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- Thursday, January 23, 2003
Probabilistic scene reconstruction

Probabilistic scene reconstruction is examined in the context of vision and robotics, but also seems to be applicable to other domains. This talk will address the recovery of 3D measurements from vision data: instance of the scene reconstruction problem. Our approach, however, is based on the use of a single achromatic image and a limited amount of range data. We develop a statistical learning method for inferring and extrapolating range data from as little as one intensity image and from those (sparse) regions where both range and intensity information is available. Our work is related to methods for texture synthesis using Markov Random Field methods. We demonstrate that MRF methods can also be applied to general intensity images with little associated range information and used to estimate range values where needed without making any strong assumptions about the kind of surfaces in the world. Experimental results show the feasibility of our method. If time permits, the application of this work to the elaboration of hand-drawn sketches will also be discussed

Greg Dudek
CS, McGill