智慧型汽車期末專題

R08922113 鄭詠鏹
R08922114 黃君儒

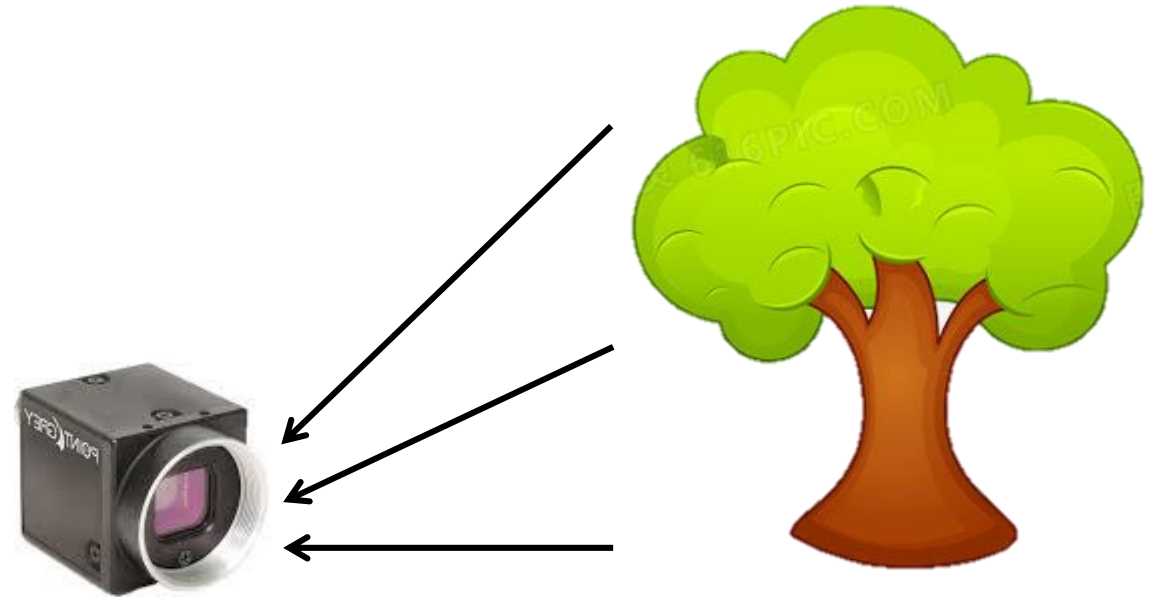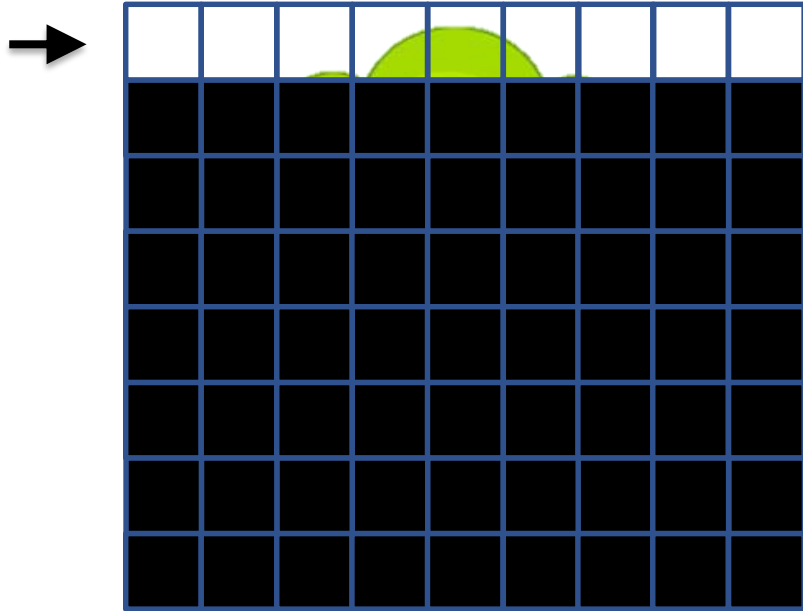# Overview

