

Fringe projection profilometry (FPP): theoretical aspects (II)

School of Computer Science and engineering,

Nanyang Technological University,

Singapore, 639798

Lyu Shenzhen and Qian Kemao

Abstract

Due to its high-precision, high-speed and low-cost, FPP is one of the most powerful non-contact and non-interferometric optical three-dimensional (3D) measurement techniques. Based on our earlier study on phase measurement, correspondence, and 3D reconstruction, we further investigated the following theoretical aspects, which have rarely been explored in the past: (i) how to establish a complete theoretical noise model; and (ii) how to approximate complex theoretical model for practical engineering applications. Answers to these questions enable the provision of theoretical guidance for development of FPP, addressing hardware selection, error tolerance, and precision estimation.

Biography:

Dr. Lyu Shenzhen is a Research Fellow at School of Computer Science and Engineering, Nanyang Technology University, Singapore. He received PhD. degree from Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences in 2021. From 2021 to 2022, he was an assistant researcher at CIOMP. His research interests include optical metrology, optical image, and computer vision.



Lyu Shenzhen