A Plane-based Calibration Method for Multi-camera Systems

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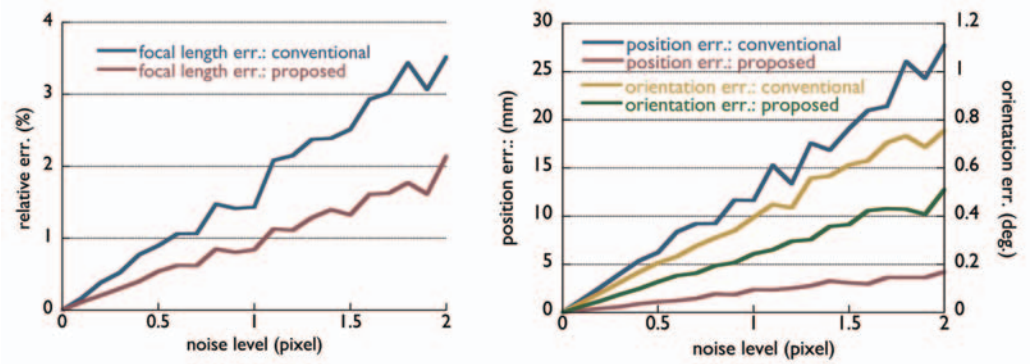
Vision systems with multiple video cameras is expected to be increasingly applied to a variety of fields such as robotics and human interface owing to their wide visual field and potential for recovering 3D structure of the scene. We have developed a simple technique for calibrating such multi-camera systems using a plane with a known 2D pattern as a reference object. Not only the intrinsic parameters, e.g. focal lengths and lens distortions, of the cameras but also the relative displacement between them are simultaneously estimated with high accuracy by simply showing the plane placed at three or more locations. Thus the algorithm yields a handy and flexible means for calibrating stereo vision systems with the arbitrary number of cameras.



Errors in estimated camera parameters vs. the noise level

Gigabit Ethernet Network Testbed GNET-1

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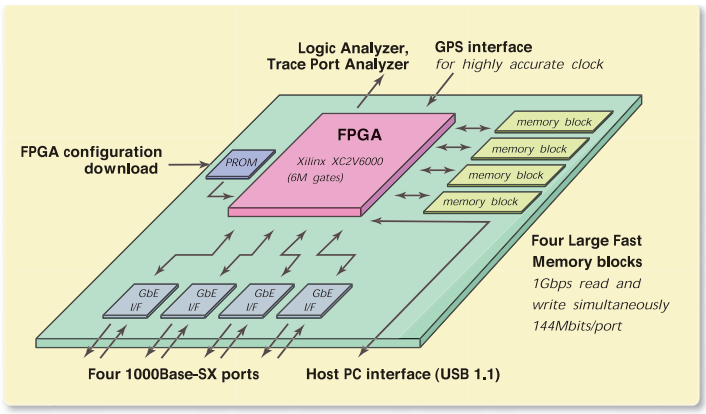
We have developed a network testbed GNET-1 so as to observe network traffic, emulate networks and test communication protocols. GNET-1 is provided with four Gigabit Ethernet ports and four high speed RAM banks which are connected to a central large scale FPGA. GNET-1 emulates more than 100 ms delay, which is corresponds to that of a wide area network, and a single frame discard on full speed of Gigabit Ethernet traffic. We can easily add new functions, such as bit error generation and frame header trace by re-programming the FPGA.



Block diagram of GNET-1