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# Finger Keyboard



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01

## 프로젝트 배경



*Image  
recognition*



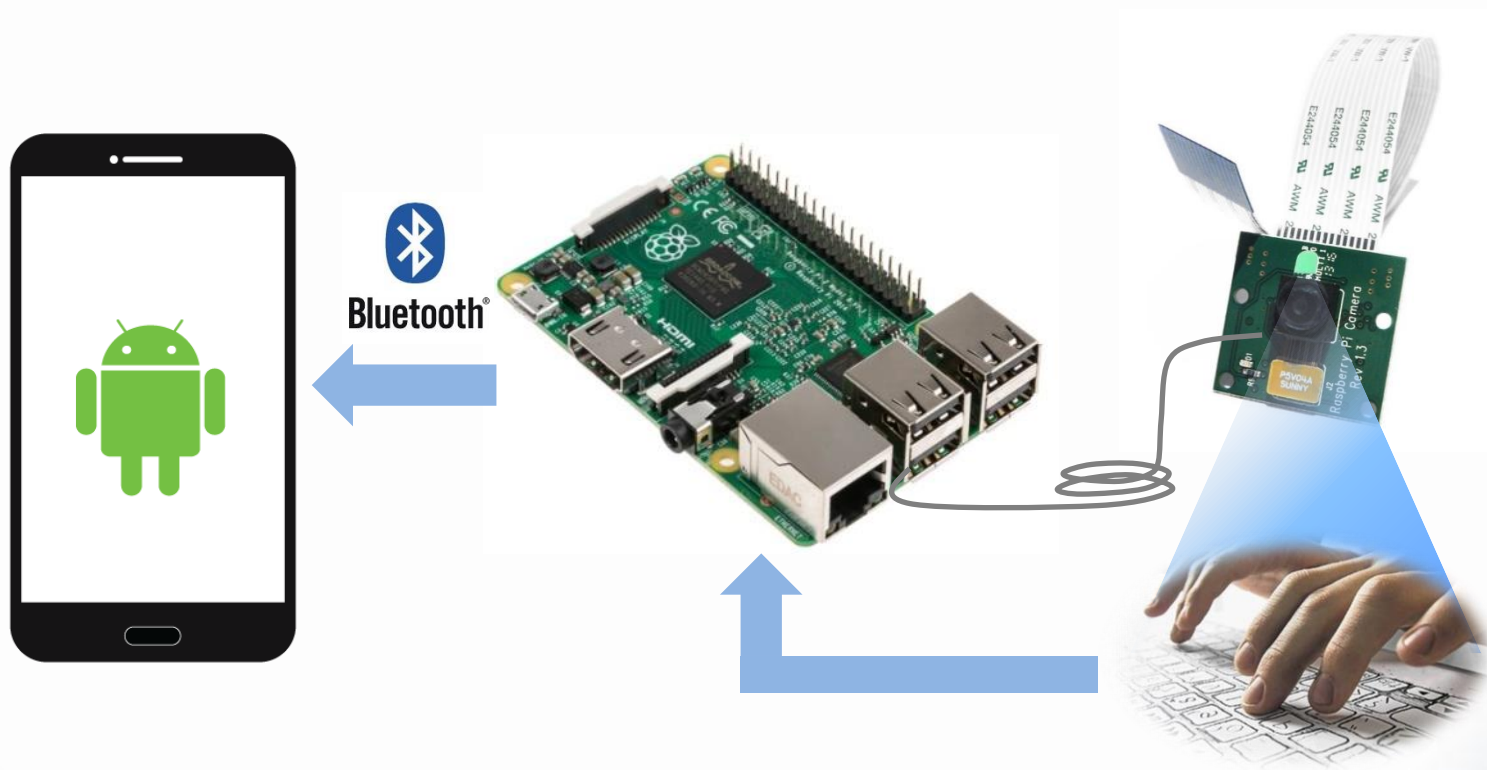
*Software*

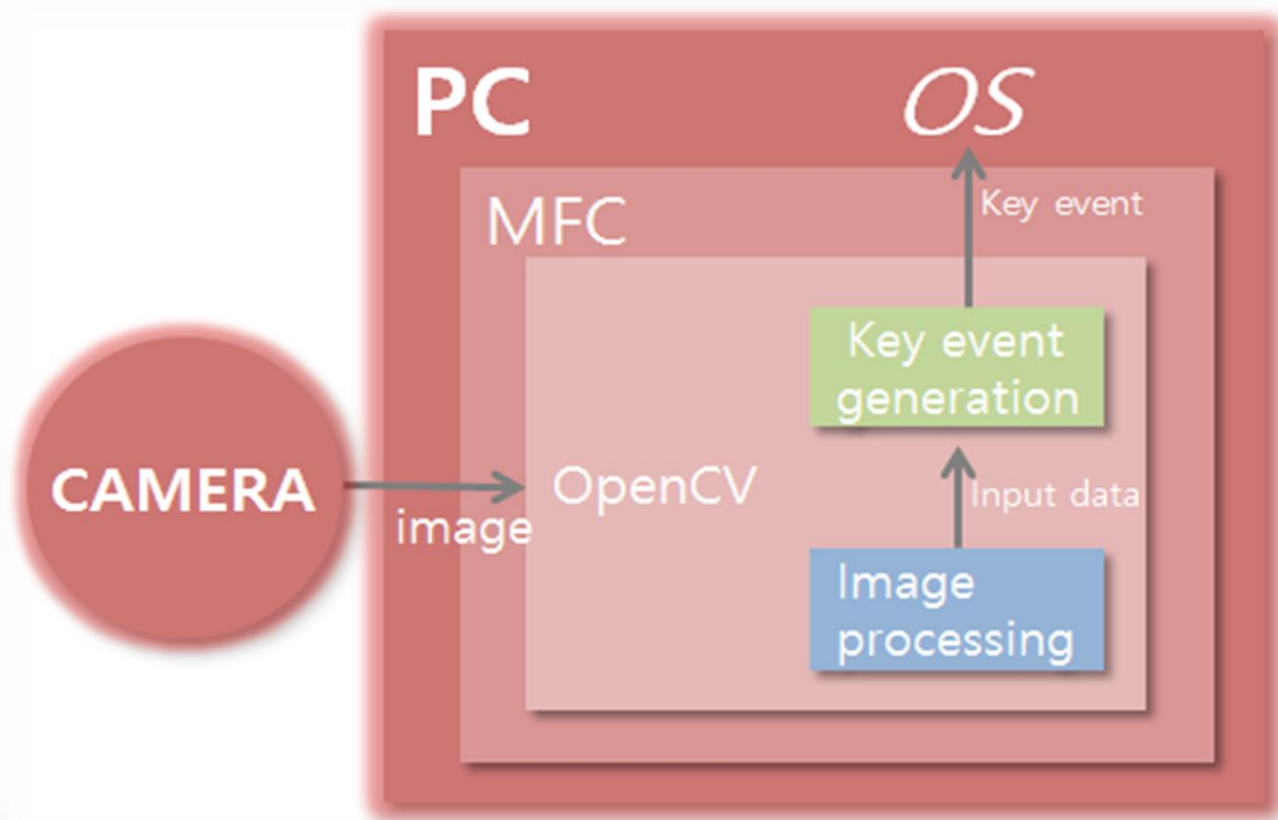


*Hardware*

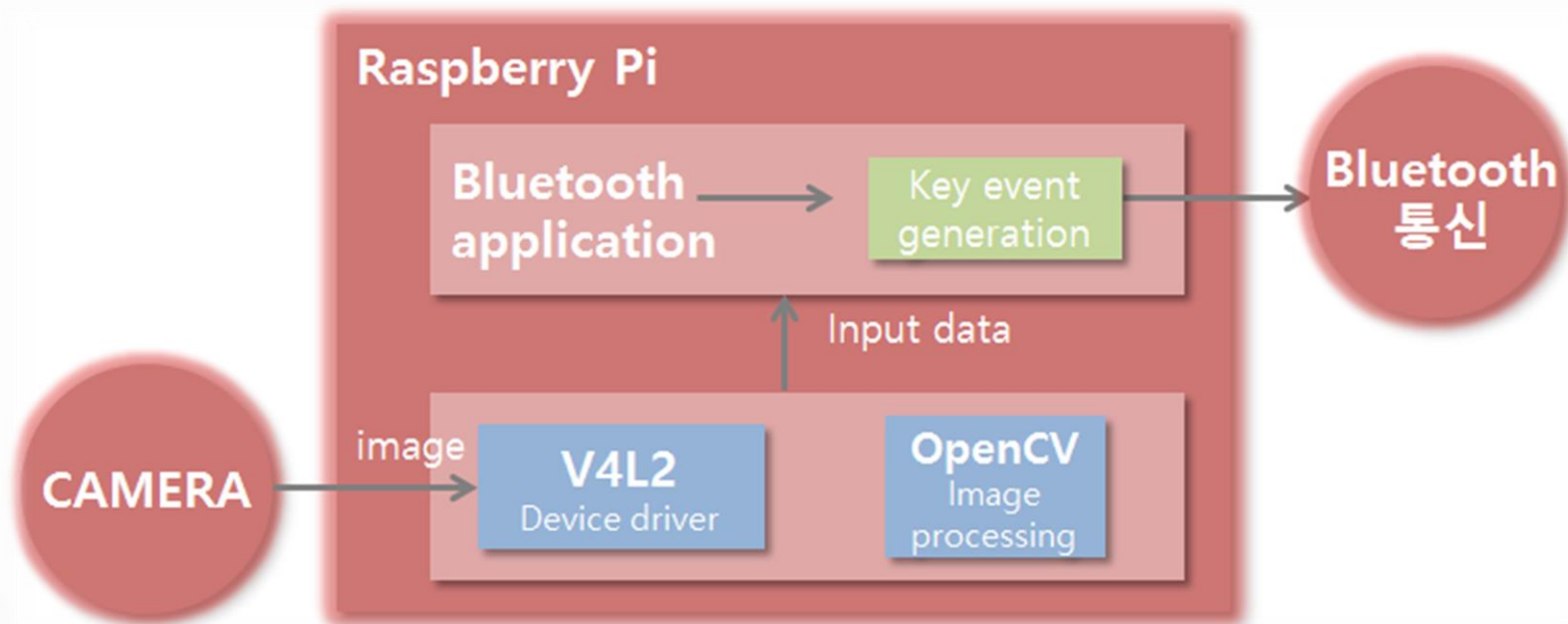








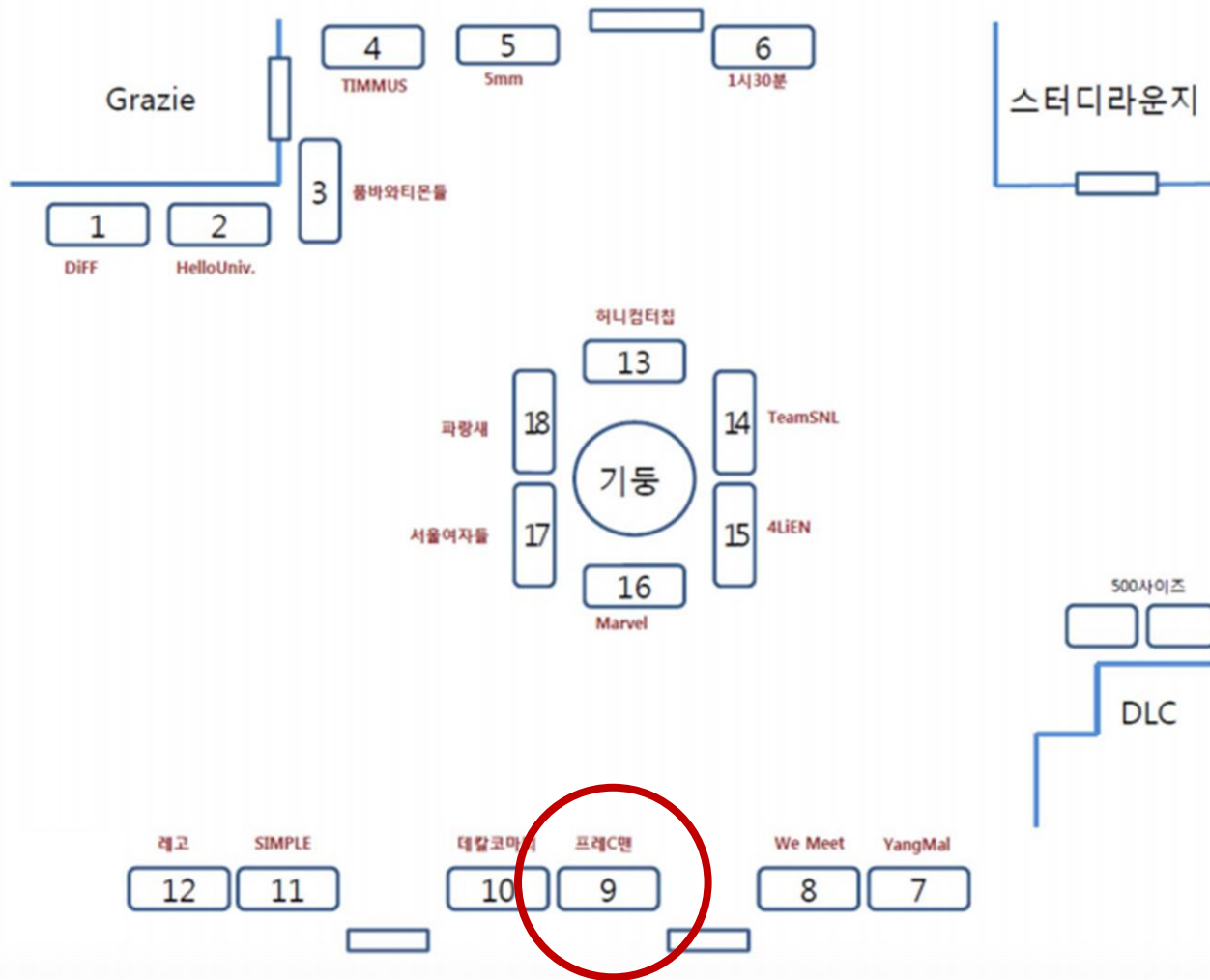
## 구조 - Raspberry Pi2



개발환경	Microsoft Windows 8.1, Ubuntu 14.04, Raspbian
