

Metaverse hardware: from wearable to implantable

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Throughout the history, the great philosophers have always been pondering over three fundamental questions. What are we? Where were we from? Where will we be? In the current mainstream view, we are human, or rather, the homo sapiens. We evolved from apes, who once lived in Africa. As to the third question, there will be a lot of possibilities. In one scenario pictured by Prof. Yuval Noah Harari in his book *Homo Deus*, homo sapiens will be upgraded into cyborgs—a being with both organic and biomechatronic or bionic parts. Inspired by this prophecy, we envision an implantable metaverse solution, which consists of two key components, *i.e.*, epiretinal implant and bionic vision processing. In this talk, we will be discussing the implant design, physiology of vision, principles of bionic vision, and substantiate our concept by reproducing the step-wise images along the visual pathway.



Short Bio:

Chao Ping Chen is an associate professor of Shanghai Jiao Tong University, China. Research interests: metaverse, augmented/virtual reality, biomimetic displays, wearable displays, vision sciences. To date, he has published 64 SCI journal papers, 8 EI and other journal papers, 86 international conference papers, 41 patents, and 2 software copyrights. According to Google Scholar, his publications have received a total of citations over 1330 (h-index: 22). National research funding (number of grants: 6): National Natural Science Foundation of China (key/regular/youth programs), Ministry of Science and Technology (973/863 programs), and National Development and Reform Commission (National Engineering Lab). National institution/organization positions: National Natural Science Foundation of China (grant reviewer), Ministry of Education (dissertation reviewer), National Virtual Reality Innovation Center (council member), Ministry of Industry and Information

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