MHZ.

Key words: TCP/IP, DW8051 Core, embedded system, SOPC

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Precision Analysis of Three Dimension Free Curves Nanofabrication

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Abstract: Three dimension free curves find wide applications in engineering. There is no problem to express them exactly mathematically, but the reportage has not been done on the investigation of precision analysis of three-dimension free curves nanofabrication. Nanofabrication Precision includes the geometrical precision and the precision of driving system (below simply called the system precision). This paper submits the precision analysis method of curve normal vector to analyze geometrical precision. Take an aspherical surface for example, it can be fitted and constructed by tensor product parameter curves, such as linear drawing curves, straight veins curves, rotating curves, sweeping curves, DUCT curves and Geomap curves. Then the curves of the aspherical surface is iterated and modified to select the best fitted curves of the aspherical surface. Finally, the geometrical precision of perfect approximate aspherical surface fitting has been sought. This kind of geometrical fitting construction is very important.

Another is the system precision, which contains axial position precision, line precision, and twisting and swinging precision, etc. The paper adopts the theory of precision optimum match[1] (Prof. Wang Er-qi first put forward in 1983) to allocate precision optimumly. The minimum cost is used as an objective function, and weight method matches the precision. To obtain the optimum match combination of the minimum cost design parameters and every composing element tolerance, the precision is iterated and sought optimumly to design the system optimumly. The theoretical analysis shows that it's feasible to control three dimension free curves nanofabrication within nanometer scale precision.

Key words: three dimension curves, precision, optimum match, advanced manufacturing technology, micro-/nano-technology

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