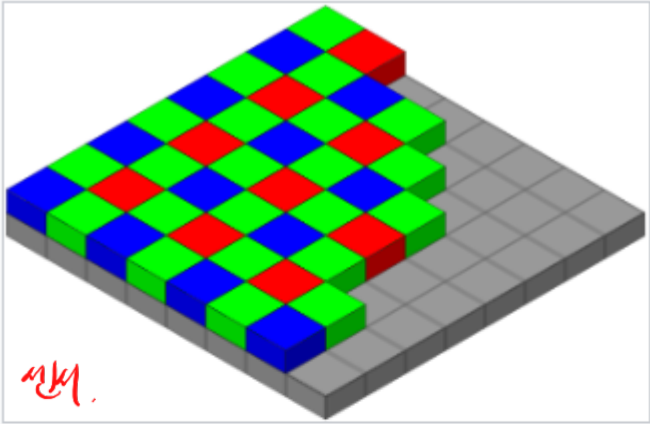
1. Introduction

1.2 영상의 출력

o. 카메라에서의 Pixel

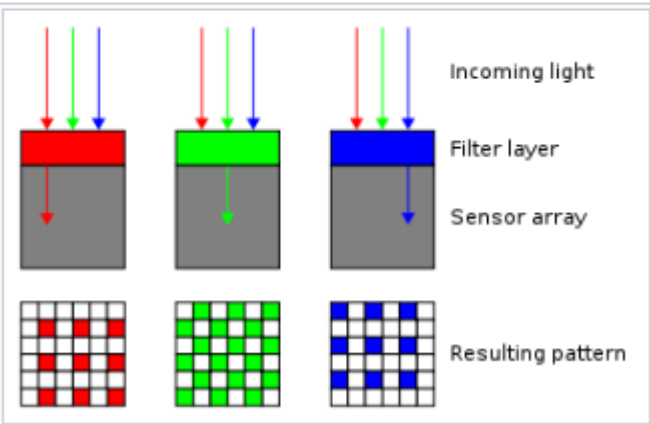
- Bayer filter

픽셀 영상 획득.



The Bayer arrangement of color filters on the pixel array of an image sensor

색 정보.



Profile/cross-section of sensor

https://en.wikipedia.org/wiki/Bayer_filter

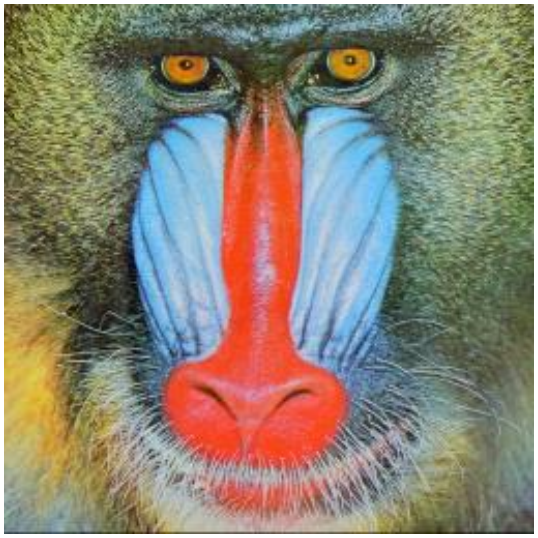
0. 디지털 영상

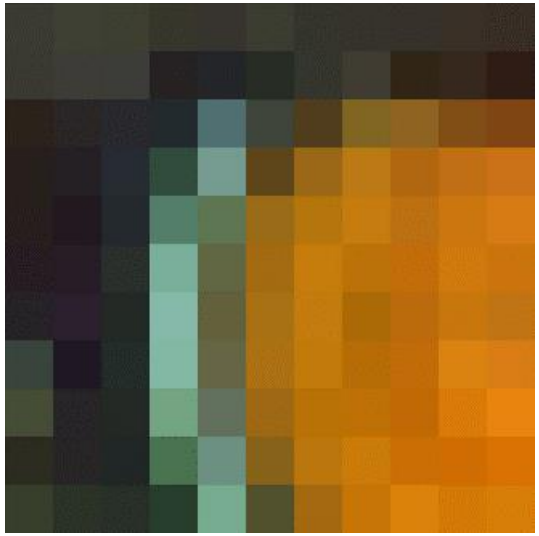
r g b

0 ~ 255 사이의 수. r, g, b가 모두 0 : black

이 사이의 rgb 값 → 흑백이다.

" 모두 255 : white





색깔 이미지.

