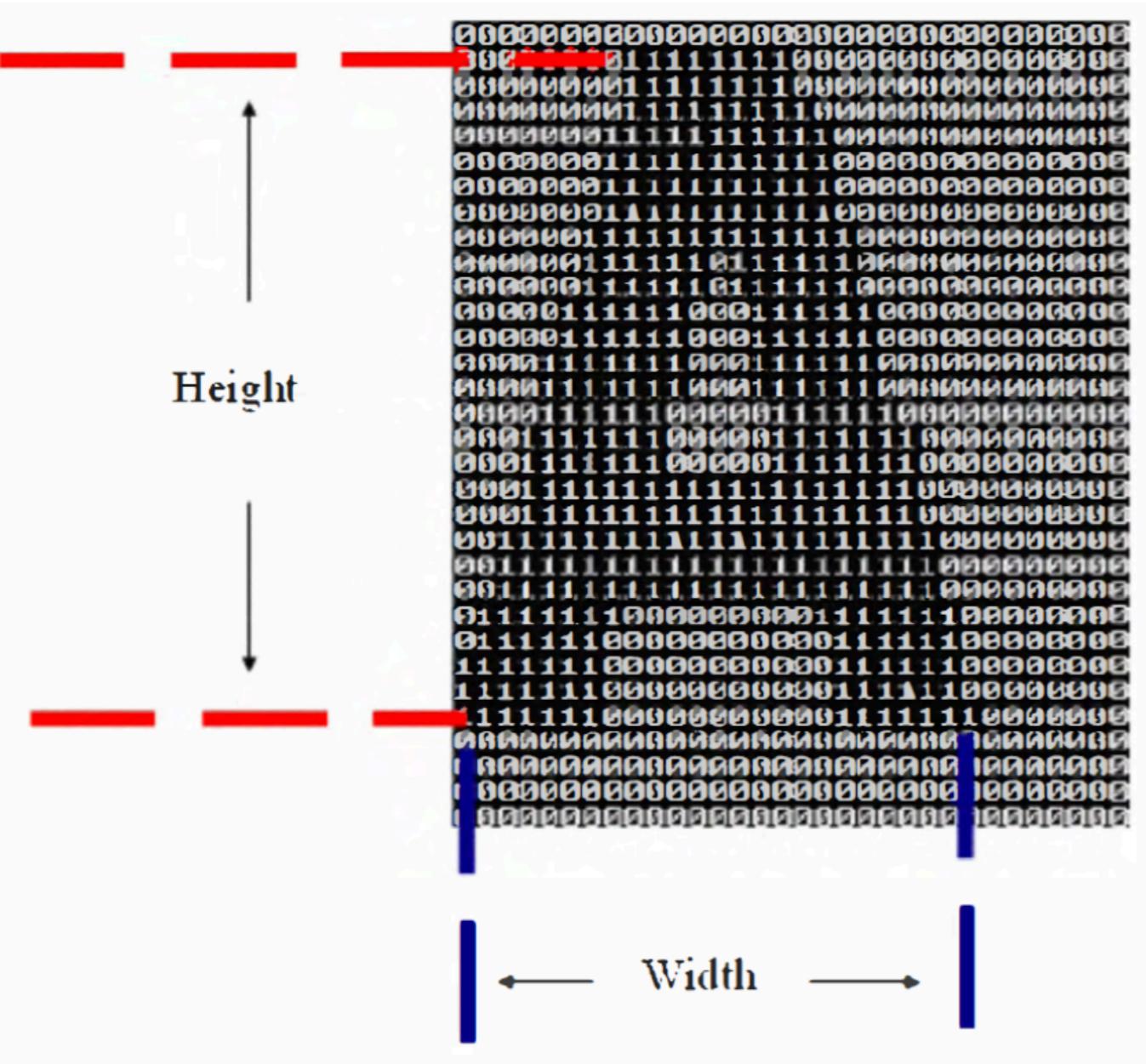
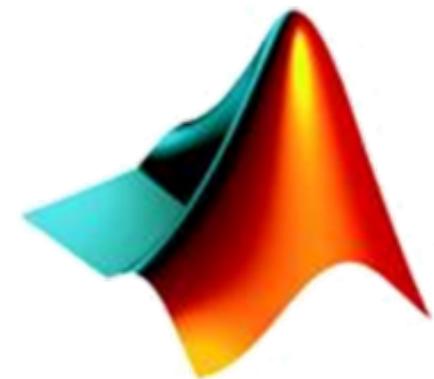


Figure shows how α -Soft extract feature from a single character that is extracted from the image. Checksum is the sum of pixel that form the body of the character.

