

RESUME

1. NAME AND DATE OF BIRTH:

Duc Thai Nguyen
July 19, 1952

2. ACADEMIC RANK:

Professor, Civil and Environmental Engineering Department, Old Dominion University, and
Director, Multi-disciplinary Parallel-Vector Computation Center, Old Dominion University.

3. DEGREES:

The University of Iowa, Ph.D.: March, 1982
“Fail-Safe Optimal Design of Complex Structures with Substructures and Composite Materials”

The University of California, Berkeley, M.S.: June, 1976
Structural Engineering and Structural Mechanics

Northeastern University, Boston, B.S.: December, 1974
Civil Engineering

4. STATES WITHIN WHICH REGISTERED:

NONE

5. DATE OF INITIAL APPOINTMENT AT OLD DOMINION UNIVERSITY:

August 1985 (Assistant Professor)

6. PROFESSIONAL CHRONOLOGY:

May 96-Present *Professor and MPVC Center Director*, Civil and Environmental
Engineering Department, Old Dominion University, Norfolk, Virginia.

Aug 90-May 96 *Associate Professor* (with Tenure): Old Dominion University, Norfolk, VA
Department of Civil Engineering.
Director, Center for Multi-Disciplinary Parallel Vector Computation (from
November 1992), ODU, Norfolk, Virginia

Apr 82-Jun 85 *Assistant Professor*: Northeastern University, Boston, MA
Civil Engineering Department
Undergraduate courses: Structural Mechanics II, III, Structural Analysis,
Civil Engineering System. Graduate courses: Theories of Elasticity, Energy
Methods, Finite Element Method, Structural Optimization.

- Dec 77-Mar 82 *Research Assistant:*
 Have handled projects for the U.S. Army Ballistic Research Laboratory (BRL) to optimally design the helicopter tail-boom. Have developed the finite element-based computer program DOCS (Design Optimization Codes for Structures).
- Instructor:*
 Teaching the course “Mechanics of Deformable Bodies,” Civil Engineering Department, the University of Iowa, Iowa City, IA.
- Jan 76-Jun 76 *Reader:*
 Application of Digital Computer to Civil Engineering. The University of California, Berkeley, CA.
- Jan 75-Sept 75 *Computer Programming Assistant:*
 Computer Science Department, Northeastern University, Boston, MA.

7. CONSULTING/ PART TIME EMPLOYMENT:

- Oct 76-May 77 *Consulting Engineer:*
 General Electric Co., Nuclear Energy Division, San Jose, CA. Have handled “Lasalle” project: Reactor Pressure Vessel and Internal Analysis, Using SAP IV computer program to find the response of structure subjected to dynamic loads. Have verified “Zimmer” and “Fitzpatrick” plants.

8. SCIENTIFIC AND PROFESSIONAL SOCIETIES MEMBERSHIP:

- Member, AIAA (American Institute of Aeronautics and Astronautics) since May 1999
 Member, VAS (Virginia Academy of Science), since May 1999
 Member, *American Institute of Aeronautics and Astronautics*, AIAA (May 1993)
 Member, IEEE (May 1993)
 Member, *American Society of Engineering Education*, ASEE
 Member, *American Society of Civil Engineers*, ASCE (January, 1986)
 Member, *American Academy of Mechanics*, AAM (September, 1983)

9. HONORS AND AWARDS:

- April 26, 2001 A. Rufus Tonelson distinguished faculty award (for excellent contribution in Research, Teaching and Service), Old Dominion Univ., Norfolk, VA (Webb Center)
- May-July 2001 NASA-ASEE Summer 2001 (11-th time) Faculty Fellowship Award (\$10,000), at Electromagnetics Research Branch, NASA Langley Research Center, Hampton, VA
- May-July '00 NASA-ASEE Summer '2000 Faculty Fellowship Award (\$10,000) at COMPUTATIOANL MODELING & SIMULATION Branch (Aerodynamics, Aerothermodynamics, and Acoustics Competency),