Introduction

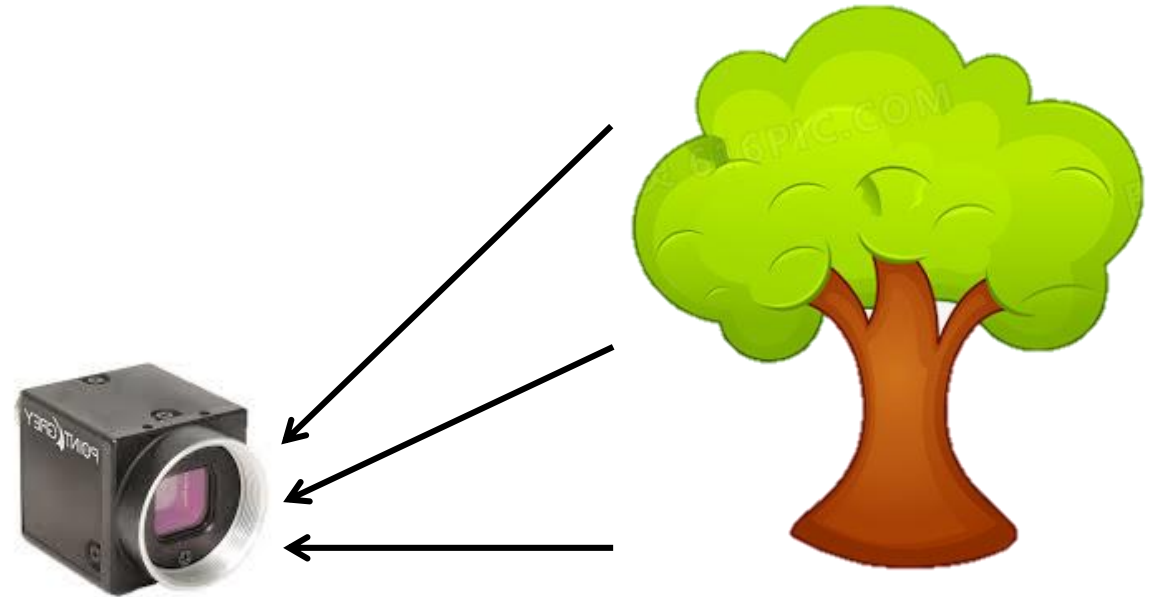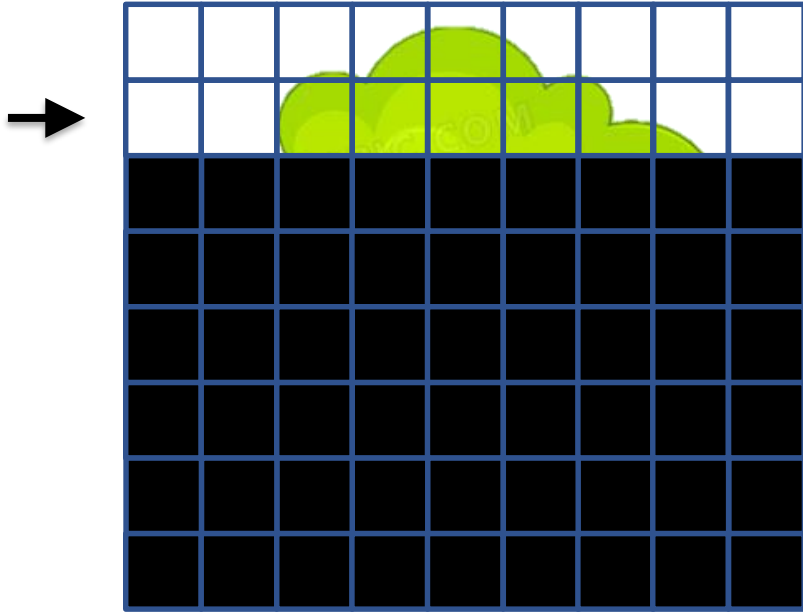　　隨著自駕車的普及, 如何利用自駕車使交通變得更有效率逐漸開始被人們重視, 透過這次期末專題, 我們想利用光通訊的技術來建立號誌與車輛間的通訊, 傳達號誌的相關訊息(ex: 燈號, 秒數, etc), 使自駕車能夠更有效率的通過路口。
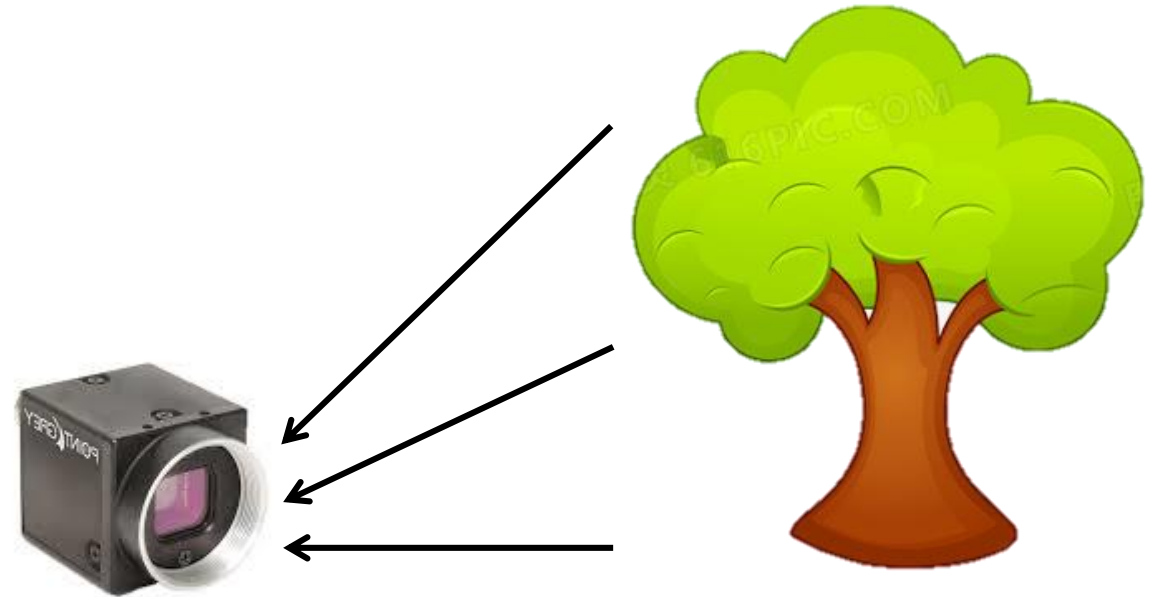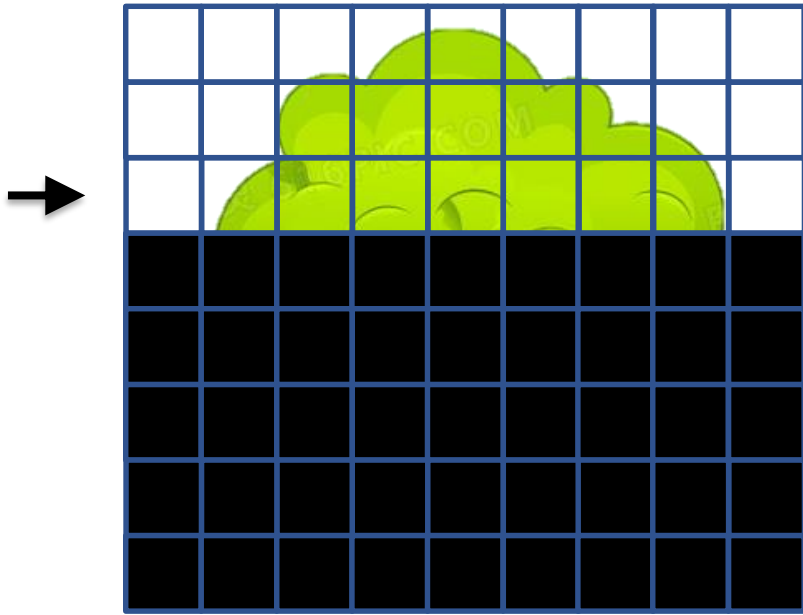
Preliminary

Rolling shutter :

Preliminary

Rolling shutter :

Preliminary

Rolling shutter :

Preliminary

Rolling shutter :

