Project Initiation Document

Final Year and MEng Group Projects

(SE3IP11, SE3GP11, SE4RP11 & SE4IP11)

School of Systems Engineering

The University of Reading

**Read me**

This document contains a template for the project initiation document (PID) that you (the student) are expected to complete at the beginning your project. This ‘read me’ page tells you how to create your PID using the template. When you have prepared your PID for submission and approval you should remove this ‘read me’ page.

A PID is written as part of a process of clarifying the purpose, approach and risks to an intended project; ensuring that the project is well understood and reasonably planned at the outset. It is likely that there will be some uncertainties at the time you are writing your PID. Do not try to conceal them as they harbour risks. It is better that you make them explicit using the expression TBD – to be determined. Note also that the content of a PID should be evidence based. So you must include all the important references and cite them in your text.

The template for the PID begins on the next page and sets out the format and content expected. The content you must add is indicated by the use of coloured text[[1]](#footnote-1) bracketed by << and >>.

Example: suppose the template has a tract of text showing:

Title: << Enter your project’s title.>>

The submitted PID might show

Title: An Investigation of the Thingy Accelerator Problem

The original black text “Title:” has been kept and the coloured text “<<Enter…>>” (including the characters << and >>) has been replaced by the required information. When in similar fashion you have replaced all the coloured text you should make final minor adjustments to the format so as to ensure that the document you are going to submit is tidy and clear.

Finally, please note that most of the coloured text instructions include guide budgets as word counts etc. These are deliberately tight, requiring you to think carefully about what you write. If your project supervisor agrees, you may change the budgets to better match your needs.

Good luck**.**

**Doc Reference:PID-Master-V4.3. Issue date: 16th March 2015.**

**Project Initiation Document**

A Face Authentication System

**Author: Thomas Bedford**

**Module: SE3IP11-15-6A**

**Project ID: A-FACE**

Date: 9/10/2015 10:30am

Document Version: 1.0

The current status of this document is: Draft

|  |  |  |  |
| --- | --- | --- | --- |
| Primary Supervisor | Hong Wei | | |
| Secondary supervisor | James Ferryman | | |
| Supervisor’s check: For each item below the supervisor should circle ✓ if it is satisfactory for this stage of the project; if it is not satisfactory then the supervisor should circle 🗶 and add a suitable comment to indicate the deficiency. The supervisor should then sign below to confirm the ✓,🗶 and comments. | | | |
| **CHECKLIST** |  | Comments, concerns and recommendations | |
| Background | **✓ 🗶** |  | |
| Problem statement | **✓ 🗶** |  | |
| Technical Products | **✓ 🗶** |  | |
| Crosscheck | **✓ 🗶** |  | |
| Purchases | **✓ 🗶** |  | |
| Health & Safety | **✓ 🗶** |  | |
| Social, Legal & Ethical | **✓ 🗶** |  | |
| References | **✓ 🗶** |  | |
| Project Plan | **✓ 🗶** |  | |
| **Supervisor’s Signature** |  | | **Date:** |
| **Submission rules: The PID, with this form completed and signed by the supervisor, must be handed in to the student information centre (G47) AND submitted online on Blackboard by Friday 9th October 2015. If the deadline is not met, the student will face a penalty of 5 marks being deducted from their overall module mark. It is expected that students will address any comments noted by their supervisor on this form in due course.** | | | |

# Introduction

This document initialises the project originally mandated in [1]. It clarifies *what* is expected and *how* it is to be done. As in any project initiation there may be uncertainties and they are identified where possible using the term TBD – to be determined.

The background motivating this project is summarised below in §. A concise statement of the objectives of this project is presented in §. How these objectives are expected to be satisfied is summarised with a headline list of *products*[[2]](#footnote-2) listed in §.

The project is undertaken under the auspices of the final year project module SE3IP11-15-6A and this mandates that the examination products listed in § are delivered as well as the technical products listed in §.

An assurance that the intended technical products are likely to be adequate is given in § where the objectives and technical products are crosschecked. § provides an outline plan and shows the plausibility that delivering the products (both technical and examination) is feasible.

The purchases expected in the plan are listed in §. Mandatory safety, social, legal and ethical concerns are addressed in § and § respectively. All references referred to in this document are listed in §.

# Background

Technological advances striving to replicate human processes has resulted in biometric analysis being a focused area of research over the past twenty years. Biometric analysis of fingerprints, palm, eyes and faces have been a concentrated area of research. Humans perform face recognition on a daily basis effortlessly. Face recognition is one of the most non-intrusive methods of biometric analysis which makes it one of the most relevant applications.

With so many applications such as video surveillance, human computer interaction and law enforcement biometric analysis is a focused area of research. The main issues regarding computing face recognition is the subject’s posture, age and lighting which restricts the usage of such systems to a controlled environment. With technological advances in hardware we draw closer to more efficient and reliable face authentication systems.