60	62	62	55	55	60	53	55	55	57	57
59	62	61	38	36	39	52	65	49	55	47
42	43	42	35	79	64	79	129	143	129	127
38	36	39	49	118	94	154	187	177	193	203
40	34	36	83	95	154	181	199	189	203	215
39	39	42	122	97	164	198	188	194	208	204
39	44	35	134	98	168	196	172	187	200	193
57	31	36	130	102	172	194	184	193	219	217
70	40	36	115	98	158	185	191	193	219	233
44	39	33	73	108	135	187	203	204	207	217
55	43	41	38	120	82	164	200	218	212	214

red 채널

51	52	50	44	47	49	44	45	44	40	40
50	55	56	35	41	37	45	50	22	30	21
27	39	46	45	113	60	29	35	33	21	20
28	36	50	60	145	26	23	21	15	20	24
30	32	45	105	83	23	14	16	18	15	20
34	39	44	156	67	18	12	9	10	14	14
40	46	36	169	60	19	14	7	12	13	20
60	33	42	164	69	19	10	7	10	16	20
55	40	37	130	93	20	6	6	5	9	15
31	39	39	81	129	26	13	10	6	3	3
43	39	42	43	144	45	17	8	10	5	6

blue 채널

59	64	63	55	52	61	53	51	50	48	46
58	61	61	34	38	44	54	60	37	40	29
35	38	41	42	111	69	61	101	99	78	70
31	32	44	76	155	69	104	122	103	111	113
31	24	41	126	118	108	118	124	112	118	123
29	29	48	175	102	107	125	114	109	122	116
35	32	41	185	97	113	124	106	106	119	116
69	23	45	184	101	113	122	109	108	131	125
77	37	41	165	112	105	114	113	105	123	133
44	38	39	115	144	98	118	124	111	109	113
62	51	48	62	172	81	105	117	130	121	126

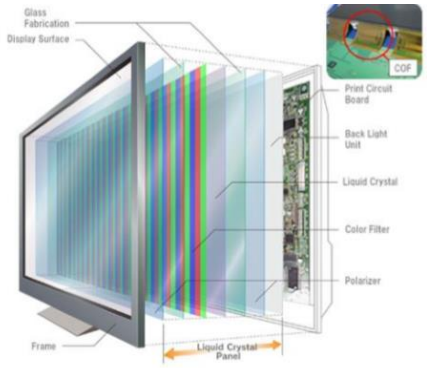
green 채널.

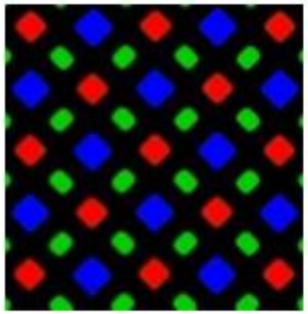
o. 디지털 영상

1. Flat panel Display

아웃풋 하드웨어.

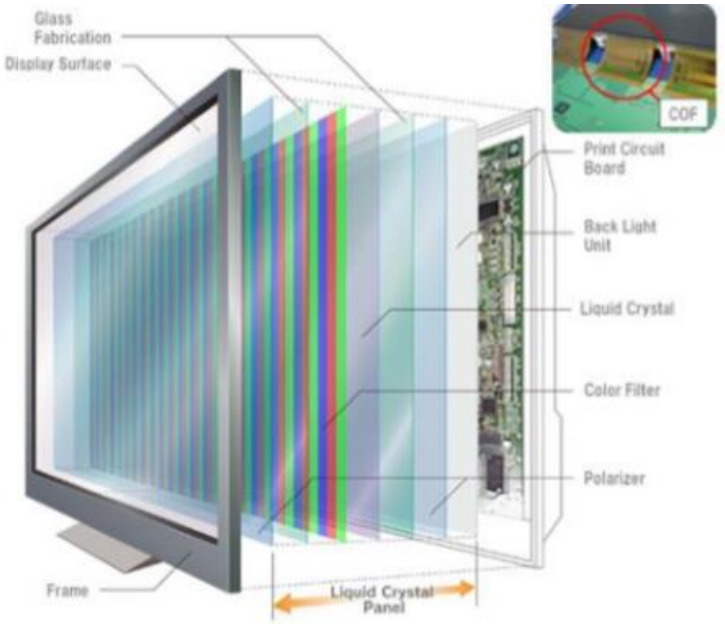
└ LCD, OLED..