NASA Langley Research Center, Hampton, VA

- 1998, 1999 Who's Who Among America's Teachers (The Best Teachers in America Selected by the Best students. Nominated by former ODU student Lee E. Mamaril), Marquis, 5th Edition, 2000-2001.
- May - Aug. 1998 NASA-ASEE Faculty Fellow; Participated in NASA-LaRC, Structural Mechanics Branch (\$10,000).
- May - Aug. 1997 NASA-ASEE Faculty Fellow: Participated in Langley Research Center, Thermal-Structural Branch, Structural Division (\$10,000).
- Feb - Aug. 1996 Visiting Assoc. Professor: Teaching and Conducting Research in "Finite Element Based Parallel Computation" at Hong Kong University of Science and Technology, Kowloon, Hong Kong.
- October 1993 NASA Langley Research Center TECH BRIEF AWARD (certificate and cash award) for contribution to Parallel Computational Mechanics. Award identification No. LAR-14627; (Reference: Mr. Shoemaker, Technology Utility Office), September 1993.
- Jun - Aug 92 Participated in the LaRC, Control-Structure Interaction group (\$9,500 + \$9,000)
- Jun - Aug 90 NASA-ASEE, Faculty Fellow:
- March 24, 1990 ASCE Faculty of the Year Award Ceremony at ODU, Norfolk, VA
- Nov 13, 1989 Cray Research Inc. Gigaflops Performance Award. The award ceremony was held during the IEEE Supercomputing '89' Conference, in Reno, Nevada
- Jun - Aug 89 AIR FORCE Faculty Fellow:
Participated in the Weapons Laboratory, Kirtland AFB, NM (\$9,410)
- April 3, 1989 Outstanding Faculty Recognition Ceremony at ODU, Norfolk, VA
- Jun - Sept 86 NASA-ASEE Faculty Fellow:
Participated in the Langley Research Center Program - Loads and Aeroelasticity Division (\$8,400)
- Jun - Sept 85 NASA-ASEE Faculty Fellow:
Participated in the NASA-Lewis Research Center, Structural Division (\$6,500)
- Jun - Sept 84 NASA-ASEE Faculty Fellow:
Participated in the Langley Research Center Program-Loads and

Aeroelasticity Division (\$7,800)

Jun - Sept 83

NASA-ASEE Faculty Fellow:
Participated in the Langley Research Center Program-Loads and
Aeroelasticit Division (\$6,000)

10. COURSES TAUGHT DURING LAST 5 YEARS:

Undergraduate courses: Concrete Design I, II, System Design, Computer Aided Design for Civil Engineering, Statics, Structural Analysis I, II, Civil Engineering Computation, Statics.

Graduate courses: Structural Dynamics, Finite Element I, II Topics in FEA, Advanced Structural Design, Structural Optimization (T.V. Course), Parallel Computational Mechanics, Finite Element Analysis with Commercialized Code Applications.

Teaching (Scores=1=unacceptable, 2=poor)

Scores (Scores=3=acceptable, 4=good)

(Scores=5=very good, 6=excellent)

(a)=Rate the overall effectiveness of the instructor

(b)=Average scores for all 12 questions on the teaching evaluation forms

(a) (b)

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Max. 5.40 5.60

Median 4.90 4.90

Dr. Nguyen 5.40 5.60

Min. 4.30, 4.10

Table 1: Teaching Performance of ALL professors at Old Dominion University/College of Engineering & Technology
(source: May '98 ODU/COET Dean's Office)

11. UNIVERSITY AND COMMUNITY SERVICE/MAJOR SERVICE ACTIVITIES:

University:

5. University Parking Committee
4. Faculty advisor for Vietnamese students Association at ODU
3. College of Engineering Ceremonies & Award, Student Project Committees, and Senior Design Course Committee.
2. Director, Multi-disciplinary Parallel-Vector Computation (MPVC) Center
1. Advising (approx. 30) undergraduate students

Community:

10. "Roles of Civil Engineers," Norview High School, (special gifted 6th grade students) "Bridge Design Class," Oct. 28, 1997
9. ODU Faculty advisor and mentor for NASA-SHARP + program for High School students

(Summer '97)

8. Recruiting and offering RA money for Ph.D. students from Hong Kong, China.

Discipline:

7. CE Dept. Computer Laboratory Coordinator (until Sept. '95) Developing CE 305 new course
6. Faculty advisor for Chi-epsilon (Civil Engineering Honor) society at ODU (until Sept. 95)

Professional Services:

