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Titolo	Defense inventory [[electronic resource]] : improvements needed in DOD's implementation of its long-term strategy for Total Asset Visibility of its inventory : report to the Chairman, Subcommittee on Defense, Committee on Appropriations, House of Representatives
Pubbl/distr/stampa	[Washington, D.C.] : , : U.S. Government Accountability Office, , [2004]
Soggetti	Assets (Accounting) Spare parts
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Livello bibliografico	Monografia
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Autore	Chinesta Francisco
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Nota di contenuto	Cover; Natural Element Method for the Simulation of Structures and Processes; Title Page; Copyright Page; Table of Contents; Foreword; Acknowledgements; Chapter 1. Introduction; 1.1. SPH method; 1.2. RKPM method; 1.2.1. Conditions of reproduction; 1.2.2. Correction of the kernel; 1.2.3. Discrete form of the approximation; 1.3. MLS based approximations; 1.4. Final note; Chapter 2. Basics of the Natural Element Method; 2.1. Introduction; 2.2. Natural neighbor Galerkin methods; 2.2.1. Interpolation of natural neighbors; 2.2.2. Discretization 2.2.3. Properties of the interpolant based on natural neighbors2.3. Exact imposition of the essential boundary conditions; 2.3.1. Introduction to alpha shapes; 2.3.2. CNEM approaches; 2.4. Mixed approximations of natural neighbor type; 2.4.1. Considering the restriction of incompressibility; 2.4.2. Mixed approximations in the Galerkin method; 2.4.3. Natural neighbor partition of unity; 2.4.3.1. Partition of unity method; 2.4.3.2. Enrichment of the natural neighbor interpolants; 2.5. High order natural neighbor interpolants; 2.5.1. Hiyoshi-Sugihara interpolant

2.5.2. The De Boor algorithm for B-splines2.5.3. B-spline surfaces and natural neighboring; 2.5.3.1. Some definitions; 2.5.3.2. Surface properties; 2.5.3.3. The case of repeated nodes; Chapter 3. Numerical Aspects; 3.1. Searching for natural neighbors; 3.2. Calculation of NEM shape functions of the Sibson type; 3.2.1. Stage-1: insertion of point x in the existing constrained Voronoi diagram(CVD); 3.2.1.1. Look for a tetrahedron which contains point x; 3.2.1.2. Note concerning the problem of flat tetrahedrons; 3.2.2. Stage-2: calculation of the volume measurement common to cx and cv
3.2.2.1. By the recursive Lasserre algorithm3.2.2.2. By means of a complementary volume; 3.2.2.3. By topological approach based on the CVD; 3.2.2.4. By topological approach based on the Constrained Delaunay tetrahedization(CDT); 3.2.2.5. Using the Watson algorithm; 3.2.3. Comparative test of the various algorithms; 3.3. Numerical integration; 3.3.1. Decomposition of shape function supports; 3.3.2. Stabilized nodal integration; 3.3.3. Discussion in connection with various quadratures; 3.3.3.1. 2D patch test with a technique of decomposition of shape function supports
3.3.3.2. 2D patch test with stabilized nodal integration3.3.3.3. 3D patch tests; 3.4. NEM on an octree structure; 3.4.1. Structure of the data; 3.4.1.1. Description of the geometry; 3.4.1.2. Interpolation on a quadtree; 3.4.1.3. Numerical integration; 3.4.2. Application of the boundary conditions - interface conditions; 3.4.2.1. Dirichlet-type boundary conditions: use of R-functions; 3.4.2.2. Neumann-type boundary conditions; 3.4.2.3. Partition of unity method; Chapter 4. Applications in the Mechanics of Structures and Processes; 4.1. Two- and three-dimensional elasticity
4.2. Indicators and estimators of error: adaptivity

Sommario/riassunto

"This book presents a recent state of the art on the foundations and applications of the meshless natural element method in computational mechanics, including structural mechanics and material forming processes involving solids and Newtonian and non-Newtonian fluids"--