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Synthetic Primate Vision

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ABSTRACT OF THE TALK

Existing research suggests that the primate visual system exhibits some important competencies: 1) a consistent representation of visual space across eye motions; 2) egocentric spatial perception in dynamic environments; 3) coordinated stereo target fixation, segmentation and pursuit of dynamic subjects; 4) active-dynamic attention. A primate-inspired synthetic active vision system incorporating real-time implementations of these competencies will be presented. The system is based around an active stereo vision mechanism that exhibits a mechanical range of motion and agility similar to that of humans. Similarities between the underlying synthetic system model and that of the primate vision system should elicit similar basic gaze behaviours. Psycho-physical trials are conducted to benchmark human gaze behaviour when free-viewing a reproducible, dynamic, 3D scene. Identical trials are conducted with the synthetic system for statistical comparison with the human benchmarks. Synthetic gaze behaviours elicited by the trial stimulus are shown to conform to human the benchmarks.