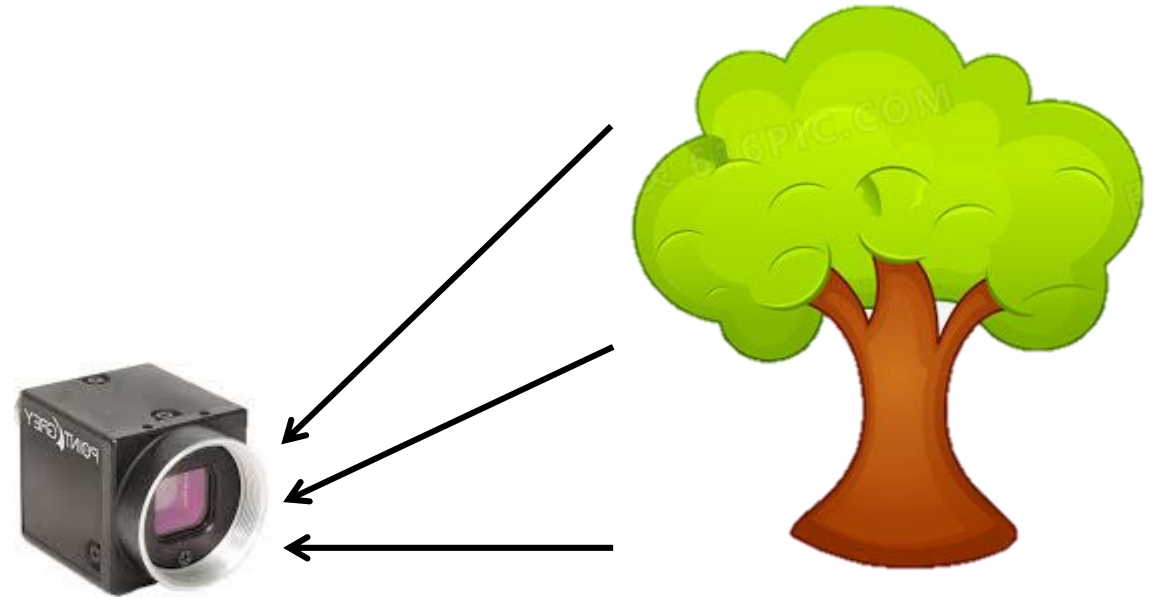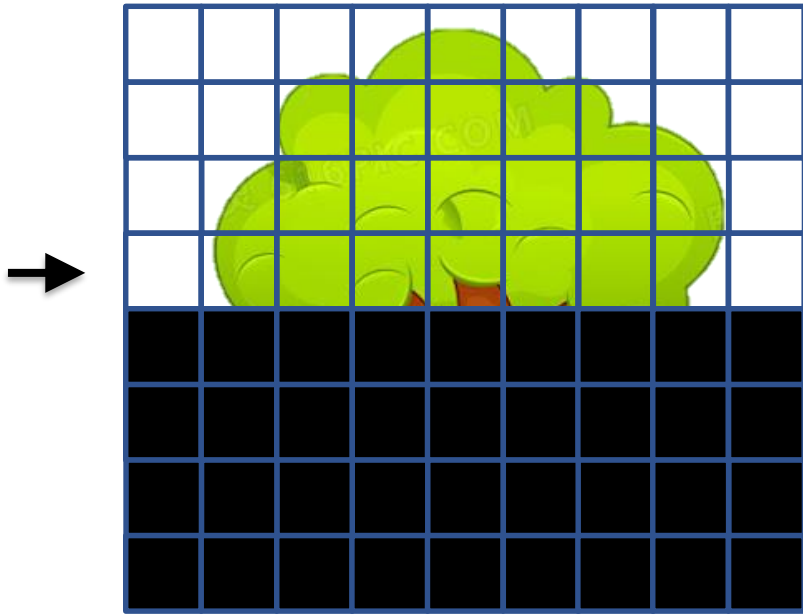# Preliminary

Rolling shutter :

Preliminary

Rolling shutter :

Preliminary

Rolling shutter :

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Rolling shutter :

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Rolling shutter :

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Rolling shutter :

Preliminary
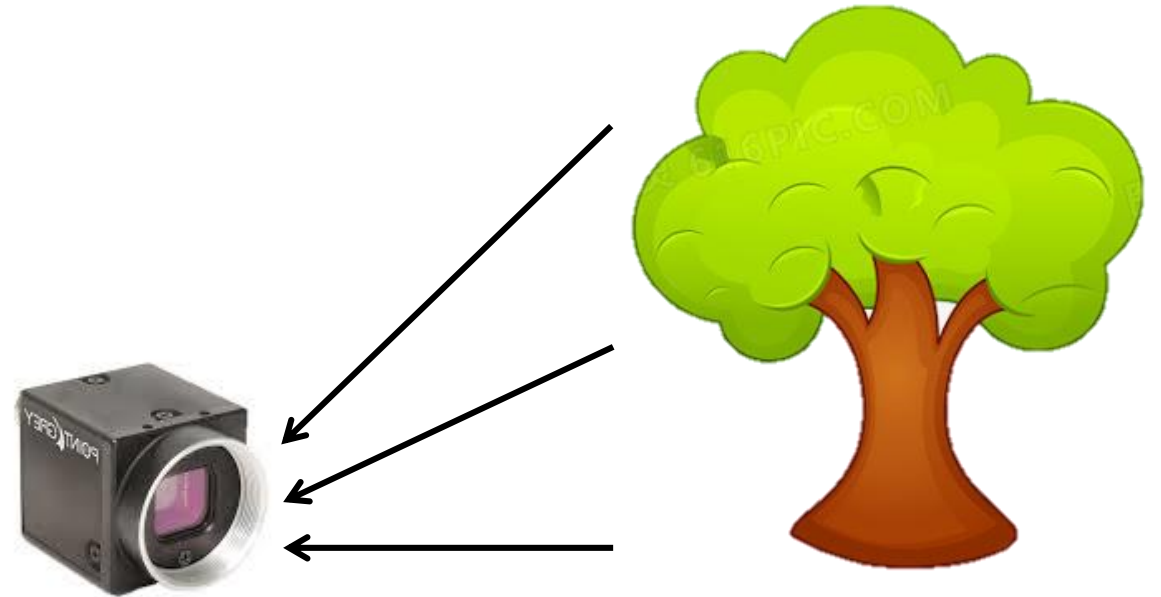
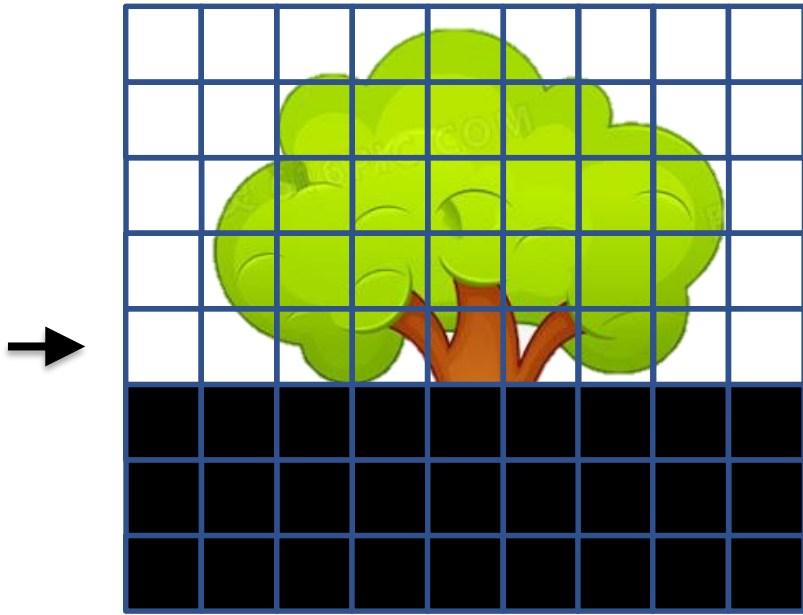Rolling shutter :

