

**BUILDING LOOK-UP TABLES OF SPARSELY SAMPLED
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Look-up tables are frequently used in many devices for fast approximation of non-linear functions. Building the table requires sampling the physical process, which can be time-consuming and expensive. This is the motivation for sparse sampling. However, the functions are not necessarily smooth or convex. We describe some problems in detail and investigate methods to approximate some multidimensional color functions accurately from this sparse sampling. The methods require local modeling and the generation of values outside the range of the original function, since both the forward and inverse functions are required. The extension from locally defined functions to a global function is the basis for building the final tables.