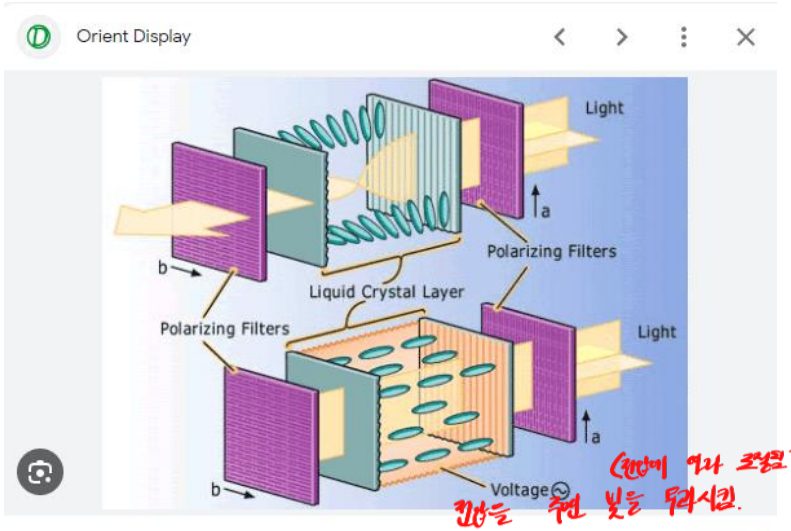




1. LCD 디스플레이

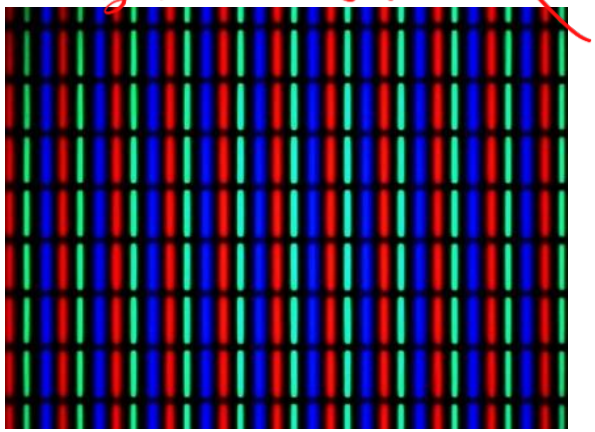
- LCD (Liquid Crystal Display)





What is an LCD? LCD technology & Types of Display | Orient Display

Visit



RGB가 한 세트. (아주 작게)

R 켜져있으면? 빨

R 켜져있으면? 빨

각각의 픽셀이 RGB 전부.

밝기를 조절해서 켜고 끌 수 있다.

(255개 단계로)

2. LED 디스플레이

- LED (organic light-emitting diode)

스스로 빛을 낼.

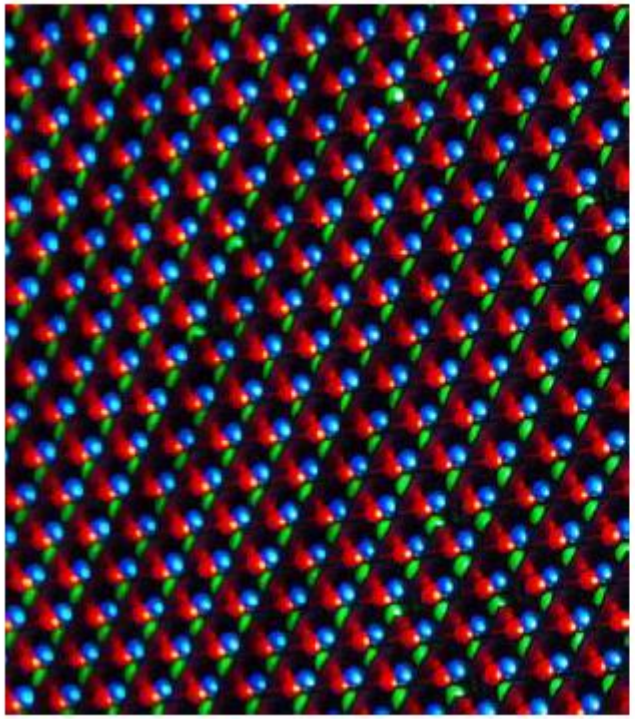
디스크 마다의 빛을 확산시킴.

3. LED 디스플레이

- LED (organic light-emitting diode)

led를 rgb로 만들기 → 슈퍼컴퓨터에 사용.