Preliminary

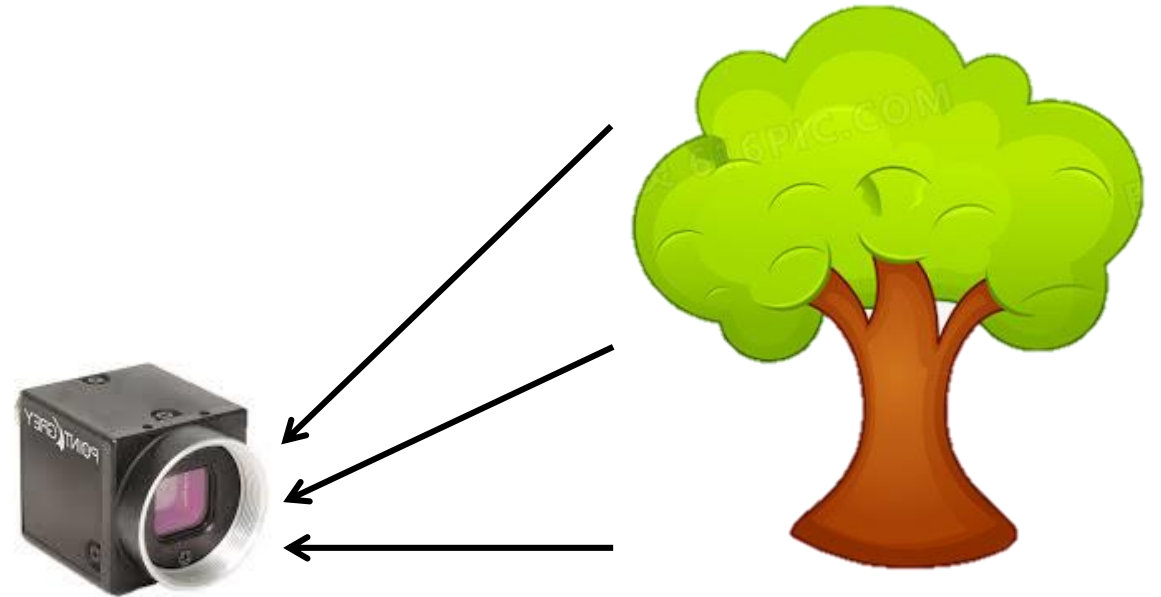Rolling shutter :

Preliminary

Rolling shutter :

Preliminary

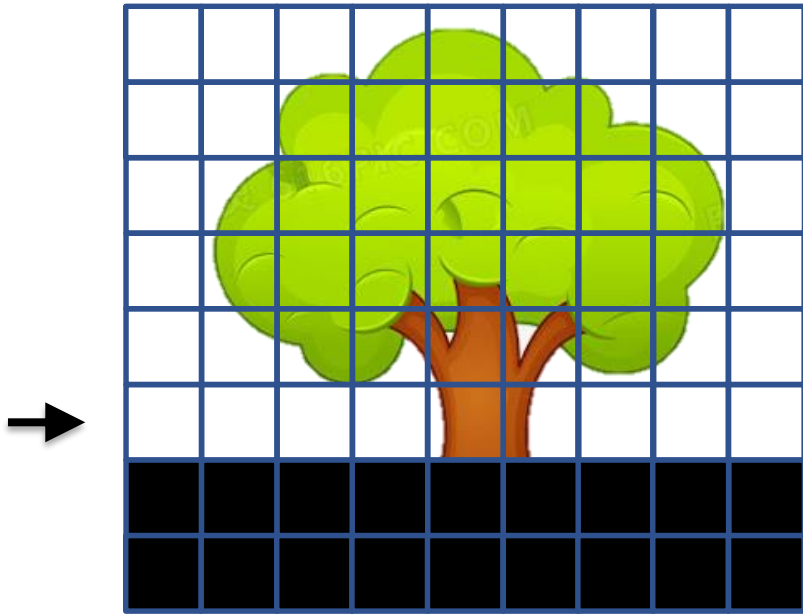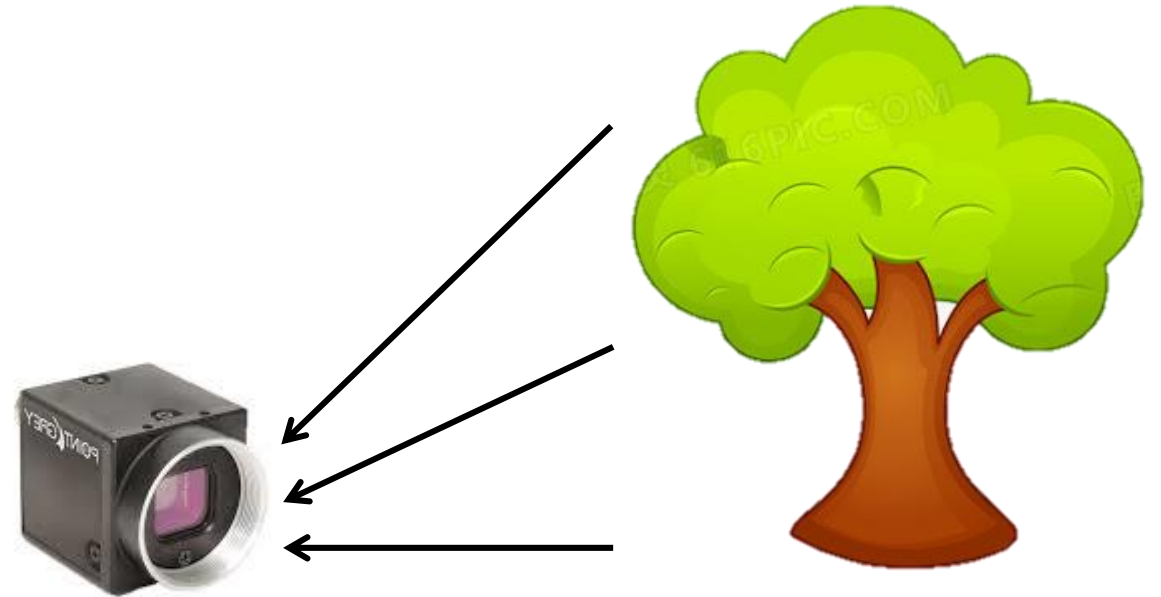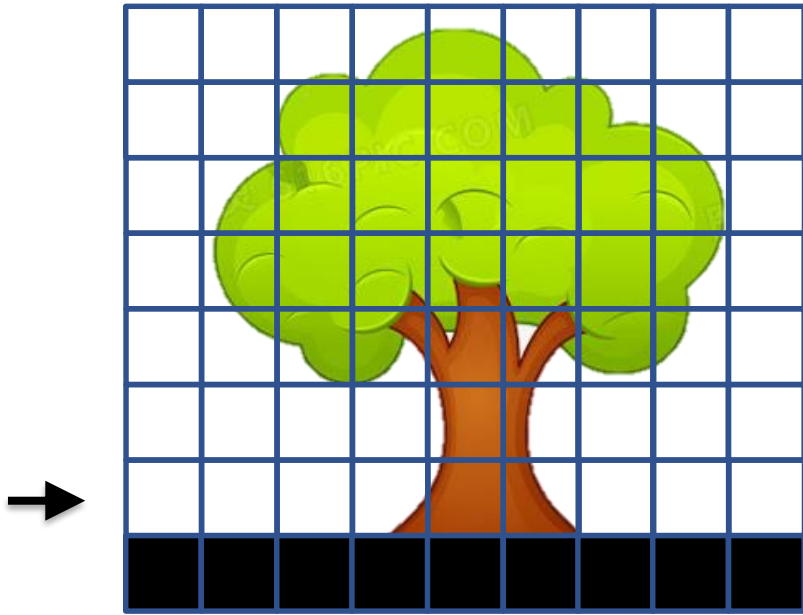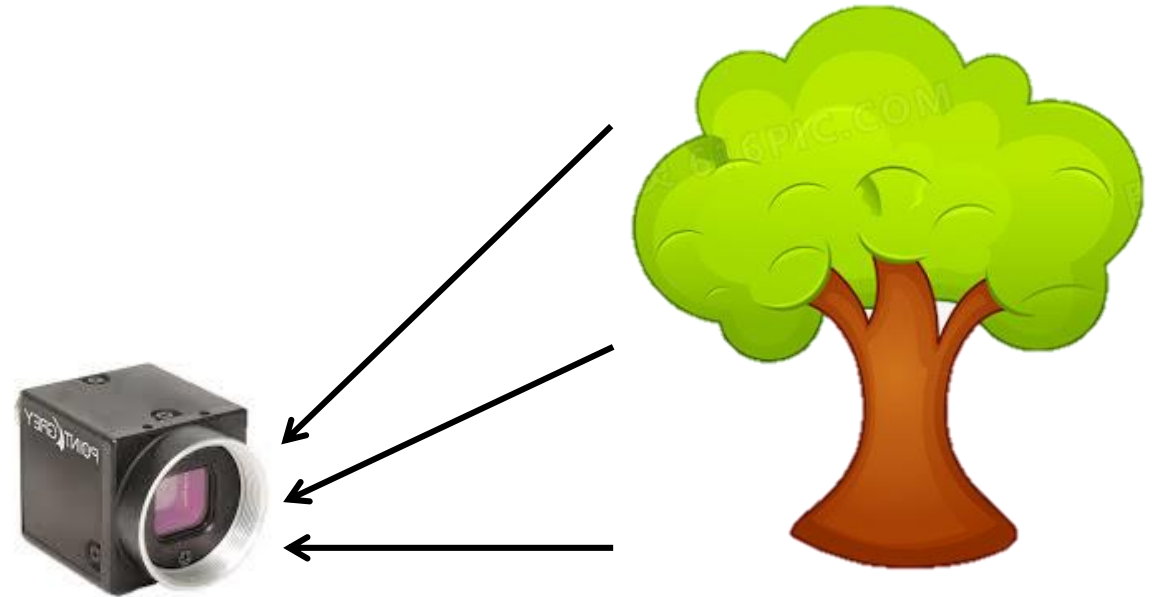Rolling shutter :

