

Mirror-array Based Autostereoscopic Display



Communications & Information

Computer/AI/Data Processing and Information Technology

Digital Broadcasting, Telecommunication and Optoelectronics

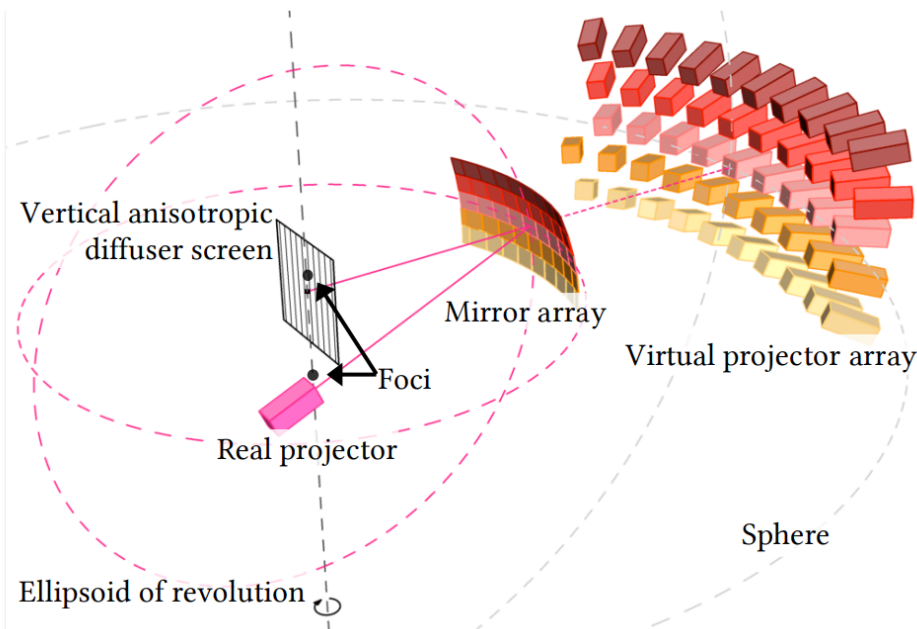


Figure 1. The proposed automultiscopic display uses a mirror array to create a dense array of virtual projectors.

Opportunity

With the rapid growth of the global emerging display technology market, there is increasing demand for high-quality, high-resolution 3D projection systems, notably automultiscopic displays. Existing automultiscopic display systems, which use projector arrays, are expensive, cannot easily be calibrated for screens of different sizes, and are difficult to reconfigure. In addition, automultiscopic display systems based on projector arrays are unable to achieve a high angular resolution. To address these shortfalls, researchers have invented a new type of automultiscopic display based on a mirror array rather than a projector array.

Technology

The proposed new automultiscopic display consists of a dense array of virtual projectors, just one or a few video projectors, and a mirror array with a specially designed geometry. The mirror apparatus consists of rows of mirrors that are individually offset to interleave a large number of horizontal views, achieving competitive angular resolution. All of the virtual projectors are at the same distance from the screen centre and each virtual projector projects a different image slice from a specific angle onto the screen. The

IP Status

Patent granted



Technology Readiness Level (TRL) ?

4

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researchers have also designed interactive modeling tools to automate the generation of computer models of the mirror array, depending on users' needs, for digital fabrication. Several sets of prototypes have been built and the software needed to verify the methodology has been developed.

Advantages

- The new automultiscopic display will be less expensive than systems based on projector arrays, as the cost of fabricating mirror arrays is low.
- Mirrors are used to create virtual projectors that are closely packed or even (virtually) overlap, providing a higher angular resolution than can be achieved using projector arrays.
- Unlike existing systems, the invention enables easy calibration of the output projection and flexible configuration of display specifications depending on user needs.

Applications

- Advertising industry
- Exhibitions industry
- Teleoperations industry
- Gaming industry

