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3D imaging techniques in documentation of cultural assets in Malaysia

(Article)

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Abstract   ⌄ View references (12)

Despite worldwide rapid development in 3D imaging technologies, documentation of 3D cultural assets in Malaysia is still very much reliant upon conventional techniques. There is very little progress towards exploring new methods or advanced technologies to convert 3D cultural assets into 3D visual representation and visualization models that are easily accessible for information sharing. Shortage of expertise in many levels of digital practice and general perception that 3D digital documentation is costly and requiring high investments further hampers digitization efforts. In recent years, however, advent of computer vision (CV) algorithms make it possible to reconstruct 3D geometry of objects by using image sequences from digital cameras, which are then processed by web services and freeware applications. This paper presents an initial stage in an exploratory study that investigates the potentials of using CV automated image-based opensource software and web services to reconstruct and replicate cultural assets. By selecting an intricate wooden boat, Petalaindera, this study attempts to evaluate the efficiency of CV systems and their suitability to be adopted in digital heritage practice in Malaysia. By presenting a brief overview of previous 3D digital documentation efforts undertaken in the field of cultural heritage (CH) in Malaysia, the final aim of this study is to compare the visual accuracy of 3D models generated by CV system, and 3D models produced by terrestrial long-range scanner and structured white light systems. The final objective is to explore cost-effective methods that could provide fundamental guidelines on the best practice approach for digital heritage in Malaysia.

Author keywords

3D imaging   Computer vision   Cultural heritage   Digital heritage

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