Preliminary

Rolling shutter :

Preliminary

Rolling shutter :
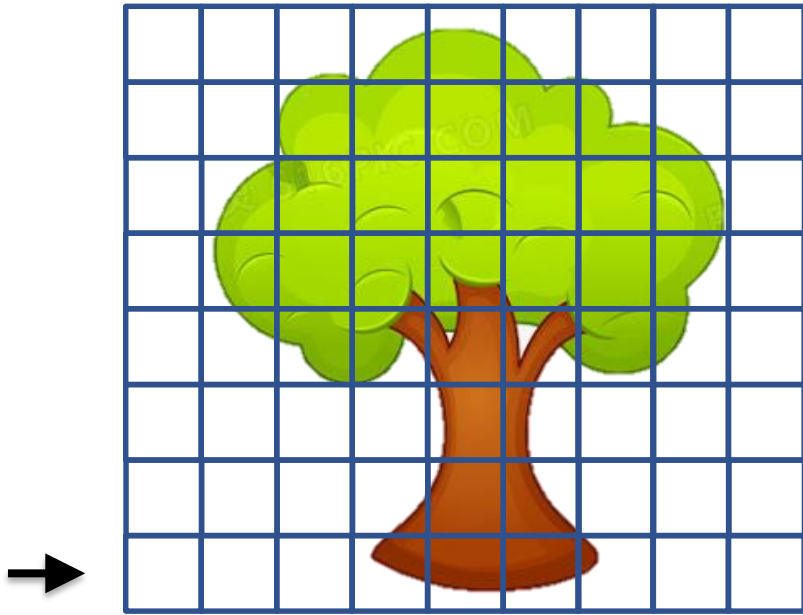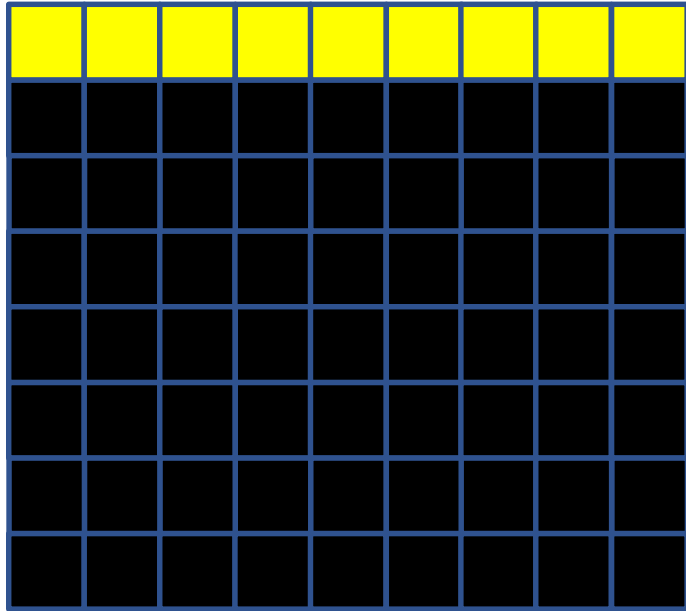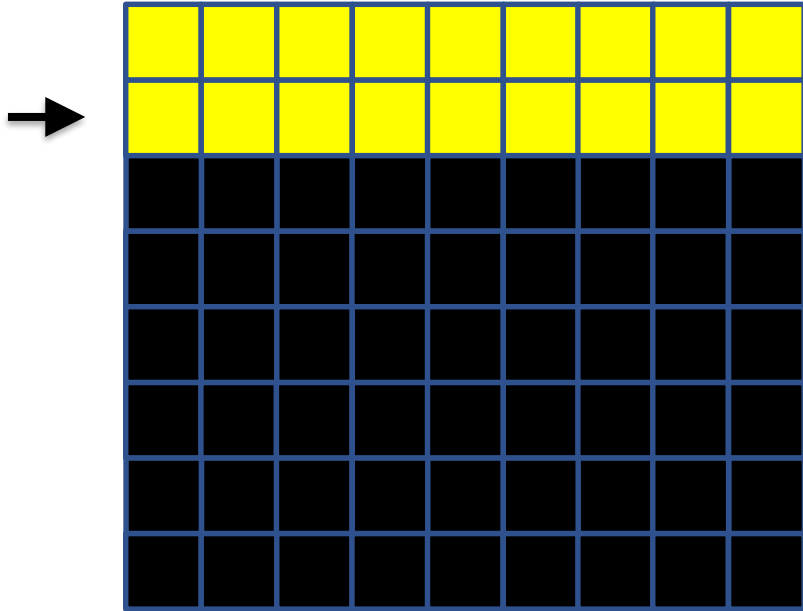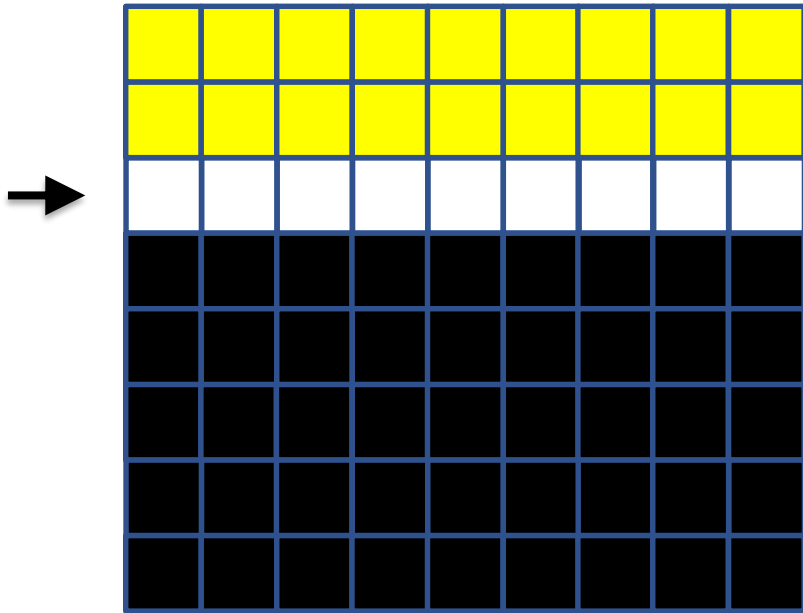