

# Single Beam Digital Holography using Total Internal Reflection

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The technique for recording digital hologram, using single beam based on Total Internal Reflection (TIR), has been proposed. The laser diode with wavelength of 635 nm has been used as the light source. First, a positive resolution test target with a line width of 200  $\mu\text{m}$  has been used as the object to compare two configurations (transmission and reflection) of digital in-line holography (DIH). From experimental results, the reconstructed digital hologram of reflected DIH (RDIH) is perfect as transmitted DIH (TDIH). The equilateral triangle prism has been used to produce TIR light and fingerprint has been selected as the sample. The configuration, applied in this TIR technique, is the same as RDIH one measured from the positive resolution test target. The results show that the reconstructed digital hologram of fingerprint provides sharper patterns than the recorded digital hologram.

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