PROJECT TITLE

by

Name Surname

Submitted to the Department of Food Engineering

in Partial Fulfillment of the Requirements

for the Degree of Bachelor of Science in

Food Engineering

Faculty of Engineering

Yeditepe University

2020

PROJECT TITLE

APPROVED BY:

Prof. Dr. Name Surname   …………………………
(Supervisor)

Prof. Dr. Name Surname   …………………………

Assist. Prof. Dr. Name Surname   …………………………

DATE OF APPROVAL: ..…/..…/2020

ACKNOWLEDGEMENTS

It is with immense gratitude that I acknowledge the support and help of my Professor Name Surname. Pursuing my project under her supervision has been an experience which broadens the mind and presents an unlimited source of learning.

I thank Name Surname and Research Assistants Name Surname.

Finally, I would like to thank my family for their endless love and support, which makes everything more beautiful.

ABSTRACT

PROJECT TITLE

Residual stress distribution in heat Affected Zone (HAZ) can be predicted by using ultrasonic technique. This was used for residual stress measurement in previous studies and accepted as a method for residual stress measurement. However, measurements at most of these studies carried on one dimension which covered a straight line from weld to base plate. This approach gave limited information about the residual stress distribution through the material. In this study, through thickness ultrasonic longitudinal wave velocity measurements are performed at predetermined points on the steel plate that cover whole plate. Velocity data is used for calculation of residual stress and density. Difference between stressed and stress free sample velocity values are used with acoustoelastic constant to calculate residual stresses. Density at each measurement point is calculated by using the relation between density and longitudinal wave velocity. In addition to ultrasonic test, the sample was radiographed by using X-Ray system. Density variation throughout the sample is obtained after the radiographs are digitalized and filtering techniques are applied. The boundary of Heat Affected Zone (HAZ) is observed by using 2D density and residual stress distribution data of ultrasonic test and radiographic interpretation. In order to confirm experimental results, 2D FEM axi-symmetric model is generated to simulate multi-pass welding process. This thermo mechanical process is performed by thermal analysis coupled with mechanical analysis.

ÖZET

PROJE BAŞLIĞI

Isı tesiri altında kalan bölgedeki artık gerilme dağılımı ultrasonik tekniği kullanılarak öngörülebilir. Bu teknik daha önceki çalışmalarda artık gerilme ölçümünde kullanılmış olup bir artık gerilme ölçüm yöntemi olarak kabul edilmiştir. Fakat birçok çalışmada ölçümler bir boyutlu olarak düz bir hat üzerinde kaynaktan malzemeye doğru gerçekleştirilmiştir. Bu çalışmada, kalınlık boyunca ultrasonik dalga hızı çelik plaka yüzeyinin tamamında daha önce belirlenmiş noktalarda ölçülmüştür. Elde edilen hız değerleri yoğunluk ve artık gerilme hesaplamalarında kullanılmıştır. Gerilme oluşmadan önce ve sonra yapılan hız ölçümlerinin farkı ve akustik elastik sabit kullanılarak artık gerilmeler hesaplanmıştır. Yoğunluk ve boyuna dalga hızı arasındaki bağlantı kullanılarak belirlenen noktalardaki malzeme yoğunluğu tespit edilmiştir. Ultrasonik kontrole ilaveten X-Ray sistemi kullanarak malzemenin radyografi filmi çekilmiştir. Yoğunlukta oluşan değişimleri gözlemleyebilmek amacıyla film dijital ortama aktarılmış ve görüntü işleme yazılımı kullanılarak çeşitli filtreler uygulanmıştır. Ultrasonik kontrol yöntemiyle elde edilen iki boyutlu yoğunluk ve artık gerilme dağılımları ile dijital ortama aktarılmış radyografi filmiyle elde edilen yoğunluk dağılımı kullanılarak ısı tesiri altında kalan bölgenin sınırları tespit edilmiştir. Deneysel sonuçları onaylamak amacıyla çok geçimli kaynak işlemi iki boyutlu ve eksensel olarak bakışımlı sonlu elemanlar modeli kullanılarak analiz edilmiştir.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF SYMBOLS/ABBREVIATIONS

