

# Make your own Retinal Projector:

## Retinal Near-Eye Display via Metamaterials

Yoichi Ochiai, Kazuki Otao, Yuta Itoh, Shouki Imai, Kazuki Takazawa, Hiroyuki Osone, Atsushi Mori, Ippei Suzuki  
University of Tsukuba / Pixie Dust Technologies, Inc.

Contact: [secretary@pixiedusttech.com](mailto:secretary@pixiedusttech.com)  
Project page: <https://digitalnature.slis.tsukuba.ac.jp/2018/04/air-mount-retinal-projection/>



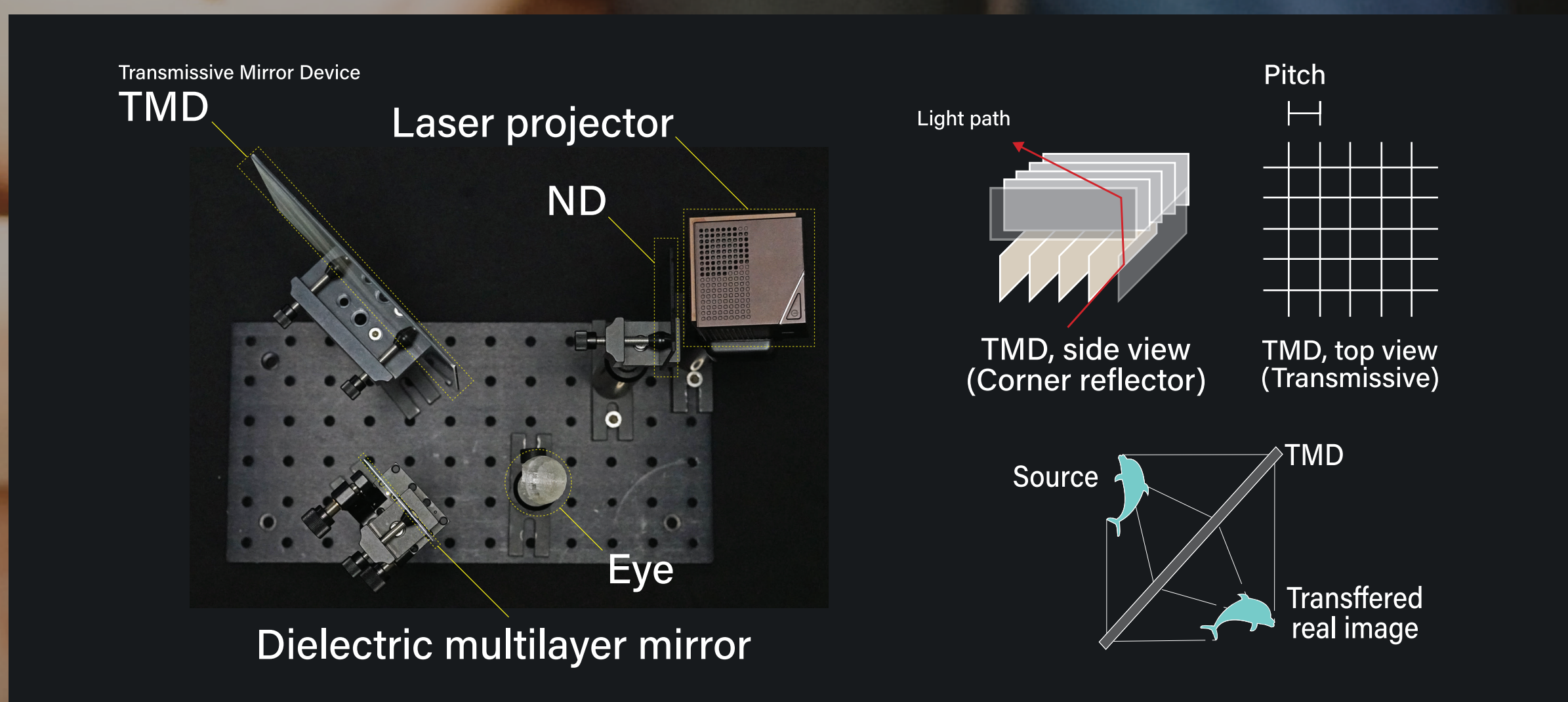
 Digital Nature Group  Pixie Dust Technologies, Inc.

### Problem

Retinal projection is required for xR applications that can deliver immersive visual experience throughout the day. However, as the lenses and iris of an eyeball are in front of the retina, the proposal of retinal projection is generally fraught with narrow viewing angles and small eyebox problems. Due to these problems, retinal projection displays are still a rare commodity because of their difficulty in optical schematics design.

### Solution

We introduce novel methods of **an optical system for solving the common problems of retinal projection by using the metamaterial mirror (plane symmetric transfer optical system)**. Using this projection method, the designing of retinal projection becomes easy, and if appropriate optics are available, it would be possible to construct an optical system that allows quick follow-up of retinal projection hardware.



please visit **E-tech**