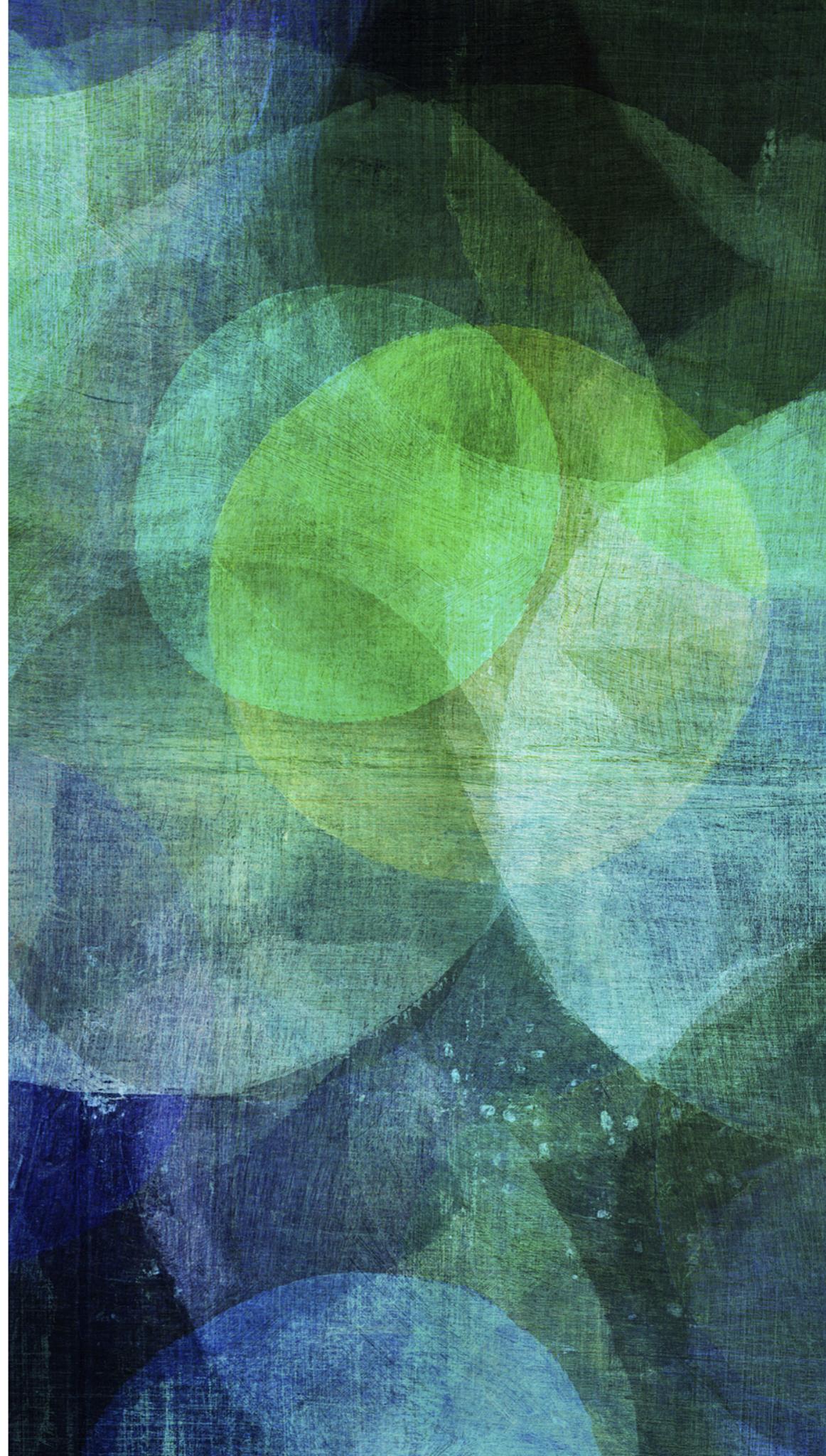
PROGRAMMING: MATLAB & SIMULINK



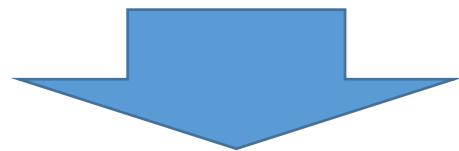
- *Image Processing Toolbox*
- *Computer Vision System Toolbox*
- *Neural Network Toolbox*
- *Statistics and Machine Learning Toolbox*
- *Image Acquisition Toolbox*
- *Simulink Coder*
- *Embedded Coder*