A	System matrix
B	Input matrix
G	Plant transfer matrix
G_1	Plant disturbance matrix
R	A closed and bounded region in E
δR	Boundary of the region R
δR^s s=1,…,p	Complementary regular subsurface of the boundary δR, s being a positive scalar
T	Sampling time
U	Control Input
x_c	Controller state vector
$α_c, α_e$	Controller and estimator characteristics polynomials
Γ	Discrete plant control input matrix
$Γ_1$	Discrete plant noise input matrix
λ	Plant delay time or transportation lag
ADD	Average detection delay
ASN	Average sample number
i.i.d.	independently and identically distributed
JACS	Journal of American Chemical Society

1. INTRODUCTION

This manual, which is based on Yeditepe University Graduate School of Natural and Applied Sciences Thesis Guidelines, includes the guidelines to prepare your FDE 492 Engineering Project Report in the correct format. This document can be used as a TEMPLATE as it is written in the required format.

Every project report must show correctness and clarity of expression. The responsibility for such correctness and clarity rests primarily upon the student, but every report will be scrutinized for these qualities by the student's supervisor and the Examining Committee.

Although the structure of a report may show small variances with respect to the project, the following paragraph describes a general outline for the construction of the report.

In addition to the sections that are outlined in the Table of Contents: Abstract, Özet (abstract in Turkish), Acknowledgements, References, every report must include a introductory chapter (Introduction). The Introduction section can briefly state the general topic and give some background, define the terms and scope of the topic, include a literature review to outline and evaluate the current research in the area, identify the importance of the proposed research, state the research problem/questions and state research aims and/research objectives, (state the hypothesis). The Material and Methods section should include the description of the materials and methods used for data collection (such as experiments, modelling, interviews, surveys and document analysis/literature review) and analysis in sufficient detail to allow independent replication. The results and related discussions are given in a single chapter titled Results and Discussion, which is expected to contain some reference to the literature to emphasize the originality of the work or make comparisons with current literature data. Every report must include a Conclusions section that presents the main conclusions obtained from the results of the study.

2. GENERAL INSTRUCTIONS

The template for the title page for a FDE 492 Engineering Project Report is presented on Page i. All copies of the report submitted must include original signatures of the Examining Committee on the approval page. The names of the members of the Examining Committee will be listed one below the other **in alphabetical order** except the Supervisor's, whose name will be **at the top** of the list. Beside each name, space for the signature of each examiner should be left. The date at the bottom of the page will be filled by the Department of Food Engineering [1].

Occasionally, authors would like to dedicate their project report to their family members, friends or some scientists in their area of research. The dedication page should follow right after the Approval Page. It must be typed in **12 points**, **italic**, and adjusted to right. It must be one sentence and contain three dots (…) at the end of the sentence. Width of the sentence cannot exceed 6.5 cm. It must be typed in maximum 2 lines.

The abstract page should contain the title of the project. Title must be typed in 14 points. The abstract should be maximum 1 page in length. The abstract should cover the following points: Statement of the problem, procedure or method, results, conclusions. Two abstracts, one in English and the other in Turkish, should be included. The abstract should contain no tabular material, chemical formulas, or footnotes. Abstracts should not contain references, but author citing is allowed. The Turkish abstract ("Özet") must follow the English abstract in the same format. Examples of abstracts to be included in the project report are given on Pages iv and v [2].

Reports are expected to have a "Table of Contents" page for the convenience of the reader. If figures and tables are scattered throughout the text, a separate "List of Figures" (and/or "List of Tables") must be included after the Table of Contents. These lists should include page numbers. Similarly, a "List of Symbols" (or "List of Symbols/ Abbreviations", as appropriate) should be included. Examples of such materials are shown on Pages vi-x. "List of Symbols/ Abbreviations" can contain abbreviations listed alphabetically as a separate group following the symbols. Symbols must be separated into two groups as Greek symbols following Latin symbols.

The first chapter (Introduction) of the report will start on the first page of the text, i.e. the first page enumerated in Arabic numerals. When writing your report, pay attention to some of the precautions listed below:

- The whole text should be left and right justified.
- Please note the spelling of "Foreword".
- Periods, commas, semicolons and colons go outside the quotation marks.
- The word "data" is plural and requires a plural verb.
- Integers from one to nine, inclusive, should be spelled out except when they represent a chapter or a section; for number 10 and above, use numerals. Numbers should be spelled out when they begin a sentence.
- Equations must be centered and equation number must be written with chapter number. Equation font should be Cambria Math and font size can differ according to the instructions from author's supervisor. An example of equations is presented on Page 9.