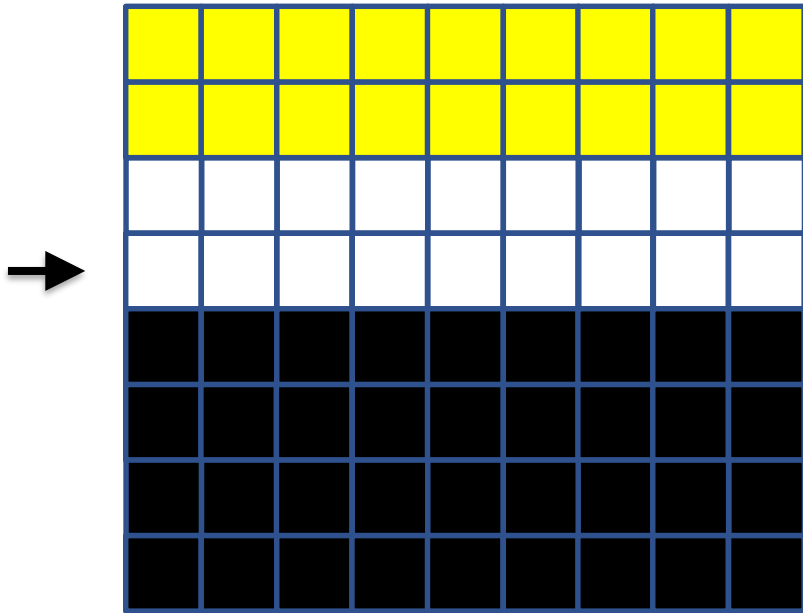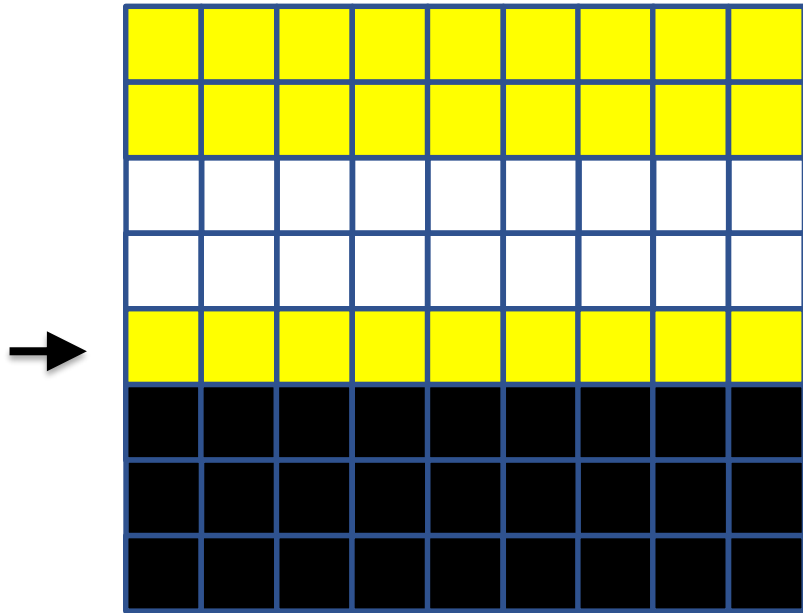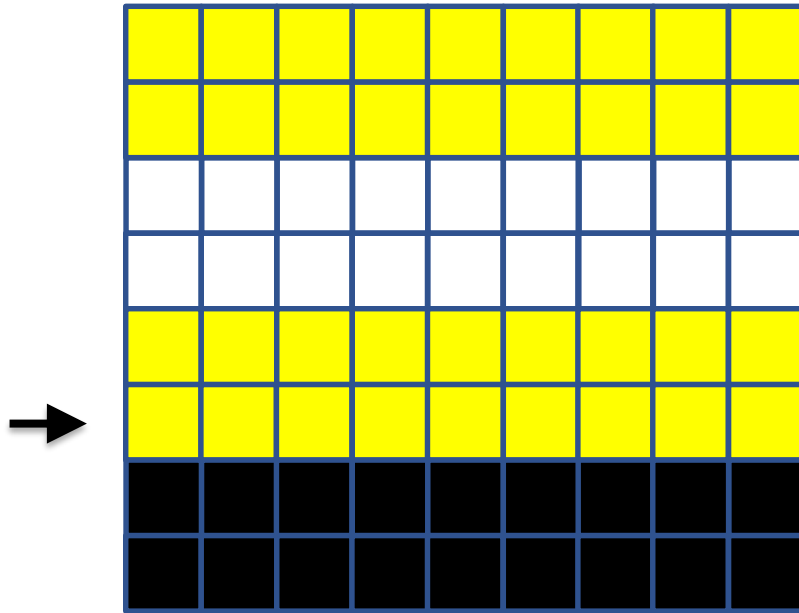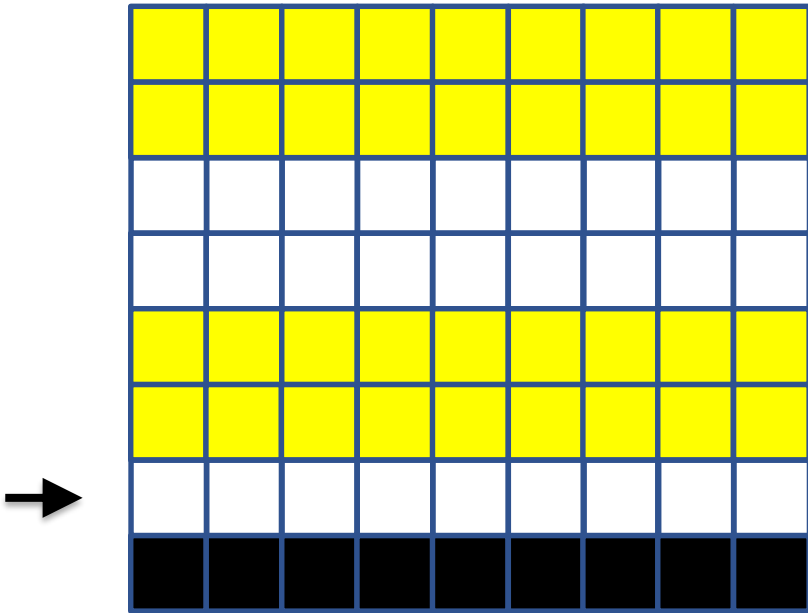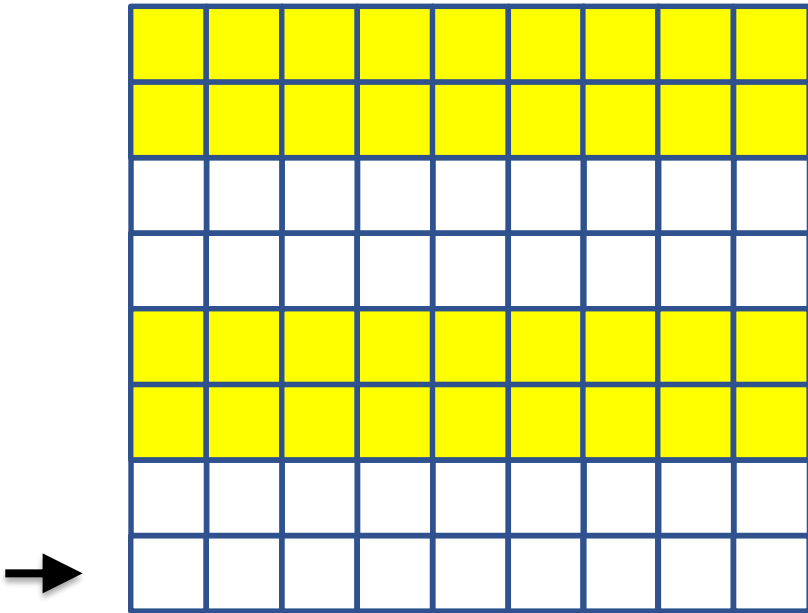
Modulation Format

