Cameraworker.h

```
#ifndef CAMERAWORKER_H
#define CAMERAWORKER_H
#include <QImage>
#include <raspicam/raspicam.h>
using namespace raspicam;
class CameraWorker : public QObject
{
    Q_OBJECT
public:
    explicit CameraWorker();
    ~CameraWorker();
private:
    RaspiCam camera;
    bool cameraRunning;
    unsigned char *data;
signals:
    void handleImage(QImage &image);
    void finished();
public slots:
    void doWork();
    void stopWork();
    void save();
};
#endif // CAMERAWORKER_H
```

cameraworker.cpp

```
#include "cameraworker.h"
#include <fstream>
#include <iostream>
#include <QDebug>
#include <QApplication>
#include "unistd.h"

void CameraWorker::doWork()
{
    if (!camera.open()) {
        qDebug() << "Error opening camera";
        cameraRunning = false;
    } else {
        cameraRunning = true;
    }
    sleep(3);

    while (cameraRunning) {
        camera.grab();
        camera.retrieve(data, RASPICAM_FORMAT_RGB);
        QImage image = QImage(data, camera.getWidth(),
camera.getHeight(), QImage::Format_RGB888);
        emit handleImage(image);
        qApp->processEvents();
        usleep(200);
    }
}
```

```
void CameraWorker::stopWork()
{
    cameraRunning = false;
    emit finished();
}

void CameraWorker::save()
{
    std::ofstream outFile ( "otoskopi.jpeg",std::ios::binary );
    outFile<<"P6\n"<<camera.getWidth() <<" "<<camera.getHeight()
<<" 255\n";
    outFile.write ( ( char* ) data, camera.getImageTypeSize
( raspicam::RASPICAM_FORMAT_RGB ) );
}
```

mainwindow.h

```
#ifndef MAINWINDOW_H
#define MAINWINDOW_H
#include <QMainWindow>
#include <QImage>
#include <QThread>
#include "cameraworker.h"
namespace Ui {
class MainWindow;
}

class MainWindow : public QMainWindow
{
    Q_OBJECT
public:
    ~MainWindow();
private slots:
    void handleImage(QImage &image);
    void on_btnStart_clicked();
    void cameraFinished();
    void on_btnsave_clicked();
private:
    Ui::MainWindow *ui;
    bool cameraRunning;
    QThread *workerThread;
    CameraWorker *worker;
};

#endif // MAINWINDOW_H
```

mainwindow.cpp

```
#include "mainwindow.h"
#include "ui_mainwindow.h"
#include "unistd.h"
#include <QPixmap>

MainWindow::MainWindow(QWidget *parent) : QMainWindow(parent),
ui(new Ui::MainWindow),
```

```
void MainWindow::on_btnStart_clicked()
{
    workerThread = new QThread;
    worker = new CameraWorker;
    if (cameraRunning) {
        return;
    }
    worker->moveToThread(workerThread);

    connect(workerThread, SIGNAL(started()), worker,
SLOT(doWork()));
    connect(worker, SIGNAL(finished()), workerThread,
SLOT(quit()));
    connect(worker, SIGNAL(finished()), worker,
SLOT(deleteLater()));
    connect(workerThread, SIGNAL(finished()), workerThread,
SLOT(deleteLater()));
    connect(worker, SIGNAL(finished()), this,
SLOT(cameraFinished()));
    connect(worker, SIGNAL(handleImage(QImage &)), this,
SLOT(handleImage(QImage &)));
    connect(ui->btnStop, SIGNAL(clicked()), worker,
SLOT(stopWork()));
    workerThread->start();
    cameraRunning = true;
    ui->btnStart->setEnabled(false);
    ui->btnStop->setEnabled(true);
    ui->btnsave->setEnabled(true);
}

void MainWindow::handleImage(QImage &image)
{
    ui->imgLabel->setPixmap(QPixmap::fromImage(image));
    QApplication::processEvents();
    this->repaint();
}


void MainWindow::cameraFinished()
{
    cameraRunning = false;
    ui->btnStop->setEnabled(false);
    ui->btnStart->setEnabled(true);
    ui->imgLabel->setText("Camera Disabled");
}

void MainWindow::on_btnsave_clicked()
{
 cameraRunning = true;
 worker->save();
    ui->btnsave->setEnabled(false);
}
```

PENGAPLIKASIAN MODUL DIGITALISASI OTOSKOP

DI RUANG KLINIK THT RSI KLATEN

Tabel 1.1 Kuisioner kinerja Modul Digitalisasi Otoskop.

No	Pernyataan	Penilaian				
		1	2	3	4	5
A.	**Fisik**					
1.	Memiliki desain yang menarik dan praktis.					
2.	Berat yang cukup ringan.					
3.	Penempatan modul tidak mengganggu.					
B.	**Teknis**					
4.	Alat mudah untuk dioperasikan.					
5.	Hasil tampilan gambar mudah untuk diamati.					
6.	Modul memiliki ukuran yang minimalis.					
7.	Modul didesain aman untuk digunakan di klinik THT.					
8.	Pencahayaan yang cukup untuk pemeriksaan telinga.					
C.	**Fungsi**					
9.	Modul memiliki teknologi yang terbaharukan.					
10.	Modul dapat menggantikan mata sebagai pengamat dalam melakukan pemeriksaan telinga.					

