진행상황 발표

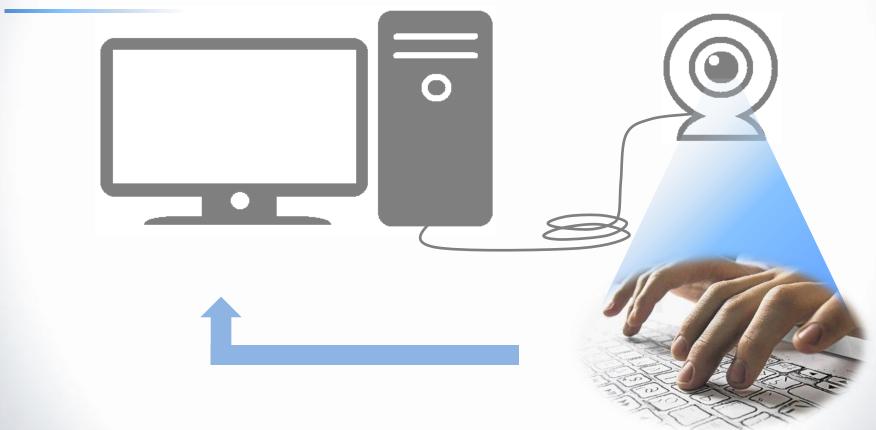
Finger Keyboard



Contents

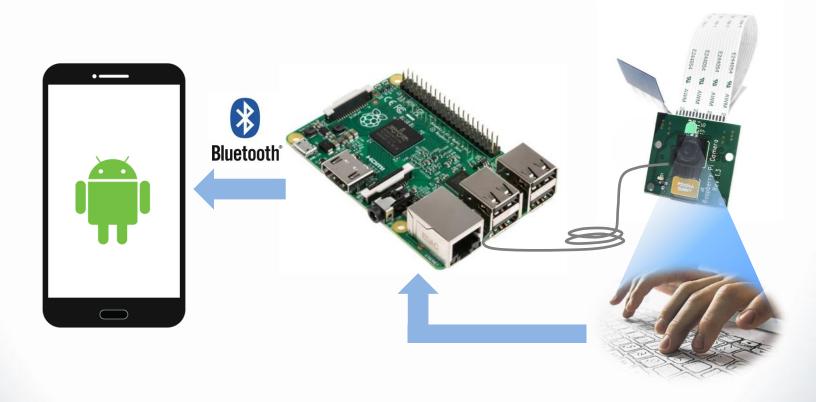
- 1. 프로젝트 소개
- 2. 수행 결과
- 3. 문제점과 해결방법
- 4. 예정 작업