Frequency shift keying (FSK) :
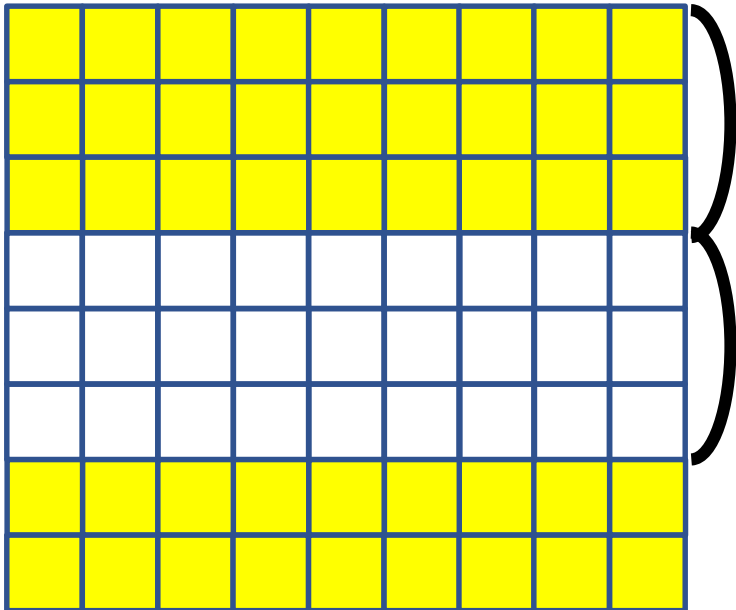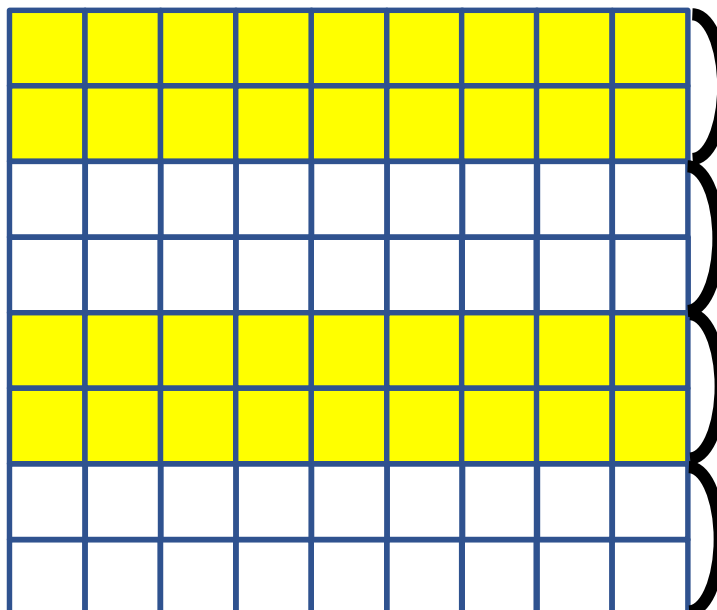
$$freq = \frac{1}{3} * f_1 \qquad\qquad freq = \frac{1}{2} * f_1 \qquad\qquad freq = f_1$$
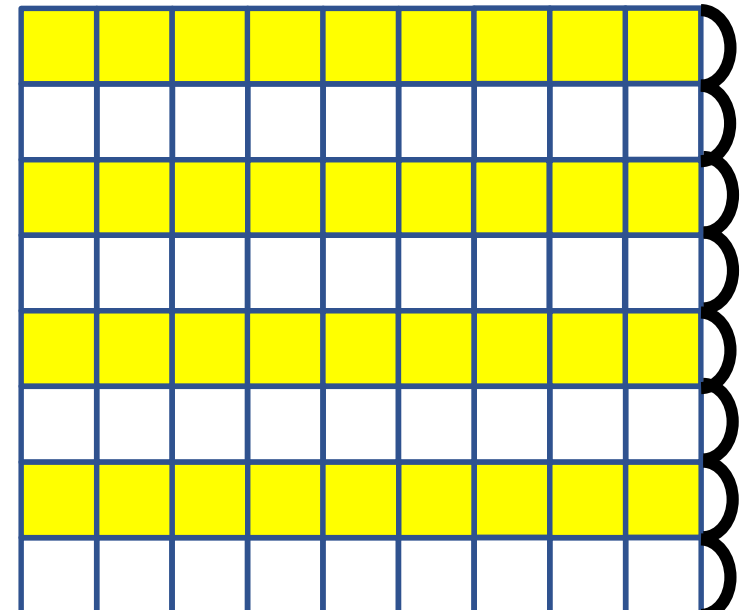
Modulation Format

