



## Final Year Project Showcase for Batch-2016

<b>Department of Electronics Engineering</b> <b>Electronics Engineering Programme</b>		
<b>1</b>	<b>Project Idea</b>	Autonomous Standing Wheelchair With A Smart Driving Mode
<b>2</b>	<b>Process</b>	We had used 3 linear actuators with 3 small brushless motor for lifting and coming back to its normal position 2 linear actuators with 2 brushless motor are at the bottom of chair for lifting up and down and one is at the back of seat for movement of wheel chair we had used gear motors which is attached with the back wheels in front we had used free wheels and attached one ultrasonic sensor for safety measure. It is a three in one wheel chair with joystick , voice Recognition through Bluetooth module and head gestures movement.
<b>3</b>	<b>Outcome</b>	The result is above expectation. Its is lifting the body almost above 70 degree more over it has 90-95 % result of joystick and head gesture movement but the result of voice recognition is 70-80%.
<b>4</b>	<b>Evidences (Theoretical Basis)</b>	The results were also tested on a patient who was suffering from temporary issues about his leg and could not stand properly, this wheelchair made him stand without putting any load on the legs.
<b>5</b>	<b>Competitive Advantage or Unique Selling Proposition</b> (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over competitor. In summary, any striking aspect of the project which compels industry to invest in FYP or purchase it. Some detail description is required in terms of how, why when what. You can select one or more from following dropdown and delete rest of them)	
<b>a</b>	<b>Cost reduction of existing Product</b>	We had used the piece of MDF as well RSH pipes of 2.5*1.5 but in market the size we required is not available so we had to buy the long sheets of MDF and RSH design it according to our size and rest of the remaining pieces were wasted because we had to make only one wheel chair, moreover buying motors & linear actuators in bulk quantity can reduce the cost.
<b>b</b>	<b>Process Improvement which leads to superior product or cost reduction, efficiency improvement of whole process</b> (e.g. What is issue is current process and what improvement you suggests)	We can make our batteries more powerful which could increase timings of the wheelchair and detection around its 4 axes and all around it would be covered with sensors which would not allow it to hit any object nearby. The joystick mode is on perfect. We can make it more perfect by adding some other system for voice recognition which would add better efficiency to it and also we could use Rasberypie for much better results than arduino. We can also make it a bed which could be added as another asset to it.
<b>c</b>	<b>Attainment of any</b>	The project is the necessity of medical industry and medication



	<b>SDG</b> (e.g. How it is achieved and why it is necessary for the region)	fields which are yielding patient with having serious inabilities spinal cord injury, , awful cerebrum injury, cerebral paralysis, spinal bifida, solid dystrophy , different sclerosis, stroke, ret condition, post-polio disorder and more. The challenge to this would be first to make it user friendly in a couple of ways for a completely disabled person which might not even use his hand gestures to control it and for a half disabled person that might use it easily. The autonomous standing wheelchair is to be created to control the motor revolution of wheelchair dependent on Voice Recognition and Heads movement of genuinely tested person that is unable to stand and move.
<b>d</b>	<b>Expanding of Market share</b> (e.g. how it expand and what is problem with current market)	In current market it is not available. In some few places it is available but at a very high price and prices online vary very much one is available at a price of 7.5 lacs and one at the same time is available at 1.5 lacs also. So there is no uniformity in buying this as a product from online sites and going to local markets it is immense difficult to find any distributor to buy it. Safely assuming it is not available anywhere with in Pakistan.
<b>e</b>	<b>Capture new market</b> (e.g. Niche market or unaddressed segment)	Still such kind of wheel chair is not available in any local markets. We will capture market by making it available first, the cost with which we will start will be affordable so it becomes desirable among demandable institutions as well as patients. Less maintenance to our products and when require maintenance we will be doing it with minimal charges to make market depend on ourselves. Our target will be to hit the industry which need it most it can easily be used as a replacement of tilt tables in the medical industry and also be used as an essential equipment in industry.
<b>f</b>	<b>Any Environmental Aspect</b> (e.g. carbon reduction, energy efficient etc.)	It reduces the lack of dependency in previous wheelchair the patient is more dependent on other people for everything. In Standing mode the flow of blood in patient becomes natural because in sitting position almost all time some nerves stop working which cost more injuries
<b>6</b>	<b>Team Members</b> (Names & Roll No.)	Muhammad Azeem Khan EI-16043 Muhammad Ahmer EI-16044 Farah Kareem EI-16069
<b>7</b>	<b>Supervisor Name</b>	Miss Arham Iqbal ( <a href="mailto:arhamiqbal@neduet.edu.pk">arhamiqbal@neduet.edu.pk</a> )
<b>8</b>	<b>Pictures</b>	<a href="https://drive.google.com/drive/folders/1JjxTJPKw1J9cMD_s2Xtdw03XdjYQ1yy?usp=sharing">https://drive.google.com/drive/folders/1JjxTJPKw1J9cMD_s2Xtdw03XdjYQ1yy?usp=sharing</a>