3. FORMAT

3.1. CHARACTER FONTS

As a character font, use Times New Roman. The font size must be 12 point in the text including formulas, equations, table headings and figure captions. At least 8 point should be used in figures, tables and super or subscripts. Footnotes, long biographical quotes and extensive quotations should be 10 points [3].

3.2. SPACING

Spacing of the text material shall be 1.5 or when necessary integer multiples thereof. The followings are exceptions:

- Footnotes - single spacing (Page 8)

- Long biographical quotes - single spacing

- Extensive quotations - single spacing and indented one (1) centimeter relative to the text material (Page 12)

3.3. LEFT ADJUSTING

The left adjusting point of titles and headings shall be 35 mm from the left edge of the paper. You can use the appropriate left adjusting command in computer typesetting.

3.4. MARGINS

Margins of pages shall conform to the following specifications:

- Left margin - 3.5 cm from edge of paper

- Right margin - 2 cm from edge of paper

- Top margin - 3.5 cm from edge of paper

- Bottom margin - 2 cm from edge of paper

The above margins shall be observed on charts, graphs, tables, and drawings. Folded papers will not be accepted unless there is absolutely no other way for the material to be presented.

3.5. PAGINATION

Each page in the report (except the title page) is expected to bear a number. Only one side of the paper may be used. The preliminary section, including the title page; copyright page, if any; foreword, preface, or acknowledgements; table of contents, etc., should be numbered, using lower case Roman Numerals, e.g., i, ii, iii, etc. The title page counts as Page i, but the number does not appear [4]. The sequence of the preliminary section is as follows:

Table 3.1. Sequence of the preliminary

Title Page	Page i number does not appear
Page of Approval	Page ii
Foreword, Preface or Acknowledgements	Page iii as necessary
Abstract	Page iv as necessary
Özet	Page v as necessary
Table of Contents	Page vi, vii as necessary
List of Figures	Page vii, viii as necessary
List of Tables	Page viii, ix as necessary
List of Symbols / Abbreviations	Page ix, x as necessary

For the remainder of the report, Arabic numbers are used. Each page must be numbered. **Page numbers are to be placed two centimeters from the top and right hand margins on the pages and must be 12 point.** Include all pages for illustrations, tables, appendices,

bibliography, etc. Use of suffixes, such as 25a, 25b, etc., will not be approved. The numbering in the main body of the report should begin with Page 1 and run consecutively to the last page. No punctuation, such as dash or a period, should accompany the page number.

Paragraphs must start without indentation. Series of paragraph items which are to be listed without headings under any of the regular headings may, for clarity, be designated by special bullets such as "●" or enumerated by (i), (ii), (iii), etc [5]. **A new paragraph must not begin at the bottom of a page if there is not sufficient space for at least (2xCR). A paragraph must be separated from the preceding and succeeding paragraphs by (2xCR).**

3.6. HEADINGS

3.6.1. Main Headings

Main headings numbered such as 1., 2., etc. must obey the following rules:

- They **must begin a new page**. Omit the period at the end of the heading. Main headings must be typed in bold face and must be in **capital letters and in 14 points**.

- Main headings should reflect content of the text that follows. Main headings are not to be called as chapters.

- The number of the headings will be followed by **a period and two spaces**.

- They must precede the following text material or second heading by (3xCR: After one CR (14 points) change to 12 points, then 2xCR more).

3.6.2. Second Headings

Second headings numbered such or 2.1., 2.2., etc. must obey the following rules:

- They must begin according to Section 3.3 and be typed in **12 points, bold face and, capital letters**; i.e., the first letter of each word except conjunctions, prepositions and articles must be a capital letter. Omit period at the end of heading.

- The number designation of the second heading will be followed with a period and two spaces.

- Second headings must be (2xCR) below preceding text and (2xCR) above of succeeding text, but **need not begin a new page**.

3.6.3. First Subheadings

First subheadings numbered such as 2.1.1., 2.1.2., etc. must obey the following rules:

- They must be typed on separate lines beginning at the left margin line of the text, but **need not begin a new page**.
- They must be typed in **bold face**, left justified and with capital and **lower case letters**.
- The number designation of the heading will be followed by **a period and two spaces**. Omit period at the end of the heading.
- First subheadings must be separated from the preceding and succeeding text by (2xCR).