Frequency Bandwidth : 250Hz ~ 2000Hz

Frequency : [258, 285, 320, 421, 615, 800, 1142, 2000, 363, 500]

Symbol per second : 100

Frame rate : 11

Frequency (Hz)	Stripe Length (pixels)	Index	Symbol
258	93	0	000
285	84	1	001
320	75	2	010
421	57	3	011
615	39	4	100
800	30	5	101
1142	21	6	110
2000	12	7	111
363	66	8	Green Light
500	48	9	Red Light

Modulation Format

| G | 111 | 111 | G | 111 | 110 | G | 111 | ... | |
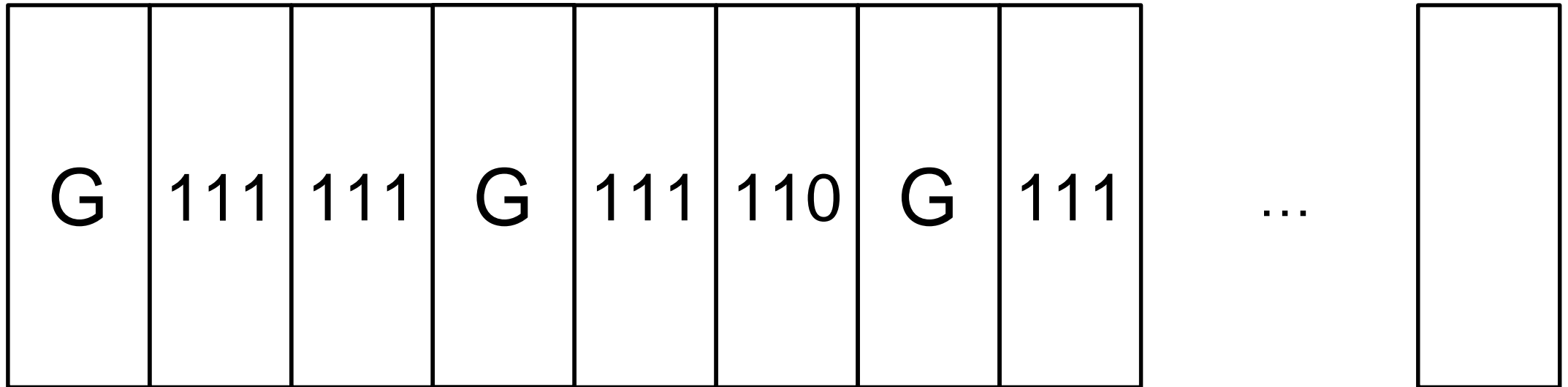
Modulation Format
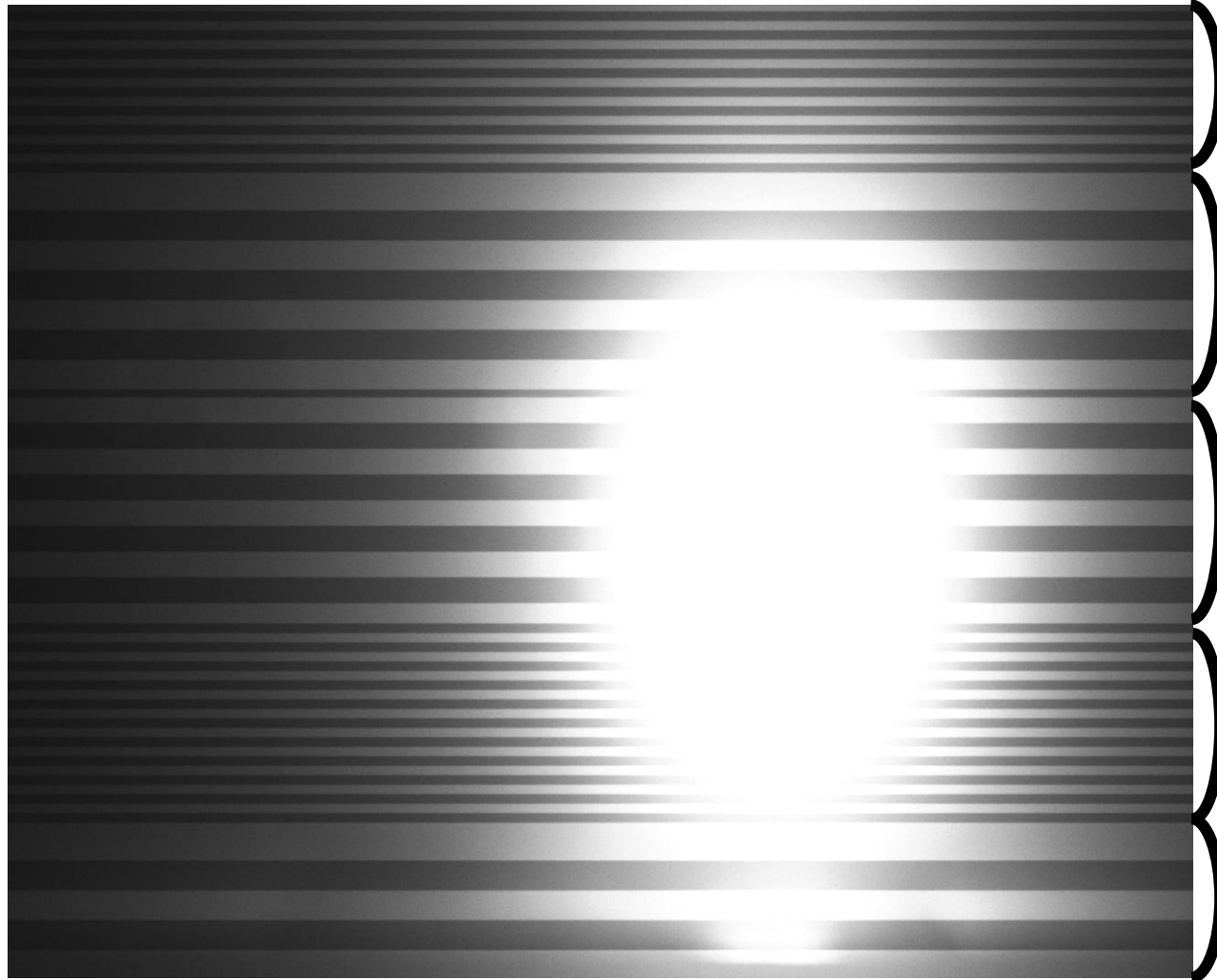
Stripes length (pixels)	Symbol
21.0588	110
66.1667	Green
57.1250	011
21.0952	110
66.6667	Green

Green Light remains 011110 seconds

Green Light remains 30 seconds

Arduino 遙控汽車

- 接線圖

L298N
馬達驅動模組

直流減速馬達

直流減速馬達

12V 電池供電

Arduino Mega 2560

Flow Chart

References

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- http://cyyang12345.blogspot.com/2015/05/arduino.html