

**FAST – National University of Computer & Emerging Sciences, Peshawar Campus**

**Department of Computer Sciences**

**SYSTEM REQUIRENMENT SPECIFICATION (SRS)**

**A Library For UI/UX Testing on Android Based Smart Phones**

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**Introduction:**

The idea is that for UI/UX testing, it's important to know what parts of the screen the user interacts with. There are heat maps in the browser/desktop world but on smartphones, there are no "mouse pointers" to track. The user only interacts with the screen by touch events and by looking at the screen. The proposed project will aim to "track the gaze" and of the user -- i.e. where are they looking at on the screen -- to decide which part of the screen content interests them the most. This will be for Android native applications and the end product will be a library that can be included in any app to serve the same purpose as heatmaps on desktops. For gaze tracking, we will use OpenCV's port to Android. We will also give a sample android application for testing our library.

**Purpose Statement:**

This report is to analyze the feasibility of our project from different aspects. For that we have to study about the technology that we require for our project development and hardware required for it. After analyzing the feasibility aspects we have to come with the effective and feasible options that should be adopted in completing the project.

**Problem Statement:**

Basic problems which influenced this project are as follows:

* The idea is, for UI/UX testing, it's important to know what parts of the screen the user usually interacts with.
* There are heat maps in the browser/desktop world but on smartphones, there are no "mouse pointers" to track.
* The user only interacts with the screen by touch events and by glancing at the screen.

**Scope:**

* Automate the UI/UX testing phenomena.
* Target domain is Android.
* End product will be a library.
* Library can be included in any android application for testing.
* An application for testing our library.

The detailed versions of the architectural design, data design, procedural design, design  
constraints and development schedule which are stated in the initial design description  
document will be covered in this document. The decomposed components are covered and  
identified more detailed. Besides this, dependencies are clarified and stated one by one.  
Description of each module including type, purpose, functions and subordinates, interfaces,  
processing and data are given clearly and more detailed with respect to the ones in the initial  
design description document. Also, the user interface will be covered.

**Overview:**

Existing Research:

Traditional gaze tracking systems rely on either contact and invasive hardware, or ex- pensive and non-standard hardware. To address this problem research has been done into systems that use only simple hardware to create gaze tracking systems. This system attempts to prove that is possible to create a gaze tracking system using a regular web camera and the free, open source Computer Vision library OpenCV. This is achieved by researching various techniques required for such a system and then measuring the performance of the created system. Analysis of the results concluded that while the error of the system was greater than desired, in conjunction with the research done in this field, it is possible to create a robust system using simple hardware.

**Operations:**

The operations that will be performed by this software are as following:

1. **Take input**
   * Capture the video of user through front cam.
2. **Preprocessing**
   * Extracting Required features
3. **Recommendation**
   * Generate heats map
4. **Feedback**

* Ask the user for feedback to save for further recommendation

**Product Functions:**

* The library would help the users for UI/UX testing.
* The software would recommend the restaurant to the user according to his choices and past user experience.

**User characteristics:**

The user of this software should have basic knowledge of web or mobile appa.

**REQUIRMENTS FOR THE PROJECT:**

Software and hardware requirements of this project are as follows:

**SOFTWARE REQUIRMENTS:**

* An operating system (Window 7/Linux (e.g. Ubutu 12.04)
* Development kits
* Eclipse
* Android Studio
* OpenCV’s port to Android

**HARDWARE REQIREMENTS:**

* Desktop / laptop
* Mobile phone

**Developer requirements:**

Using HP, Sony etc System or Laptop with following specifications:

* 64-bit Intel Core i3, Intel Core i5, Intel Core i7
* At least 4GB of Random Access Memory (RAM)
* At least 1GB of free hard drive space

**Literature Review:**

This section describes the previous work done about this project and brief comparison of different alternative solutions.

**Reliability:**

CMPGR will be designed as a whole simulation of a mobile device. Since mobile devices are one of the most indispensable objects for people in their daily life, our system have to be designed with minimum faults. It will contain a dataset of various hand features with different types and colors in order to decrease the error tolerance of the system. False errors, which are the most dangerous errors for a system to work correctly, will not be occurred in the system.

**Availability:**

When the project will be completed than the intentions are to take a domain and upload it also upload a window phone version on the store so people can use this app to get the recommendations

**Low-cost:**  
Implementation of the stereovision technology by using one low cost cameras provides an inexpensive solution with respect to the current technologies which are already available on the mobile device market.

**Maintainability:**  
Any error occurred while the system is in use will be tolerated and system recovers itself and continues properly.

**Performance:**  
Since the system will work on real time, performance is one of the most important topics of the system. Performance of the system will be high enough that user can use the system without noticeable delays or performance problems.

**Time:**  
Software will work on real time. Response of the system after the user makes an action will be fast enough that does not cause a problem.

**Security:**  
Since the system is compatible for only Unix based OS, it will be more secure for the external attacks.

**Conclusion:**

The conclusion is that we created a library that can be included in any app to serve the same purpose as heat maps on desktops. This will be for Android native applications.