25. Editorial Board Member, The Third International Conference on Engineering Computational Technology, Sept. 4-6, 2002, Prague, Czech Republic.
24. Invited 4 day Short Course Lecturer (Parallel Computational Mechanics), Phoenix, AZ (June 1- June 6, 2001).
23. Journal Paper Reviewer for International Journal of Numerical Method for Engineering (IJNME) Journal.
22. Journal Paper Reviewer for "Finite Element in Analysis and Design: the International Journal of Applied Finite elements and Computer Aided Engineering."
21. Proposal Reviewer For the ARMY RESEARCH OFFICE. P.O. Box 12211, Research Triangle Park, NC 27709-2211 (July 19, 2000).
20. Invited Short Course Lecturer, China Chang Feng Science Technology (Aerospace Group) Corporation, Beijing, China (May 10-15, 1999)
19. Editorial Board Board Member, the Second International Conference on Engineering Computational technology (ECT 2000), Leuven, Belgium, Sept. 6-8, 2000.
18. Reviewer for Journal of Spacecraft & Rockets (Log No. A10861), May 1999
17. External Tenure Reviewer (for UNCC, Engineering Technology Dept., Sept. 25, 1998).
16. Lecturer for a short (2 day) course "Parallel Computing Methods for Structural Analysis," NEC Sys. Inc., Woodlands, TX (May 26-27, 1998).
15. Organizing Committee member for the 3rd, 4th and 5th National Symposia on "Large-Scale Structural Analysis for High Performance Computers and Workstations," Marriott Hotel, Norfolk, VA sponsored by NASA LaRC (Nov. 8-11, 1994), and Williamsburg, VA (October 15-17, 1997, Oct. 12-15 '99).
14. Lecturer for a short (2-day) course "Parallel Computing Methods for Structural Analysis", the University of Nebraska, Lincoln, Engineering Mechanics Department, (October 10-11, 1996)
13. Lecturer for a short (2-day) course "Parallel Computing Methods for Structural Analysis", Norfolk, Virginia, (August 24-26, 1995)
12. Lecturer for a short (2-day) course "Parallel Computing Methods for Structural Analysis", Michigan State University, Department of Materials, Science & Mechanics, East Lansing, Michigan (April 7-9, 1995)
11. Lecturer for a short (2-day) course "Parallel Computing Methods for Structural Analysis", North Carolina A&T University, Mechanical Engr. Dept., Greensboro, NC (December 1-2, 1994)
10. Organizing Committee member for the 2nd symposium "Parallel Computational methods For Large-Scale Structural Analysis and Design," Sponsored by NASA LaRC, held at the Marriott Hotel, Norfolk, VA (February 24-25, 1993)
9. Organizing Committee member for the symposium "Parallel Methods on Large-Scale Structural Analysis," sponsored by NASA LaRC and USAF Weapons Lab, held at NASA LaRC (February 5-6, 1991)
8. Lecturer (with Dr. Razzaq) for the short course "Parallel Computing Methods for Structural Analysis," sponsored by the College of Engineering, ODU, Norfolk, VA 23529 and held at the

- Holiday Inn, Virginia Beach, VA (May 22-25, 1989 and June 11-14, 1990)
7. Member, ASCE Committee on Optimal Design (October 1, 1987 to September 30, 1990)
 6. Organizer and Chairperson for 2 sessions on "Parallel Computations In Structural Mechanics" for the Sixth Conference on Computing in Civil Engineering, ASCE's TCCP, Atlanta, GA (September 11-13, 1989)
 5. Lecturer (with Capt. Carmona, and Dr. Storaasli) for the Workshop on Parallel-Vector Processing, sponsored by and held at Weapons Laboratory, SCP, Kirtland AFB, NM 87117 (August 1-2, 1989)
 4. Session Chairman, 12th International Symposium on Mathematical Programming, MIT, Cambridge, MA (August 5-8, 1985)
 3. Book reviewer for MacMillian Publishing Company, (3 chapters on optimization), 866 Third Avenue, New York, NY 10022
 2. Paper reviewer for AIAA, Computer Methods in Applied Mechanics & Engineering, ASCE (Structural and Aerospace), IJNM Journals.
 1. Book reviewer for Prentice Hall, (3 chapters on optimization), Route 9W, Englewood Cliffs, NJ 07032

12. PATENTS, LICENSES. OR COPYRIGHTS:

BOOK(S), Editors

3. Nguyen, Duc T., and Hou, Gene, "Finite Element Methods: Sparse Technologies & High-Performance Computing Platforms" (in preparation).
2. Nguyen, Duc T., "Parallel-Vector Equation Solvers for Finite Element Engineering Applications," Published on October 2001 (Copyright 2002), by Kluwer/Plenum. Publishing Co., ISBN# 0-306-46640-6. Information about the book, and how to order the book can be found at: <http://www.wkap.nl/book.htm/0-306-46640-6>
1. Storaasli, O.O., Housner, J.M., and Nguyen, D.T., Guest Editors, Special Issue: "Parallel Computational Methods for Large-Scale Structural Analysis and Design," Computing Systems in Engineering, An Inter. Journal, Vol. 4, Nos. 4-6 (August/October/December 1993), Pergaman.