3.6.4. Second Subheadings

Second subheadings numbered such as 2.1.1.1., 2.1.1.2., etc. must obey the following rules; however, second subheading, should be avoided if possible.

- They must be typed on separate lines beginning at the left margin line of the text.
- They must be typed in 12 points, bold face, italic, left justified and with capital and lower case letters except conjunctions, prepositions and articles.
- The number designation shall be followed by a period and two spaces.

- Second subheadings must be (2xCR) below preceding text and (2xCR) above of succeeding text, but need not begin a new page.

3.7. FOOTNOTES

Footnotes should obey the following rules; however, footnotes should be used only if absolutely necessary:

- Footnote references shall be indicated in the text by an Arabic number placed superior to the text and immediately following the word, phrase or sentence which the footnote concerns.
- Footnotes shall be sequential for each page and for the entire report.
- Footnotes shall be placed at the bottom of the page on which they are indicated. They shall be **indented from the left margin** of the text by **one centimeter** and **placed under a broken line made of 20 characters** (5 cm). Footnotes shall be **single-spaced and 10 points**.

3.8. BIBLIOGRAPHICAL MATERIAL

Citations and references shall be in the correct format:

- The number in square brackets such as "[8]", should indicate the order of first appearance of the reference in the text. The listing of references in the bibliography shall be in the order in which they are used in the text and shall bear the same number as was used in the reference in the text as illustrated in Page 16 [6].
- References that are not cited in the text should be given separately under a new title.
- References should be written in the same format with the examples given in Page 15. Reference text should be justified.
- Reference text should be separated from the preceding reference by (2xCR).

3.9.   SPECIALLY DESIGNATED EXPRESSIONS

Specially designated expressions usually mean equations, formulae, etc. and they obey the following rules:

- They will be centered on the page according to Section 3.3 and separated from the preceding text and the succeeding text by (2xCR).
- The expressions shall be identified by an Arabic number in parenthesis like "(2.1)", "(2.2)", "(2.3)", etc., which should be placed opposite the expression and in line with the right margin of the text. They should be numbered within each chapter in the order of their appearance [7].
- Mathematical formulae and expressions must be typeset according to a consistent math-style throughout the whole report. The standard style for mathematical expressions in scientific publications makes use of italic typeface for variables in Latin characters and non-italic typeface for mathematical signs (+, -, parenthesis, etc.). Bold characters are usually reserved for vectors and matrices. In any case, the style used for in-text formulae should be the same as that of displayed formulae.

$$\Phi_1\begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{cases} \begin{pmatrix} 4 - x_2 + |x_1 - x_2| \\ 4 - x_1 + |x_1 - x_2| \end{pmatrix} & if \ \sqrt{x_1{}^2 + x_2{}^2} > 2 \\ \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} & otherwise \end{cases} \tag{3.1}$$

3.10. TABLES AND FIGURES

General guidelines for tables and figures are provided below, consult with your supervisor for spefic formats to be used. To ensure satisfactory reproduction, drawings, graphs, etc., they should be prepared in contrasting colors, preferably in black.

Figure 3.1. Caption about first image

Table 3.2. Caption about table

Action	Sensitivity (%)	Specifity (%)	Total postural transitions	Type of subject
lying	100 ± 0	-	-	
StSi	92 ± 9	85 ± 11	42 ± 0	Young and healthy (10 subjects)
SiSt	85 ± 11	92 ± 9		
walking	100 ± 0	-	-	
lying	100 ± 0	-	-	Elderly and healthy (10 subjects)
StSi	89 ± 8	83 ± 11	42 ± 0	
SiSt	83 ± 11	89 ± 8		
walking	98 ± 1	-	-	

