Middle East Technical University

Department of Electrical and Electronics Engineering

EE493 ENGINEERING DESIGN I

Business Statement Report

Supervisor : Assoc. Prof. Emre Özkan (Section 6)
Company Name : Duayenler Ltd. Şti.
Members : Sarper Sertel, 2094449 (Contact Person)
Enes Taştan, 2068989
Erdem Tuna, 2617419
Halil Temurtaş, 2094522
İlker Sağlık, 2094423

October 19, 2018

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Contents

1 Introduction

2 About the Company

2.1 Our Mission

Our mission is to design products for real life problems by creating innovative solutions.

2.2 Our Mission

Our vision is to be frontier in robotics by intelligently automating the future world.

3 About Us

Figure 1: Kişi1

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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Figure 2: Kişi2

Figure 3: Kişi3

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Figure 4: Kişi4

Figure 5: Kişi5

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Justification of the composition of the team TODO NOTE

4 Description of the Projects

The analyses of each 4 projects including possible challenges and solutions are given in this section.

4.0.1 Devices Competing to Catch Falling Balloons

In this project, we are supposed to design and construct two robots that try to catch falling balloons before they touch the floor. However, we have some limitations with this design. Firstly, the sizes of the robots mustn't exceed the upper limit provided us. Secondly, robots are not allowed to touch, push or contact each other. Thirdly, the protection from the interference from robots' sensors is required.

There are two major problems related to this project. First problem is moving the robot to the direction of the balloon. To solve this, a built-in camera on the robots can be utilized. We can take a reference point on the camera, and try to make it aligned with the balloon. However, image processing is highly required. Second problem is the way of catchng the balloons. Robot arms or vacuums can be utilized in this step. However, we think the vacuums would be much easier. In overall, image processing and algorithm to make robots tend the direction of balloons avoiding collusion are required.

4.0.2 Devices Trying to Score in Each Other's Goals

4.0.3 Vehicles Chasing Each Other Around a Closed Course with Varying Properties

4.0.4 Devices Trying to Extract the Plan of Their Surroundings

The project requires a mobile vehicle that can travel in a meaningful path such that the device neither crashes any of the obstacles nor the exterior walls but can map the whole playfield accurately. The main limiting factor in the solution is the use of same color for both the obstacles and the exterior wall. This limitation prevents the implementation of a simple color thresholding solution for the object detection with the help of a imaging system such as a camera. A possible way to handle the object detection problem would be to use "shadow games" so that light shades of the color indicate a possible object whereas the dark shades of the color might mean exterior wall. Certainly, mapping the playfield is important as much as object detection. The vehicle should be able to get the distance of it to its environment.

The overall solution requires a combination of many steps, mainly, image processing, direction automation with respect to surroundings, an algorithm to create map.

5 Conclusion

Appendices:

Time table for the tasks including the assignment of responsibilities until the submission of the proposal report

CVs (Maximum of 2 pages per person)

- Item
- Item

Figure 6: Logo

(a) Logo1 (b) Logo2

Figure 7: Small Logos

A	B	C
1	2	3
2	3	4
3	4	5
4	5	6

Table 1: table

A \ a	Average deviation after subtracting out the frequency error	C
1	2	3
	3	4
3	4	
4	5	6

Table 2: table

Enes Taştan

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PERSONAL PROFILE

An aspirant and diligent physics undergraduate who currently makes double major with electrical and electronics engineering with the aim of integrating principles of science with practicality of engineering. Demonstrates high interest in experiments with resourceful and creative profile. Enjoys sharing academical knowledge with colleagues.

EDUCATION

2016–2020 (expected) **Electrical and Electronics Engineering (BSc)**, *Middle East Technical University (METU)*, Double major .

2014–2019 (expected) **Physics (BSc)**, *Middle East Technical University (METU)*, Major.

2010–2014 **Bartın Hasan Sabri Çavuşoğlu Science High School**, *Bartın*.

LANGUAGES

Turkish	Native
English	Advanced
Arabic	Beginner

COMPUTER SKILLS

Office	Intermediate	C Language	Beginner
Python	Intermediate	Java	Beginner
Matlab	Intermediate	LaTeX	Intermediate
ROOT	Beginner	SolidWorks	Beginner

- Able to solve an arbitrary encountered problem using appropriate language
- Matlab and Python for mostly scientific computation purposes

MEMBERSHIPS

Physics Society	Management board member, conducted LaTeX seminars
Machinary Innovation Society	Attandence to introductory courses and projects

ACHIEVEMENTS

TUBİTAK 2205 Bachelor Scholarship — *given for those who register science departments with the degree within the first 5000 in university entrance exam in 2014*

REFERENCES

Available upon request

Halil Temurtas

Curriculum Vitae

Education

2014–Present **BSc**, *Middle East Technical University*, Ankara, *CGPA – 3.05*.
Electrics and Electronic Engineering

2010–2014 **High School**, *Ankara Ataturk Anadolu Lisesi*, Ankara, *GPA – 90.3/100*.

Projects

VLA A Student Researcher at an Independent Research and Development Project for Development of Very Light Aircraft (VLA) by Middle East Technical University (METU) and Turkish Aircraft Industries Corporation (TAI)

EE213 Analog Air Conditioner System, 3rd Semester Laboratory Term Project

EE214 Flute Controlled Car, 4th Semester Laboratory Term Project

EE313 FMCW Based Distance Measuring System, 5th Semester Laboratory Term Project

Experience

Summer Practice

2017 **Summer Intern**, Turksat Uydu Haberlesme Kablo TV ve Isletme A.S., Ankara.
20 days mandatory summer practice. Worked on project management systems on a project about sun tracking solar panel system.
- Between July and August 2017

Detailed achievements:
- Raspberry Pi / Python
- Arduino
- Introduction to project management systems

Ilkadim Mahallesi Dayanisma Sokak – No:5/7 Dikmen/Cankaya/Ankara
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haliltemurtas.com

Intern Engineer

2018 **Intern Engineer**, Turkish Aircraft Industries Corporation (TAI) , Ankara.
One day per week engineering program from TAI for engineering students.
- Between March and May 2018

Summer Practice

2018 **Summer Intern**, ASELSAN A.S., Ankara.
20 days mandatory summer practice. Observed and participated on environmental test of products at HBT,ASELSAN and conducted research work on components
- Between July and August 2018

Computer skills

Basic Python, Verilog

Intermediate Git Matlab ,html, LaTeX, Microsoft Office, Microsoft Windows, C

Languages

Turkish **Mothertongue**

English **Upper Intermediate** *Conversationally fluent*

German **Basic** *Basic words and phrases only*

Exams

YDS 2015 **95/100**

METU EPE 2015 **87.5/100** *English Proficiency Exam done my METU*

Interests

Taekwon-do **Green-Blue Belt** *Metu Taekwon-do Club*

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