Aalto University
School of Engineering

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Future consumers to 3D scan, -print and use virtual environments?

Title of the dissertation	Emerging near-consumer-level technologies for 3D geomatics Kuluttajan lähellä olevat teknologiat 3D geomatiikassa
Contents of the dissertation	The Internet, smart mobile devices and advanced methods of 3D mapping have increased the detail level of geospatial datasets, made them accessible for consumers via virtual environments, and allowed two-directional interaction between users and geospatial data. In this thesis, near-consumer-level technologies were studied for producing and utilizing geospatial datasets. The studied technologies included 3D indoor mapping, 3D scanning with a smartphone, 3D printing and the use of browser based virtual environments and game engines for application development. The aim was to test the performance of the given systems and develop methods for utilizing them. Acknowledging the performance limitations of the systems, near-consumer-level 3D mapping can be utilized for either obtaining individual measurements of specified objects, or mapping entire environments. Compared with professional mapping instruments, these technologies are significantly more affordable and reduce the know-how requirements in 3D mapping. Methods suited for producing game engine content enable bringing real environments into interactive 3D applications. In addition to producing new datasets, benefits may result from utilizing existing data on new platforms, such as game engines or 3D printers.
Field of the dissertation	Geoinformatics
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