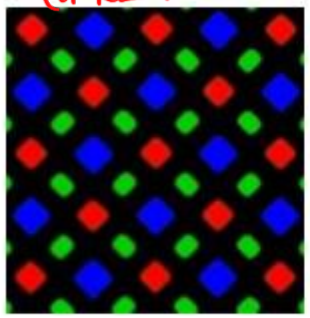
0~255 단계의 조절 가능.



4. OLED 디스플레이

- OLED (organic light-emitting diode)

전자 필요 X.
(다이오드?)



플렉블 디스플레이.
(휘게 전자 소자 가능)
투명 디스플레이.

5. 입체영상

- 스테레오 카메라-> 3D Display

입체카메라 → 렌즈 2개 (사람 눈 거리만큼 간격)

왼눈 영상

오른눈 영상.

6. Surround Display

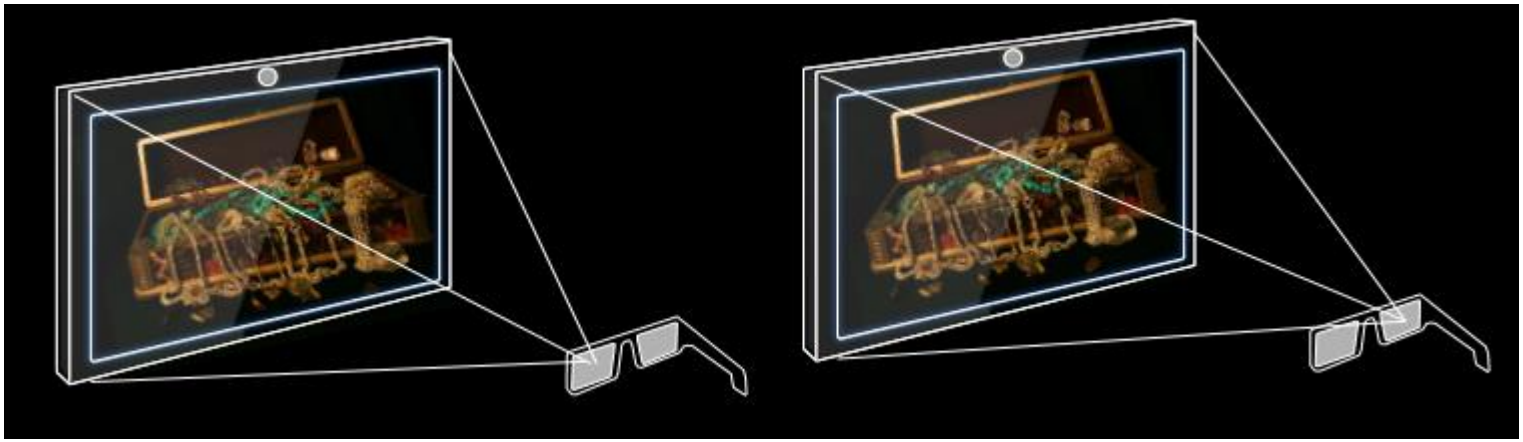
- 3D Display

cave automatic virtual environment

MESO - Multiprojection Display Technology

7. Stereo Display

- 3D Display



left 카메라에서 얻은 영상 → 왼눈에서만 보도록.
right 〃 → 오른눈 〃
] 입체영상의 원리.

L 안경을 두어나
(셔터 스펙드)

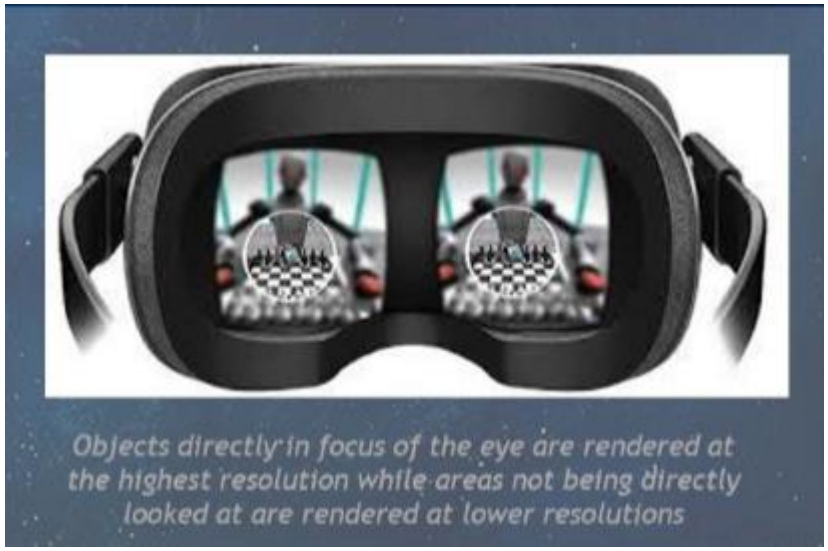
8. Stereo Display

- 3D Display AR 실제 + 가상. (그래픽스) 빛의 반사 원리.