Tables and figures should be enumerated within each chapter, i.e., as 2.1, 2.2, 2.3, 3.1, 3.2, etc. The designation of each table or figure within the text should have only the first letter in capital (i.e, such as "Table 2.2" or "Figure 5.7") throughout the report. Tables, figures and their captions should be centered as shown in the example. The captions should be as normal text, i.e, only the first letter should be capitalized. The captions should be at a distance of single space from the table or figure.
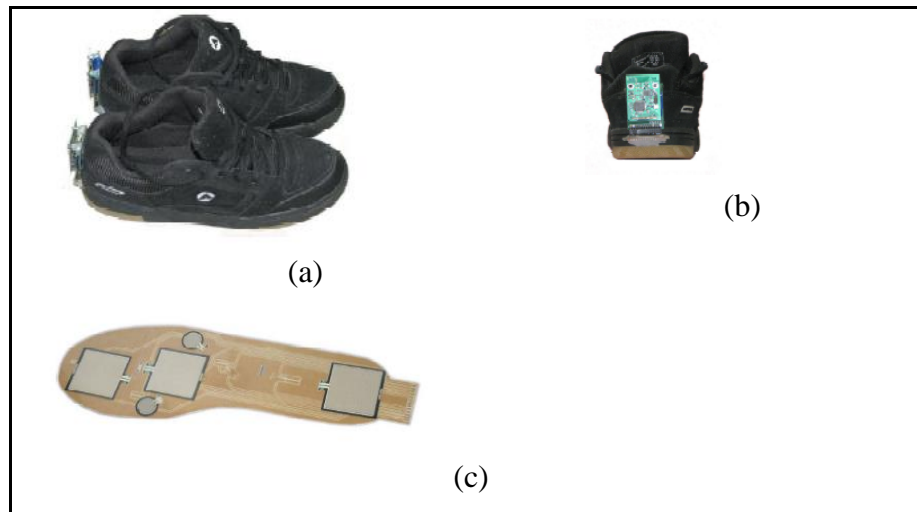
Figure 3.2. Caption about multiple images. (a) First of multiple image, (b) Second of multiple image, (c) Third of multiple image.
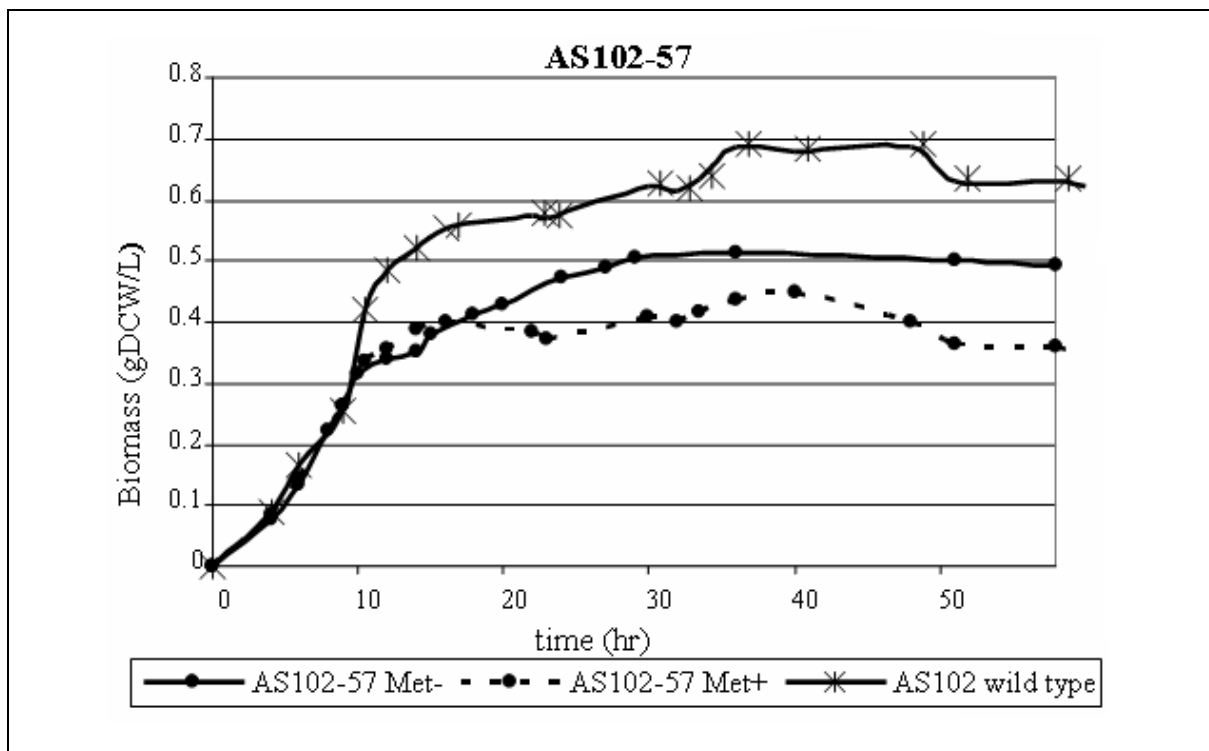

Figure 3.3. Growth curves of the wild type (AS102) and recombinant AS102-57

3.11. QUOTATIONS

Quotations as a paragraph should be separated from original text of the report. It must be typed in 10 points. A new quotation must not begin at the bottom of a page if there is not sufficient space for at least (2xCR). A paragraph must be separated from the preceding and succeeding paragraphs by (2xCR). Quotations must also be separated 1 cm from left and right margins as illustrated in the example.

