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|  | **HASAN KALYONCU UNIVERSITY****Computer Engineering Department****COME 499 Project Proposal Form** |

**Part I. Project Proposer**

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**Part II. Project Information**

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| **Starting Term** |

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| **Title of the Project** | Andriod-based User-intaerface Application for control of the powered wheelchair |
| **Project Description** |
| The Project aim at dveloping a low-cost powered wheelchair system. The powered wheelchairs currently available in the market are manually controlled by the user using a joystick. The joystick provide a switching input to the DC motors. This control method is not suitable to be used with automated wheelchair that need a continuos and smooth control voltage. The Kangaroo X2 motion control is designed and manfictured for this control of DC motors. The Sabertooth power driver task is to provide the necessary elecric current to the motor. The project is to develop a software control that take the velocity value and direction, then generate the electrical voltage value to each DC motor required to move the wheelchair. The basic design to complete the project is to develop an Android based software that works as a user interface to drive the wheelchair by the disabled user. The software allows control by the user or activate theintelligent and autonomous driver software. This allow shared control concept. **Note: the project does not include the design and implementation of the autonomous driver software**, but just the user interface and manual control software. Hardware available with us and no need to buy: Laptop, Galaxy Tab A, Raspberry PI3, Arduino, Kangaroo X2, and Sabertooth.  |
| **Project Justification** |
| **Novelty** |
| **New aspects** | The aimed software application is the basic version of high level supervisory system for shared control of a wheelchair. |
| **Complexity** |
| **Challenging problem and issues** | The user interface design for disabled is a challenging problem due to the need for different design skills and software development tools.  |
| **Related computer science fields and subfields** | Interface and interaction design, Mobile programming, and embedded systems. |
| **Tools** | Web programming, Android programming |
| **Risk involved** |
| **Potential problems and alternative solutions** | Students need to study the interface design in addition to their expected skills from Computer Engineering courses. |
| **Minimum work required** | 3-4 months (2-3 Students) |