Tabel 1.2 Bobot nilai dan Presentase Nilai

Bobot nilai		Persentase nilai	
STS	1	0% - 19.99%	STS
TS	2	20% - 39.99%	TS
C	3	40% - 59.99%	C
S	4	60% - 79.99%	S
SS	5	80% - 100%	SS

**)STS : Sangat tidak setuju, TS : Tidak setuju, C : Cukup, S : Setuju, SS : Sangat setuju*

Saran :

Klaten, ……..…. 2019

(……)

1. Pengukuran Tegangan Awal Ketika Pengisian Baterai

   a. Rata-rata

      Rata-rata ($\bar{X}$) = $\frac{\sum xi}{n}$

      Diketahui:

      (∑xi) = 47,99 VDC

      n = 10

      Jawab:

      $\bar{X} = \frac{\sum xi}{n} = \frac{47,99}{10}$ = 4,799 VDC

   b. Koreksi

      Koreksi = $\bar{X}$ – Y

      Diketahui:

      $\bar{X}$ = 4,799 VDC

      Y = 5 VDC

      Ditanya:

      Koreksi…?

      Jawab:

      Koreksi = Y - $\bar{X}$ = 5 – 4,799 = 0,201 VDC

   c. % *Error*

      % *Error* = $\frac{Y - \bar{X}}{Y}$ x 100

      Diketahui:

      $\bar{X}$ = 4,799 VDC

      Y = 5 VDC

Ditanya:

% Error…?

Jawab:

$\%\ Error = \frac{Y - \bar{X}}{Y}$ x 100 = $\frac{5 - 4{,}799}{5}$ x 100 = 4,02 %

2. Pengukuran Tegangan Akhir Ketika Pengisian Baterai

a. Rata-rata

Rata-rata ($\bar{X}$) = $\frac{\sum xi}{n}$

Diketahui:

($\sum$xi) = 50,32 VDC

n = 10

Jawab:

$\bar{X} = \frac{\sum xi}{n} = \frac{50{,}32}{10}$ = 5,032 VDC

b. Koreksi

Koreksi = $\bar{X}$ – Y

Diketahui:

$\bar{X}$ = 5,032 VDC

Y = 5 VDC

Ditanya:

Koreksi…?

Jawab:

Koreksi = $\bar{X}$ – Y = 5,032 – 5 = 0,032 VDC

c. % *Error*

% *Error* = $\frac{Y-\bar{X}}{Y}$ x 100

Diketahui:

$\bar{X}$ = 5,032 VDC

Y = 5 VDC

Ditanya:

% *Error*…?

Jawab:

% *Error* = $\frac{\bar{X}-Y}{Y}$ x 100 = $\frac{5{,}032-5}{5}$ x 100 = 0,64%

3. Pengukuran Tegangan Awal Ketika Pemakaian Baterai

   a. Rata-rata

   Rata-rata ($\bar{X}$) = $\frac{\sum xi}{n}$

   Diketahui:

   (∑xi) = 50,21 VDC

   n = 10

   Jawab:

   $\bar{X}$ = $\frac{\sum xi}{n}$ = $\frac{50{,}21}{10}$ = 5,021 VDC

   b. Koreksi

   Koreksi = $\bar{X}$ – Y

   Diketahui:

   $\bar{X}$ = 5,021 VDC

   Y = 5 VDC

   Ditanya:

Koreksi…?

Jawab:

Koreksi = $\bar{X}$ – Y = 5,021 – 5 = 0,021 VDC

c. % *Error*

% *Error* = $\frac{Y-\bar{X}}{Y}$ x 100

Diketahui:

$\bar{X}$ = 5,021 VDC

Y = 5 VDC

Ditanya:

% *Error*…?

Jawab:

% *Error* = $\frac{\bar{X}-Y}{Y}$ x 100 = $\frac{5,021-5}{5}$ x 100 = 0,42 %

4. Pengukuran Tegangan Akhir Ketika Pemakaian Baterai

a. Rata-rata

Rata-rata ($\bar{X}$) = $\frac{\sum xi}{n}$

Diketahui:

(∑xi) = 49,76 VDC

n = 10

Jawab:

$\bar{X}$ = $\frac{\sum xi}{n}$ = $\frac{49,76}{10}$ = 4,976 VDC

b. Koreksi

Koreksi = $\bar{X}$ – Y

Diketahui:

$\bar{X}$ = 4,976 VDC

Y = 5 VDC

Ditanya:

Koreksi…?

Jawab:

Koreksi = $Y - \bar{X}$ = 5 – 4,976 = 0,024 VDC

c. % *Error*

% *Error* = $\frac{\bar{X}-Y}{Y}$ x 100 = — x Y =

Diketahui:

$\bar{X}$ = 4,976 VDC

Y = 5 VDC

Ditanya:

% *Error*…?

Jawab:

% *Error* = $\frac{Y-\bar{X}}{Y}$ x 100 = $\frac{5-4,976}{5}$ x 100 = 0,48 %