> The welding heat affects the microstructure of heat affected zone and melted zone. This effect causes the variation in ultrasonic wave propagation velocity. Effect of microstructure should be considered during the residual stress measurements. Acoustoelastic constant is determined as the relation between the total residual stresses normal to the wave propagation and ultrasonic wave velocity variation. This constant is calculated by observing wave velocity variations.

3.12. ALGORITHMS

A new algorithm must not begin at the bottom of a page if there is not sufficient space for at least (2xCR). An algorithm must be separated from the preceding and succeeding paragraphs by (2xCR). Algorithms must also be separated 1 cm from left and right margins and limited within a frame. Author can use the font type, font size and text color of the original source code within this frame.

Algorithm 3.1. Core training algorithm

```
wi=0 ∀1 ≤ i ≤ t
coreTraining(Cmxn)
for i from 1 to m
      for j from 1 to m
            (p0,p1)=Z(K(c(i,:)),K(c(j,:)))
            fij=p0·p1
      end for
end for
xm=mult(Fmxm, bm) where bm= { bi = 1, ∀1 ≤ i ≤ m/2
                             { bi = −1, ∀m/2 + 1 ≤ i ≤ m

for i from 1 to m
      wn+1=av(wn,mult(K(c(i,:)),xim))
end for
return wn+1
```

Algorithms should be enumerated within each chapter, i.e., as 2.1, 2.2, 2.3, 3.1, 3.2, etc. The designation of each table or figure within the text should have only the first letter in capital (i.e, such as "Algorithm 3.1") throughout the report. Captions of algorithms should be centered as shown in the example. The captions should be as normal text, i.e, only the first letter should be capitalized. The captions should be at a distance of single space from the algorithm.

3.13. APPENDICES

A last section may contain supporting data for the text in the form of one or more appendices. Examples of appendix material include data sheets, questionnaire samples, flowcharts, illustrations, maps, software listings, charts, etc. if the appended data should include oversize illustrations or maps, several alternative methods of inclusions are available.

If a section, table, figure, equation etc., is to be included in an appendix, the numbering should follow the same rules used within the report. In this case, however, they should begin with the letter of the respective appendix such as "Table A.l", "Equation (B.4)" etc. The title should start with the centered appendix title such as "APPENDIX A: " and then followed by the descriptive title (See Page 16).

4. PREPARATION OF THE FINAL COPIES

4.1. TYPESETTING

Word processing software such as MS Office WORD and Open Office WRITER are highly recommended. TEX or LATEX are also acceptable on the condition that accomplishes format rules.

4.2. PAPER QUALITY

The original copy shall be typed on 75 or 80 gr/m^2 A4-size white paper. All reproduced copies should be of the same grade of paper.

4.3. PRINTER

Only laser printer and Ink Jet printer outputs are acceptable. Printer settings must comply with A4-size paper and must be so that the page is not resized in printing.

4.4. BINDING

The report should be bound in dark blue hard cover. The final bound size of the report should conform to A4 size. The name and surname of the candidate, the type of degree obtained and the year should be printed in the above order on the spine of the cover. When the report is placed front cover up, the spine should read from left to right.

