

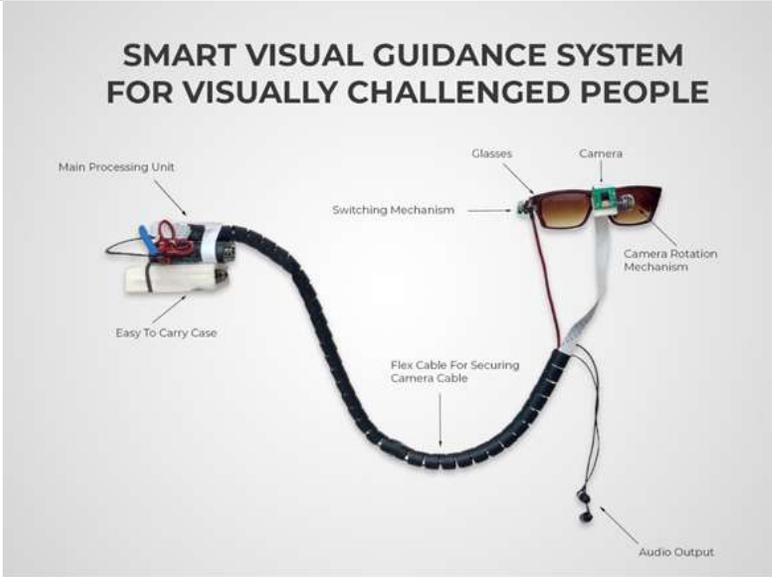


## Final Year Project Showcase Batch-2017 Year 2021

<b>Department: Electronics Engineering</b> <b>Programme: Electronics Engineering</b>		
1	<b>Project Idea</b>	The “ <b>Smart Visual Guidance System for Visually Challenged People</b> ” is a smart device for blind or visually impaired people that provides the users all the necessary information required for safe navigation with the help of computer vision and a monocular camera without the aid of any sensors.
2	<b>Process</b>	The process starts with a press of a single button multiple times to select any suitable options like multi-object Detection, object distance, and object orientation In accordance with the selected option, the visual information will be converted to TTS (text to speech) and delivered to the user through hands-free Moreover Google Assistant integration which will allow the user to recall any event over the past week through voice commands.
3	<b>Outcome</b>	SVGS is fully capable of performing the below features: 1. Object Detection. 2. Object Distance Calculation. 3. Object Orientation Calculation. 4. Object Dimension Calculation. 5. Department classification. 6. Scene captioning. 7. Chatbot communication.
4	<b>Evidence (Theoretical Basis)</b>	This technology is driven from a paper called “Show and Tell: A Neural Image Caption Generator” which states that a “generative model based on a deep recurrent architecture that combines recent advances in computer vision and machine translation and that can be used to generate natural sentences describing an image.”
5	<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 a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence	
a	<b>Cost Reduction of Existing Product</b>	The seeing Ai app by Microsoft is capable of running on Pivothead's SMART glasses. They cost up to \$299 with Smart Mods accessories that add power, connectivity and apps to the product, costing \$99 each. We were able to build SVGS with the same above and additional features in an approx. investment of \$200.00 by using readily available local components, achieving the goals through a monocular camera, eliminating the need for sensors and purchasing rasp pi 4 directly from Canada.



<b>b</b>	<p><b>Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process</b> (e.g. What is the issue is current process and what improvement you suggests)</p>	<p>The main key factor in making the product superior, while reducing the costs at the same time is relying on a monocular camera for the calculations and identifications of objects. By eliminating the need for sensors for the calculation of parameters like distance, the cost automatically drops.</p>
<b>c</b>	<p><b>Attainment of any SDG</b> (e.g. How it is achieved and why it is necessary for the region)</p>	<p>Out of the 17 Sustainable Development Goal set by the United Nations, we are able to cater the following through SVGS.</p> <p><b>SDG#1, No Poverty:</b> This device can be exported to many international organizations that will improve overall country's performance and decrease poverty.</p> <p><b>SDG#3, Good Health And Well-Being :</b> Our device have a great impact on well being and good health on the visually impaired people having problem with navigating to their destination.</p> <p><b>SDG#8, Decent Work &amp; Economic Growth:</b> The device also supports economic growth by letting many visually impaired persons work on many platforms easily.</p> <p><b>SDG#9, Industry, Innovation &amp; Infrastructure:</b> Smart Visual Guidance System uses cutting edge technology in AI and Deep Learning to achieve this task , recent innovation in AI proves that these kind of technologies will be game changer in future.</p>
<b>d</b>	<p><b>Expanding of Market share</b> (e.g. how it expand and what is the problem with the current market)</p>	<p>According to the Visual Impairment &amp; Blindness Global Data &amp; Statistics Q4 2020 Update by laser eye surgery hub, Pakistan has the 3rd largest number of people globally suffering from moderate to severe visual impairment. This severity eventually results in total blindness.</p> <p>The current problem with the market is lack of any advanced smart devices in Pakistan catering to visually challenged people while the city infrastructure at the same time was not and is not being designed while taking into consideration the ease of mobility for any disabled or challenged person.</p>
<b>e</b>	<p><b>Capture New Market</b> (e.g. Niche market or unaddressed segment)</p>	<p>The new segments we can cater to is the augmented reality industry, especially the factories and industries where our device can be modified and provide key parameter information to the quality and inspection engineers and help them in averting disasters.</p>
<b>6</b>	<p><b>Target Market</b> (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service</p>	<p><b>Customer Persona</b> Gender: Both Age: 40+ Location: Pakistan</p>

		Trait: Visually Challenged
7	<b>Team Members</b> (Names & Roll No.)	Bilal Tehseen (EL-17048) Ahmed Jogiyat (EL-17047) Askari Rizvi (EL-17052) Muhammad Umer (EL-17107)
8	<b>Supervisor Name</b>	Ms. Ayesha Akhtar
9	<b>Supervisor Email Address</b>	ayesha@cloud.neduet.edu.pk
10	<b>Pictures (If any)</b>	 <p style="text-align: center;"><b>SMART VISUAL GUIDANCE SYSTEM FOR VISUALLY CHALLENGED PEOPLE</b></p>
11	<b>Video (If any)</b>	<a href="#">Video Link - Google Drive</a>