개발도구	Microsoft Visual Studio 2012, gnueabihf toolchain,
개발언어	C, C++, Python
개발HW	Raspberry Pi2, Pi Cam, Web Cam







# 05

## 데모 시연

솔루션 탐색기 | ImageProcessor.cpp | Main.cpp | Mouse.cpp | MouseListener.cpp | PaperKeyboard.cpp | FingerKeyboard.cpp | KeyButton.cpp | PaperKeyboard\_TypeA.cpp

→ ImageProcessor

```
412         paperKeyboard->keyButton[i].keyAction();
413     }
414 }
415 }
416 void ImageProcessor::isMotionVectorValid(int index){
417     int hand = index/5;
418     int finger = index%5;
419     double xValidValue = CV_IABS(prevFingerTip[hand][finger].x - fingerTip[hand][finger].x);
420     double yValidValue = CV_IABS(prevFingerTip[hand][finger].y - fingerTip[hand][finger].y);
421     if(xValidValue > 10 &&yValidValue >10)
422         validVector[index] = false;
423     else
424         validVector[index] = true;
425 }
426 double ImageProcessor::calcMotionAvg(double motionVector){
427     /*motionSum += motionVector;
428     return motionSum/FingerKeyboard::captureFrame;*/
429     return 0;
430 }
431 void ImageProcessor::makeMotionGraph(){
432     for(int i = 0 ; i < 10 ; i++){
433         if(FingerKeyboard::captureFrame == 0)
434             graph[i][FingerKeyboard::captureFrame] = 0;
435         else{
436             graph[i][FingerKeyboard::captureFrame] = calcMotionVector(i);
```