# Problem Statement

<< Provide a problem statement using a guide budget of between 100 and 160 words. Before writing you should assess the technical problem being addressed by your project. Then boil it down to the objectives being satisfied and what imposed constraints are placed on any solution. Finally identify any assumptions any acceptable solution would depend upon. When you have done your preparatory investigation and thinking read the <<’readme’>> paragraph (below) and summarise your problem statement by completing the sections §§3.1, 3.2 & 3.3. Remember when doing so to add and cite important references.

Note that there is a tight word limit. This is deliberate to ensure that you focus on the headline details encompassing the scope of the whole problem rather than detail – which will be dealt with in other documents as the project progresses.

If you are confident about writing problem statements and your supervisor allows it you may forego using the rubric and sections §§3.1, 3.2 & 3.3 and construct a problem statement as a narrative of between 150 and 180 words (guide budget).>>

<<’readme’>> On the basis of the soundness of the following assumptions, §, it is deemed worthwhile to satisfy these objectives, §, by delivering technical products subject to these constraints, §, on how they may be developed and/or delivered.

## Objectives

1) Develop a graphical user interface to capture and display images.

2) Capture images from a camera device and save images as graphic files.

3) Implement Face detection algorithms on camera feed.

4) Implement Face recognition algorithms on the camera feed.

5) Integrate face data base into face authentication system.

6) Display recognition results displaying rejection and acceptance rates.

## Constraints

1) The system will be used in a controlled environment i.e good illumination, distance of subject to camera.

2) Hardware such as camera resolution will dictate the quality of analysis results.

3) Faces captured for recognition should be of a neutral gesture and posture.

4) Faces captured for recognition will be frontal facing or within 20 degree angle.

5) Project deadlines and delivery date.

## Assumptions

<<Using a guide budget of 50 words create between 1 and 5 assumptions fitting the logic of the ‘readme’ paragraph (above).>>

1) Experiments will be carried out in a suitable environment i.e good lighting conditions, no foreign objects between the subject and camera, the subject does not bear any facial clothing(HAHA is facial clothing a thing, it should be).

2) Images of faces stored in database will be frontal facing. Images taken for authentication must be frontal facing or have the frontal features generated.

3) The environment in which the face recognition will take place must be considered. Elements such as lighting

4) System subjects will not be wearing obstructive facial items i.e sunglasses, burka, head scarf.

5) Participants using the system will be aware that there biometrics will be stored and analysed (Ethics).

# Technical Products

**Product 1:** Graphical User Interface

The graphical user interface will provide a method of interaction from the user to the system.

The user interface will display a camera feed, the stored image for comparison, acceptance and rejection rates of the recognition and computation statistics yielded in the recognition. It will provide mechanisms for the user to customise and interact with the authentication system.

Time constraints of other project deadlines and objectives. The chosen language for implementation may have its constraints when implementing the interface. Storage of the system software could become corrupt or damaged.

**Product 2:** Capturing and storing images as graphical files.

This product will enable a camera feed to be displayed through the GUI. It will allow the user to capture and store an image as a graphical file.

Successful implementation of the camera feed into the GUI and the ability to capture and save graphical images with satisfy this products completion.

Ethics and security needed to be considered when allowing a user to interact with the system.

**Product 3:** Computing Face Detection

The detection software will locate and track the face of a user. It will compute and draw a rectangle encompassing the contour features of the face.

For this products completion the face detection software will correctly be able to locate and track a human user’s face. It will be able to illustrate through the camera feed the area of image that is being detected visible for the user.

Hardware failures, loss of code, long exposure to computer screen, good posture when working.

**Product 4:** Computing Face Recognition

The face recognition software will be able to compare the user’s captured image with a previously stored image of the user.

The system should be able to successfully compare and recognise similarities of biometrical features within two images of a user’s face.

Time deadlines, ethics, security.

**Product 5:** Integrate Face Database into system

* Brief Description
* Acceptance Criteria. Some aspects of this products completion are TBD.
* Key Risk to its completion

**Product 6:** Display recognition results displaying rejection and acceptance rates.

* Product Name:
* Brief Description
* Acceptance Criteria
* Key Risk to its completion

# Crosscheck of approach

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Product 1 | Product 2 | Product 3 | Product 4 | Product 5 | Product 6 |
| Objective 1 | X |  |  |  |  |  |
| Objective 2 |  | X |  |  |  |  |
| Objective 3 |  |  | X |  |  |  |
| Objective 4 |  |  |  | X |  |  |
| Objective 5 |  |  |  |  | X |  |
| Objective 6 |  |  |  |  |  | X |

Then using a guide budget of 100-150 words justify the claim that the headline projects to be adequate to satisfy the objectives.