프로젝트 소개



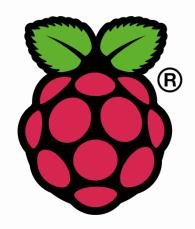


수행 결과

1.Open CV



2. Raspberry Pi





02

수행결과

1.Open CV

Finger Tip Detection







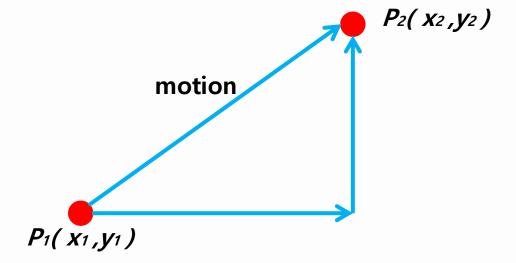


수행결과

1.Open CV



Motion Vector



graph[finger][frame] = motion



02

수행결과

1.Open CV



Motion Vector

```
ImageProcessor.cpp * X
                                                                                                                              ₹ Header.h ≄ X CurrentMode.cpp
                    ▼ ¼ × PaperKeyboard.cpp
                                                   Main.cpp
                                                                 FingerKeyboard.cpp
                                                                                                                                 1mageProcessor
                             → ImageProcessor
                                                                            ▼ @ setCorner()
                                          for(int i = 0; i < 4; i++){
                                                                                                                                              static CvPoint fingerTip[2][5];
솔루션 탐색기 검색(Ctrl+;)
                                  74
                                              for(int j = 0; j < 3 - i; j++){
                                                                                                                                               static CvPoint prevFingerTip[2][5];
                                  75
                                                  if(FingerKeyboard::keyboardCorner[j].y > FingerKeyboard::keyboardCorner[j+1].y
                                                                                                                                      58
                                                                                                                                              static CvSize size;
🗊 솔루션 'FinalProgram' (1 프로젝
▲ ⑤ FinalProgram
                                  76
                                                      temp = FingerKeyboard::keyboardCorner[j];
                                                                                                                                      59
                                                                                                                                              static IplImage* showGraph;
                                                      FingerKeyboard::keyboardCorner[j] = FingerKeyboard::keyboardCorner[j+1];
                                                                                                                                              static CvPoint prevPoint;
     ■ 리소스 파일
                                                     FingerKeyboard::keyboardCorner[j+1] = temp;
                                                                                                                                              static double motionAvg;
   ◢ 髱 소스 파일
                                                                                                                                               static double motionSum;
     ▶ * Camera.cpp
                                  80
                                                                                                                                      63
                                                                                                                                               static bool downOrientation;
     ▶ * CurrentMode.cpp
                                  81
                                                                                                                                              static double graph[10000];
     ▶ ** FingerKeyboard.cpp
                                          for(int i =0 ; i < 2 ; i++){
                                                                                                                                               void paperAreaDraggingImage([pllmage* srcImage);
     ▶ * ImageProcessor.cpp
                                  83
                                              for(int j = 0; j < 1 - i; i++){
                                                                                                                                               void getPaperKeyboardlCorner(IplImage* srcImage, CvPoint21
     ▶ * Main.cpp
                                  84
                                                  if(FingerKeyboard::keyboardCorner[j].x > FingerKeyboard::keyboardCorner[j+1].x
                                                                                                                                      67
                                                                                                                                               void setCorner();
     ▶ * MouseListener.cpp
                                  85
                                                      temp = FingerKeyboard::keyboardCorner[j];
                                                                                                                                               void getKeyButton(IplImage* srcImage);
        ** PaperKeyboard.cpp
                                  86
                                                      FingerKeyboard::keyboardCorner[j] = FingerKeyboard::keyboardCorner[j+1];
                                                                                                                                      69
                                                                                                                                               void detectKeyButtonCorner(|p||mage* src|mage);
   ▶ 屬 외부 종속성
                                  87
                                                      FingerKeyboard::keyboardCorner[j+1] = temp;
                                                                                                                                      70
                                                                                                                                               void initKeyButtonCorner();
                                  88
                                                                                                                                               void setKeyButtonArea(CvPoint2D32f* corners, int startInd
   ◢ ∰ 헤더 파일
                                  89
                                                                                                                                      72
                                                                                                                                               void setDirectionKeyButtonArea(CvPoint2D32f* corners, int
     ▶ B Header.h
                                  90
                                                                                                                                      73
                                                                                                                                               void cornerVerification(|p||mage* src|mage);
                                  91
                                          for (int i = 0; i < 2; i++) {
                                                                                                                                               void cornerSortingY(int startIndex, int cornerCount);
                                  92
                                              for(int j = 0; j < 1 - i; i++){
                                                                                                                                      75
                                                                                                                                               void cornerSortingX(int startIndex, int cornerCount);
                                  93
                                                  if(FingerKeyboard::keyboardCorner[j+3].x < FingerKeyboard::keyboardCorner[j+3]
                                                                                                                                      76
                                                                                                                                               void showKeyButton(|p||mage* srclmage);
                                 94
                                                      temp = FingerKeyboard::keyboardCorner[i+2];
                                                                                                                                               void cameraCalibration([pllmage* srcImage);
                                  95
                                                     FingerKeyboard::keyboardCorner[j+2] = FingerKeyboard::keyboardCorner[j+3];
                                                                                                                                      78
                                                                                                                                               void createSkinColorHistogram(lpllmage* srcImage);
                                  96
                                                      FingerKeyboard::keyboardCorner[j+3] = temp;
                                                                                                                                               void detectHandContour(|p||mage* src|mage);
                                 97
                                                                                                                                               void determinFingerTip(int nomdef, int side);
                                 98
                                                                                                                                      81
                                                                                                                                               void makeMotionGraph();
                                 99
                                                                                                                                      82
                                                                                                                                               double calcMotionVector();
                                100
                                                                                                                                               double calcMotionAvg(double motionVector);
                                                                                                                                               bool isMotionVectorValid();
                                                                                                                                100 % - 4
                             줄력 보기 선택(S): 빌드
                                                                                     솔루... 클래... 속성... 팀 탐... 4
```



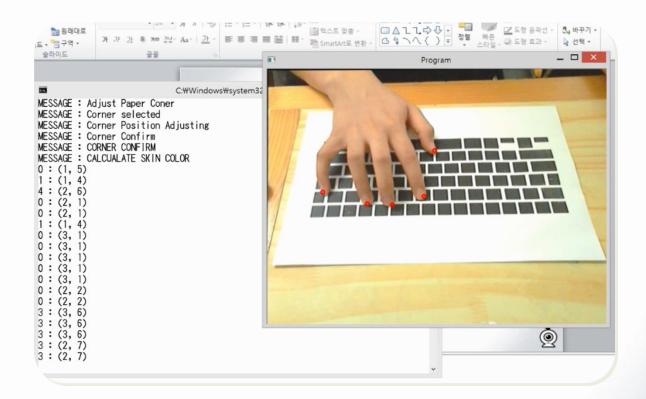
02

수행결과

1.Open CV



Key Event





수행결과

2. Raspberry Pi



1. Bluetooth 통신





2. SDP 프로토콜을 사용

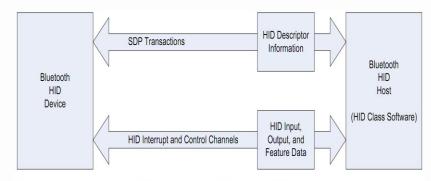


Figure 2.1: How Descriptors and Data are transferred from the HID Class Device



문제점과 해결방안

1.Open CV



움직임에 대한 Detecting 불안정

Testing과 Refactoring 통해 개선



예정 작업

1.Open CV



움직임에 대한 Detecting 정확도 개선

Single key 이벤트 처리

Modifier key 이벤트 처리

2. 기타 작업

UI 구현 및 단일 프로그램 완성