출력

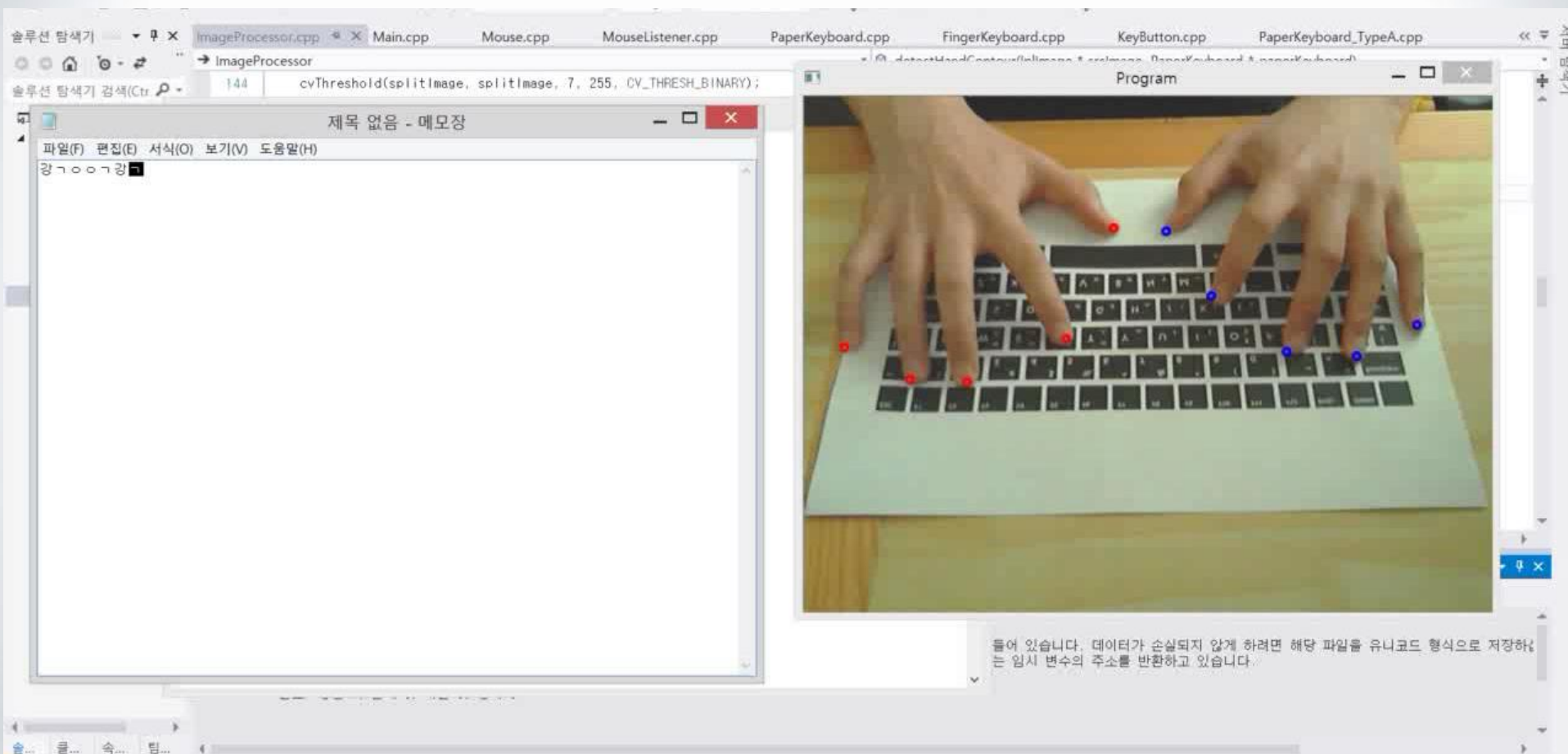
출력 보기 선택(S): 빌드

반디캠  
여기를 클릭 하시면 반디캠을 열 수 있습니다.



# 05

## 데모 시연





A Venn diagram consisting of two overlapping circles. The left circle is solid black, and the right circle is a light blue color. The intersection of the two circles is shaded in a darker blue. The text "& A" is written in black font within the intersection area.

**& A**