Finally using a guide budget of 100-150 words justify the claim that the headline products are individually and collectively feasible over the time allocated to the project. You will need to bear in mind the detail of the plan §12.>>

# Health and Safety

<< Identify and list any potential health and safety issues that may be present in your project. Use this list to then complete the standard RA1 Risk Assessment Form [2] that must be submitted with this PID.>>

# Legal and Ethical

<< Describe the social, legal and ethical issues that apply to your project. Does your project require ethical approval? >>

* Subject of testing need to be aware that the experiment is taking place. Need permissions and need to notify the subjects.
* Security of biometrical data. Needs to be handled sensitively. Can get a new bank card but not so easy to get a new face.

# Examination Products

The mandated examination products are as follows. Risks identified that may obstruct their completion are listed in [2] with cross-reference to this section. << The acceptance criteria for the examination products has been provided. However, there are some items that are to be determined (TBD) which should be resolved by the student. >>

**EX1. Name**: PID

* **Short Description**: The document that initiates this project and guides it thereafter.
* **Acceptance Criteria**: The PID must be written as a Microsoft Word or PDF document in compliance with the format and content instructions indicated in this document (the PID Master). All sections should be complete to a reasonable depth and quality, consistent with the stage of the project, that satisfies the technical judgement of the project supervisor and, if appropriate, the Company Partner. The sign offs on the cover page will be completed.

**EX2. Name**: Autumn Term Week 6 Logbook Check

* **Short Description**: A formal check of project progress based on the logbook.
* **Acceptance Criteria**: The Student Information Centre staff, and Project Co-Ordinator if necessary, must be convinced the project progress has been sufficient to date and that this progress has been adequately recorded in the logbook. The logbook must include a sign-off sheet that indicates that the logbook has been assessed by the supervisor on a weekly basis.

**EX3. Name:** Project Progress Review

* **Short Description**: A formal check of project progress based on a checklist form.
* **Acceptance Criteria**: The ‘Project Progress Review Individual Form’ must be completed by the student and supervisor and signed and submitted by the appropriate deadline.

**EX4. Name**: Spring Term Week 6 Demonstration

* **Short Description**: A formal presentation of the executable technical products of the project to the project supervisor and internal moderator.
* **Acceptance Criteria**: During Week 6 of Spring Term, the student must demonstrate their project to their supervisor and internal moderator. The demonstration should show that the project’s technical products are on track to be completed by the end of the project.

**EX5. Name**: Poster

* **Short Description**: A poster summarising a significant aspect of your work.
* **Acceptance Criteria**: A poster is constructed based on the template (TBD). It will be of a quality typical of an academic conference poster presentation. The content will introduce and explain some aspect, claim of other facet of the project that the student deems most interesting and which is agreed by the supervisor.

**EX6. Name**: SCARP Abstract

* **Short Description**: An abstract in a form typical of an academic conference.
* **Acceptance Criteria**: The abstract is written according to the academic template (TBD). It will summarise the project with a focus on its achievements with respect to the objectives and technical products and what was learned.

**EX7. Name**: SCARP Paper

* **Short Description**: A short paper in a form typical of an academic conference.
* **Acceptance Criteria**: The paper is written according to the academic template (TBD). It will describe the project with a focus on its achievements with respect to the objectives and technical products and what was learned.

**EX8. Name**: Final Report

* **Short Description**: The academic write up of the work achieved by the project in addressing the technical problem.
* **Acceptance Criteria**: The report shall be formatted according to provided rules (TBD). It shall have content assessable according to the criteria (TBD). It will include sections such as Introduction, Literature Survey, Problem Analysis, Solution Analysis, Implementation, Evaluation (detail TBD).

**EX9. Name**: Demonstration to Internal Examiners

* **Short Description**: A formal presentation of the executable technical products of the project.
* **Acceptance Criteria**: The working demonstration must be convincing to the examiners in terms of: showing a significant satisfaction of the objectives through the operation of the developed technical products; showing that the work is substantially the product of the student’s efforts.

**EX10. Name**: SCARP Presentation

* **Short Description**: A 10 minute presentation of your work in a conference setting.
* **Acceptance Criteria**: The paper is presented in a clear, coherent manner in the allotted time and plausible answers are given to such questions that are possible in the conference schedule (typically two or three questions).

**EX11. Name**: Project Archive

* **Short Description**: A CD containing all project documents.
* **Acceptance Criteria**: The CD must contain all the files and folders specified in the guidelines (TBD).

