

**IFEANYI FRANCIS EZEBILI**

**A Model for Accurate Error Propagation in a Convergent Stereovision System.**

**Supervisor: Prof K Schreve**

An epipole-featured model with short execution time is proposed and evaluated for scene reconstruction in active geometric computer vision. *Virtual depth* and *depth factor* are introduced, which together define the depth of a 3-space point relative to the reference camera. An equivalence relation between coplanar-parallel and convergent stereo-camera imaging systems is established, in which *baseline-to-depth-factor ratio* is defined and termed *convergent stereo disparity*. This disparity is equated with the image rectification process in coplanar-parallel stereo-camera imaging. Subsequently, mathematical models are derived to study the variation of depth sensitivity coefficient and relative depth uncertainty with respect to convergent stereovision system parameters.