TEXT TO SPEECH

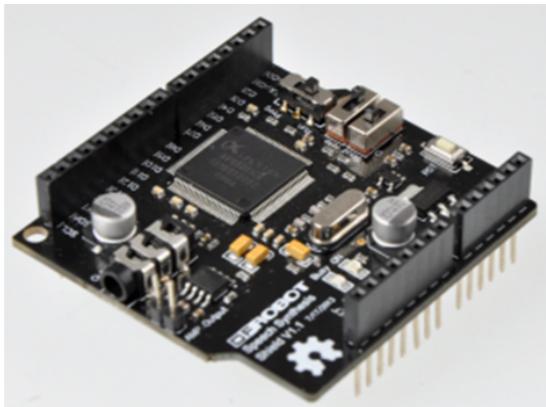
TTS through Arduino



How Arduino talk?



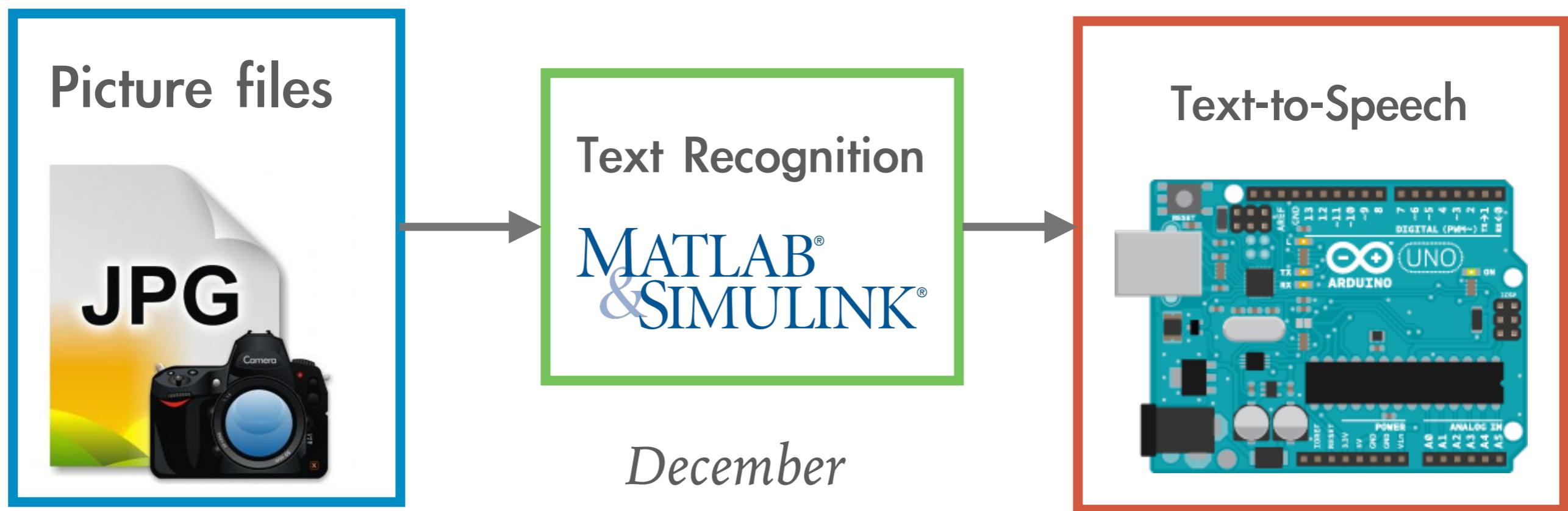
We use this



Speech Synthesis Shield(DFR0273) by the SpeechSynthesis.h

We make this read aloud a text

SCHEDULE





Q&A

GO

Thank You