# References

[1] << Put in reference details for the Project Mandate; e.g. :Project to make a TARDIS, Project Mandate, ID 123XYZ, SSE Projects Digest 2014-2015, Blackboard >>

[2] << Put in a correct reference to your RA1 Risk Assessment Form >>

# Project Plan

<< Split your project work into sections/categories/phases and add tasks for each of these sections. First deal with the headline products you identified in §4 and then deal with the examination products listed in §11 as illustrated by the two tables below.>>

## Technical Products

<<Create and populate a table as illustrated here. The idea is that every headline technical product will be delivered as a result of project activity (tasks). If you wish, you may add sub products as illustrated in the ‘Installed Thingy’ example. It is very easy to waste time planning at too much precision – to avoid this you are limited to a maximum of 25 rows to the table. Note on effort ratings: These weeks are working time not elapsed time. For example working time of one week will take two weeks of elapsed time if you are working only half time on the project. This understanding is important for creating realistic plans.

Table ‑ Technical Products

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product | Task  ID | Task Description | Effort  (weeks) | Who[[3]](#footnote-3) |
| Built Widget | T1 |  |  |  |
|  | T1.1 | Specify, Design, | 2 | Bill Poster |
|  | T1.2 | Implement and test | 2 | Dawn Poor |
|  |  |  |  |  |
| Installed Thingy | T10 |  |  |  |
| - Thingy Infrastructure | T10A |  |  |  |
|  | T10A.1 | Purchase stuff | 2 |  |
|  | T10A.2 | Assemble stuff | 1 |  |
| -Thingy Code | T10B | Design, Code & Unit Test | 3 |  |

>>

## Examination Products

<<Create and populate a table as illustrated here. The idea is that every examination product will be delivered as a result of project activity (tasks). List each. You are limited to a budget of 20 rows. >>

Table ‑ Examination Products

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product | Task  ID | Task Description | Effort  (weeks) | Who |
| Final Report | E1 | e.g. Write-up project report | 4 |  |
| SCARP Poster |  | e.g Create SCARP poster | 1 |  |
|  |  |  |  |  |
|  |  |  |  |  |

>>

## Time Plan for the proposed Project work

<<Populate the following table: For each task identified in Table 12‑1 and Table 12‑2, please shade the weeks when you’ll be working on that task. You should also mark target milestones, outputs and key decision points. To shade a cell in MS Word, move the mouse to the top left of cell until the curser becomes an arrow pointing up, left click to select the cell and then right click and select ‘borders and shading’. Under the shading tab pick an appropriate grey colour and click ok. Limit your table to fit on a single sheet of A4; you may adjust font sizes but the smallest font allowed is 10 point.>>

**Time Plan for the proposed Project work**

**Time Plan for the proposed Project work**

Table ‑ Time Plan Technical Products

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product / Product phase** | **START DATE: <enter the project start date here>** | | | | | | | | |  | | | | | | | |
| Pre-Term | AUTUMN TERM (weeks) | | | | | | Break | SPRING TERM (weeks) | | | | | | | Break | SUMMER TERM  (exams) |
| 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11 | 1-2 | | 3-4 | 5-6 | 7-8 | 9-10 | 11 |  |
| e.g. Widget |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |
| … eg Thingy |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |

Table ‑ Time Plan Examination Products

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product / Product phase** | **START DATE: <enter the project start date here>** | | | | | | | | |  | | | | | | | |
| Pre-Term | AUTUMN TERM (weeks) | | | | | | Break | SPRING TERM (weeks) | | | | | | | Break | SUMMER TERM  (exams) |
| 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11 | 1-2 | | 3-4 | 5-6 | 7-8 | 9-10 | 11 |  |
| PID | X |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |
| Autumn Term Week 6 Logbook Check |  |  |  | X |  |  |  |  |  | |  |  |  |  |  |  |  |
| Project Progress Review |  |  |  |  |  |  | X |  |  | |  |  |  |  |  |  |  |
| Spring Term Week 6 Demonstration |  |  |  |  |  |  |  |  |  | |  | X |  |  |  |  |  |
| Poster |  |  |  |  |  |  |  |  |  | |  |  |  |  | X |  |  |
| SCARP Abstract |  |  |  |  |  |  |  |  |  | |  |  |  |  | X |  |  |
| SCARP Paper |  |  |  |  |  |  |  |  |  | |  |  |  |  | X |  |  |
| Final Report |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  | X |
| Demonstration to Internal Examiners |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  | X |
| SCARP Presentation |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  | X |
| Project Archive CD |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  | X |

1. If you cannot distinguish the coloured text please tell your project supervisor. [↑](#footnote-ref-1)
2. A *product* in this context is something completed by the activity of the project. This is terminology of PRINCE2 project management. Some other PM regimes refer to *deliverables*. [↑](#footnote-ref-2)
3. For those doing SE3GP11: Identify who is doing what in the Task Description and Output columns by attaching names to each task and output. If you are all doing a task together then you can put ‘ALL’ but in general try and break it down and be specific. It is a requirement from the External Examiners that this plan should make it clear how each member of the team will do the appropriate amount of work for the module. If, for example, there are 5 people in your team, then it is likely that this plan will be about 5 times as long as that for one student doing an individual project. [↑](#footnote-ref-3)