9. Virtual Reality

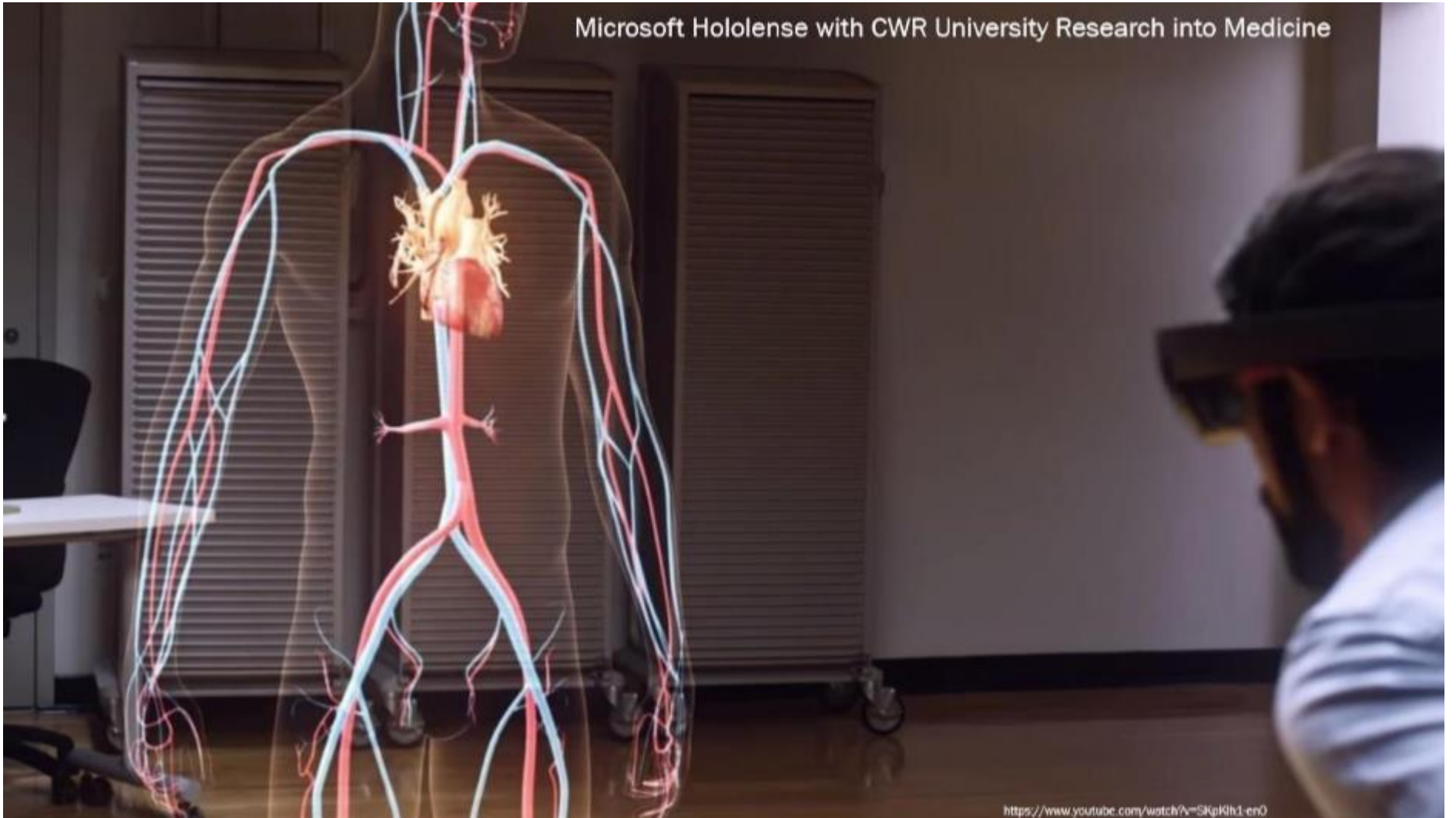
- Output Hardware – VR

L R



10. Augmented Reality

- Output Hardware – AR



11. Head-up Display

- Output Hardware – HUD