

SCHOOL OF ENGINEERING AND NATURAL SCIENCES

Department of Biomedical Engineering

YTU: Biomechatronics Research Lab Internship Report

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Student’s Advisor :

Date : 01.07.2020 – 28.07.2020

# Overall Description of the Activities/Projects Involved

[Here give an overall description of your internship for the duration of 6 weeks. State what you have done in general, what you have accomplished, and what you have gained from the internship. Moreover, state which coursed you have taken have helped you the most and the parts that you had no idea about but had to learn during the internship. This part should be limited to one page only. ]

# About the Company

[Here mention the general info about the company. Its history, accomplishments, market presence, and its goals for the project you got involved with. In a paragraph also, state what you would do for the project if you were the CEO or the company’s president. This part should be limited to one page. ]

**Manager’s Name and position within the company**:

**Contact Info**: Telephone and email

# Internship Activities

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| **Week 1** | | | **Date** | 01.07.2020-07.07.2020 |
| **Tasks Planned for the Weeks** : | | | | |
| **Weekly Activity :**  **Day 1:** A preliminary study was conducted on robots which are designed to help disabled people during the eating food.  **Day 2:**  It was investigated what robots were designed to help people with mobility problems during the eating food. A detailed research has been done on "The Assistive Dexterous Arm (ADA)" [1] and "My Spoon"[2]. The working principles and designs of these two systems were examined.  **Day 3:**  "iEAT Robot"[3] and "The Winsford feeder"[4] which are examples of autonomous feeder robots used as supporters in daily life for people with disabilities, were examined. How they work and their intended use were investigated.    **Day 4:**  A detailed research has been done on "Obi Feeding Robot"[5] and "Handy1"[6]. The working principles and designs of these two systems were examined.  **Day 5:**  Literature review on robots "Neater Eater"[7], "Meal Buddy” [8] and "The Mealtime Partner Dining System (Mealtime Partners)" [9] has been completed. | | | | |
| **Completed Tasks for the Week**: | | | | |
| **Manager** |  | **Sign, Seal, and Date** |  | |

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| **Week 2** | | | **Date** | 08.07.2020-14.07.2020 |
| **Tasks Planned for the Weeks** : | | | | |
| **Weekly Activity :**  **Day 1:**  A literature review on remote controlled service robots [10] has begun. It was investigated how the system works and what it aims during daily life of the patients.  **Day 2:**  The answers were sought for the questions of what are assistive robots [11], what do they include, what are their functions and where are they used. Examples of assistive robots were examined.  **Day 3:**  Researches were made to comprehend the working principles of "MANUS Wheelchair Robot"[12]. Besides, basic operations of self-feeding robot were searched to learn about it.  **Day 4:**  Describing the physical design principles for a remote controlled assistive robot and analyzing model of the system which is used in the design process of the robot were searched and examined.  **Day 5:**  Literature survey about remote controlled robotic surgery was completed. | | | | |
| **Completed Tasks for the Week**: | | | | |
| **Manager** |  | **Sign, Seal, and Date** |  | |

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| **Week 3** | | | **Date** | 15.07.2020-21.07.2020 |
| **Tasks Planned for the Weeks** : | | | | |
| **Weekly Activity :**  **Day 1:**  Today was the holiday.  **Day 2:**  Artificial intelligence applications which have significant role in the field of health in recent years, the application areas of these in practice and what wait us in the future were discussed. Literature study on these subjects has started.  **Day 3:**  The literature review was continued and how artificial intelligence was integrated into medical equipment was examined.  **Day 4:**  A detailed research was conducted on robotic surgery or robot-assisted surgery [13], which are examples of robotics applications in the field of health.  **Day 5:** The "Da Vinci"[14] system, which can be summarized as performing some surgeries through small holes, was investigated. In the light of these, research continued on how artificial intelligence and robots will shape the health sector. | | | | |
| **Completed Tasks for the Week**: | | | | |
| **Manager** |  | **Sign, Seal, and Date** |  | |

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| **Week 4** | | | **Date** | 22.07.2020-28.07.2020 |
| **Tasks Planned for the Weeks** : | | | | |
| **Weekly Activity :**  **Day 1:**  Starting from the basics, research has been started on what should be done and what steps should be followed during the design of a biomechatronic system [15].  **Day 2:**  Biomechatronic systems developed in the field of physical medicine and rehabilitation and especially artificial intelligence used for the control of these systems were examined.  **Day 3:**  The use and function of mechanical systems in biomechatronic systems, as well as the mechanical structure of the systems were examined.  **Day 4:**  A literature study was conducted on the investigation of biomedical equipment [16] used in both diagnosis and treatment in the clinic.  **Day 5:**  The research on the purposes, functions and examples of biomedical equipment used in both diagnosis and treatment in the clinic has been completed. | | | | |
| **Completed Tasks for the Week**: | | | | |
| **Manager** |  | **Sign, Seal, and Date** |  | |