An Apparatus for Generating Moveable Screen Across a Three Dimensional Space

Communications & Information

Computer/AI/Data Processing and Information Technology

Digital Broadcasting, Telecommunication and Optoelectronics

Opportunity

Since the invention of 3D displays in 1832, humanity has been seeking increasingly sophisticated ways of representing 3D reality. Most 3D displays involve creating the impression of three-dimensionality within a two-dimensional display. For example, stereoscopic glasses can allow viewers of two separate images to view these images as one image that appears to have depth. However, such technologies are limited by the fact that viewers need to wear special equipment. By contrast, fog displays use a fog blown from nozzles as a medium for receiving a projected image. This allows for viewers to see a 3D image without the aid of equipment. Nevertheless, the images formed by these displays are still two-dimensional, and thus they do not provide visual depth for the viewer. This invention allows for fog displays to display a 3D image with visual depth.

Technology

This invention involves a horizontal array of nozzles that project fog or a fog-like medium. This array is paired with a projector that uses discrete beams of light to project images onto the medium. Mounted at a perpendicular angle to the horizontal array, the projector is able to project points of light to various locations of the medium in such a way as to result in a 3D image with actual volume. This projector can do so based on calculations that compute which part of the medium should receive a beam for which part of an image. Thus, the resulting display can project volumetric 3D images that can also feature animation—for example, the figure of a man walking in circles around the array.

Advantages

- Unlike other forms of fog displays, this invention can be utilized within mixed-reality settings.

- This invention can achieve volume and depth in 3D visuals without the use of glasses or other special equipment.

Applications

- The invention can enable researchers in industries such as healthcare or manufacturing to visualize an object in 3D.

IP Status
Patent granted

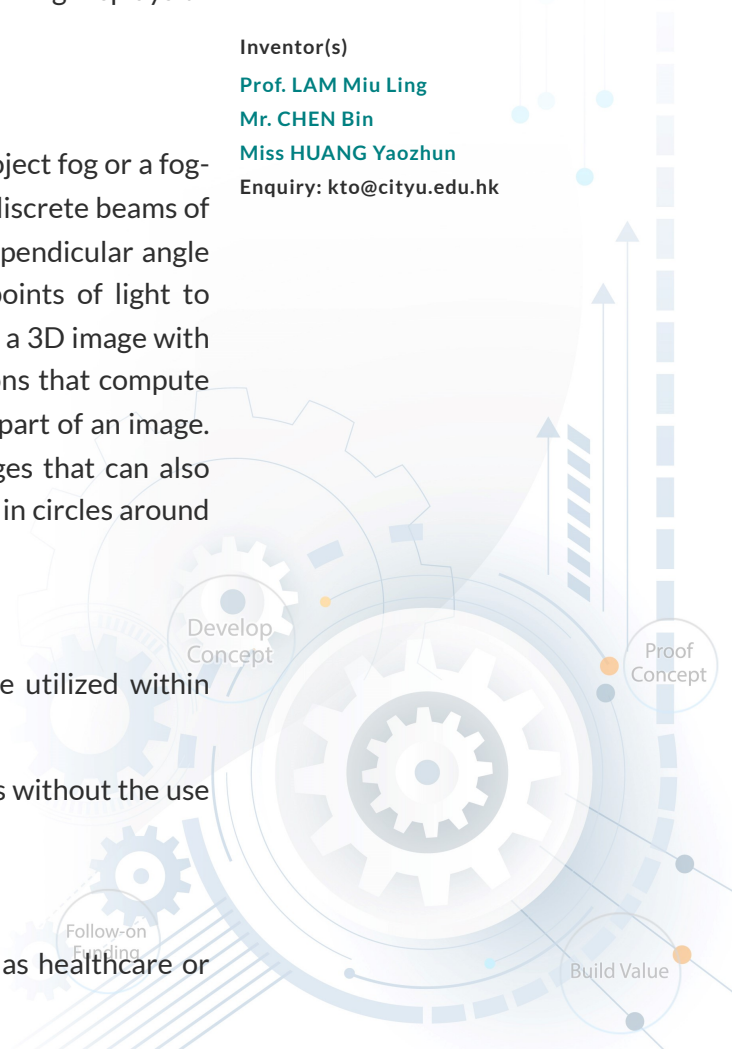Technology Readiness Level (TRL) ❓ 5

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- This invention can be employed as a mixed-reality device in the field of education by enabling teachers and students to interact with 3D images.

- The invention can be implemented within the convention industry by allowing vendors or presenters to display 3D images at booths or during presentations.