REFERENCES

1.   Brusey J, Rednic R, Gaura EI, Kemp J, Poole N. Postural activity monitoring for increasing safety in bomb disposal missions. *Measurement Science and Technology*. 2009;20(7):075204. (**Format for journal article**)

2.   Hong J, Ohtsuki T, editors. A state classification method based on space-time signal processing using SVM for wireless monitoring systems. *Personal Indoor and Mobile Radio Communications (PIMRC), 2011 IEEE 22nd International Symposium on*; 2011: IEEE. (**Format for conference paper**)

3.   Vapnik V. *The nature of statitiseal learning theory*. New York: Spring-Verlag Press; 1995. (**Format for book**)

4.   Mitsuoka T. Role of intestinal flora in health with special reference to dietary control of intestinal flora. *Microbiology applications in food biotechnology*. 1990:135-48. (**Format for book chapter**)

5.   Rennie JD, Rifkin R. Improving multiclass text classification with the support vector machine. 2001. (**Format for other communications such as Memo**)

6.   Yang M-H, Cornu`ejols A. Dr. Gabriela (Serban) Czibula's homepage 2012 [cited 2012 24 April]. Available from: http://www.cs.ubbcluj.ro/~gabis/ml/Lectures/6_SVM.pdf. (**Format for web page**)

7.   eZ430-Chronos™ Development Tool User's Guide: Texas Instruments; [cited 2011 1 October]. Available from: http://www.ti.com/lit/ug/slau292d/slauarrrrmut.pdf. (**Format for web page**)

Vancouver style must be used.

APPENDIX A: NUMERICAL EXAMPLE FOR RT-CAM$_{KD}$

$A=\{a_1, a_2, a_3, a_4, a_5\}$ where a_1, a_2, a_3, a_4 and a_5 correspond to *drinking*, *eating*, *pouring*, *toothBrushing* and *turningKey* respectively. Let's assume that $Ta=\{M_1{}^{2x3}\}\forall a \in A$ and

$$M_1{}^{2x3} = \begin{bmatrix} -46 & 3 & 8 \\ -46 & 3 & 8 \end{bmatrix}$$ for $a=a_1$. (We are demonstrating the operations only on a_1 since

operations on other simple actions are handled in a similar way.) To generate the pattern

for a_1, we start from the ***training*** algorithm: $P_{a_1}^{1x5} \leftarrow$ ***featureExtraction***$(M_1{}^{2x3}|a=a_1)$

Then execution swiches to ***featureExtraction*** module: $C^{2x3}=\begin{bmatrix} -46 & 3 & 8 \\ -46 & 3 & 8 \end{bmatrix}$ and m=2 and

n=3, $R^{2x3}=\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$, $d(1,:)=K((-46\ 3\ 8))$, $d(2,:)=K((-46\ 3\ 8))$, $d(3,:)=K((1\ 1\ 1))$,

$d(4,:)=K((1\ 1\ 1))$. Taking e=2.72 and using the K function: $d_{14}= \frac{1}{1+2.72^{-46}} + \frac{1}{1+2.72^{8}} +$

$\frac{1}{1+2.72^{8}}$ $=1.047$, $d_{i4}\ \forall 2 \leq i \leq 4$ are calculated as d_{14}, yielding

$$D^{4x4}=\begin{bmatrix} -46.000 & 3.000 & 8.000 & 1.047 \\ -46.000 & 3.000 & 8.000 & 1.047 \\ 1.000 & 1.000 & 1.000 & 0.806 \\ 1.000 & 1.000 & 1.000 & 0.806 \end{bmatrix}$$ where 2m=4 and n+1=4.

APPENDIX B: DETECTED ACTIVITIES IN T_1P_1 TESTS

Table B.1 to Table B.20 illustrate detected activities in T_1P_1 tests. For a more concise presentation, *toothBrushing* and *turningKey* actions are abbreviated as tB and tK respectively within the tables. testId showing the number of the test, action names given in the column names indicate the actual type of action whereas action names within the table entries show detected activity result corresponding to the actual activity whose type is specified by the related column name. Therefore, when a table entry matches the related column name, it means a successful detection. The composite action tests incorporate several columns named as chunk_2, chunk_4 and chunk_6, which represents first, second and third transitions respectively. Since transition type is inferred considering the simple actions right before and after the transition, the types detected for them are ignored.

Table B.1. Drinking

testId	drinking
1	drinking
2	drinking
3	drinking
4	drinking
5	drinking
6	drinking
7	drinking
8	drinking
9	drinking
10	drinking

Table B.2. Drinking_pouring

testId	drinking	chunk_2	pouring
1	drinking	pouring	pouring
2	drinking	pouring	pouring
3	drinking	pouring	pouring
4	drinking	pouring	tB
5	drinking	pouring	tB
6	drinking	pouring	pouring
7	drinking	pouring	pouring
8	drinking	pouring	tB
9	drinking	pouring	pouring
10	drinking	pouring	tB