13. GRANTS AND CONTRACTS AWARDED: (total = \$1,727,923 including awards, prizes)

26. D.T. Nguyen, Principal Investigator, "Parallel Domain Decomposition Formulation and Software for Large-Scale Sparse/Unsymmetrical 3D Aeroacoustics Applications", NASA Langley Research Center, \$135,000, January 15, 2001 – January 15, 2004.
25. "An Out-of-Core Revised Simplex Algorithm for Large-Scale Linear Programming Problems," NASA LaRC GSRP award (with M.S. Student: Mr. Kevin Gould), NASA LaRC technical monitor, Dr. J. Sobieski, \$66,000 (August 1, 1999-August 1, 2002)
24. "Finite Element Analysis of Reverberation Chambers", \$193,509, Co-P.I. (with Dr. Bunting), NASA LaRC, Hampton, VA, January 1, 1998 - December 30, 2000.
23. "Finite Element Analysis of 2-D field and Structural Problems", \$16,000, Co-PI

(with Ms. Vanessa Hill, through Prof. Tiwari's ICAM budget), NASA LaRC, Hampton, VA, Jan. '98 - Dec. '98, also \$6000 (NASA-ODU/ICAM, Jan. '99-May '99).

22. "Linear Programming and Equation Solver Algorithms for Thermal-Structural Analysis and Design Application", \$21,864, Principal Investigator, NASA LaRC, Hampton, VA, October 1, 1997 - September 30, 1998.
21. "New Parallel Algorithms for Structural Analysis and Design of Aerospace Structures," \$160,000, Principal Investigator, NASA LaRC, Hampton, VA, Nov. 1, '95 - June 30, '98.
20. "Finite Element Software for Multidisciplinary Design Optimization," \$20,000, Principal Investigator, NASA LaRC, Hampton, VA, February 1, 1995 - November 30, 1995.
19. "Computational Mechanics on High-Performance Computers," \$60,000, Principal Investigator, NASA LaRC, Hampton, VA, October 1, 1994 - October 1, 1995.
18. "Development of Concurrent Procedures for Large-Scale Integrated Structural Analysis and Optimization," \$250,000, Principal Investigator, NASA LaRC, Hampton, VA, October 1, 1991 - October 1, 1994.
17. "CSI-Design Code on High-Performance Computers," \$26,000, Principal Investigator, NASA LaRC, Hampton, VA, January 1, 1993 - December 30, 1993.
16. "Parallel-Vector Control Structure Integrated Methodology for General Dynamic Loads," \$25,000, Principal Investigator, NASA LaRC, Hampton, VA, August 1, 1992 - August 1, 1993.
15. "Design Code for Lightweight Power Plant Structures," \$184,000, Co-Principal Investigator, Virginia Power Co., Jonathan Corp. and Center of Innovative Technology (CIT), July 1, 1992 - July 1, 1993.
14. "Parallel-Vector Computations for CSI Design Code," \$15,000, Principal Investigator, NASA LaRC, Hampton, VA, October 1, 1991 - October 1, 1992.
13. "Parallel-Vector Algorithms for Nonlinear Finite Element Analysis," \$20,355, Principal Investigator, AFOSR, Albuquerque, NM, August 1, 1991 - September 30, 1993.
12. "Parallel-Vector Finite Element Analysis for the CSM Testbed," \$58,458, Principal Investigator, NASA LaRC, Hampton, VA, October 1, 1990 - October 1, 1991.
11. "Parallel-Vector Computation for Controls-Structures Interaction Code," \$21,931, Principal Investigator, NASA LaRC, Hampton, VA, October 1, 1990 - October 1, 1991.
10. Co-P.I. (with P.I. Dr. Ishibashi), NSF Grant No. MSS-8920878, "Development of Hybrid Discrete Element/Finite Element Model for Large Deformation Geotechnical Engineering Problems," \$75,514 August 15, 1990 to August 14, 1992.
9. NASA Minority Graduate Grants (for Mr. Kevin R. Pullen, and Mr. James E. Demby, Jr.),

NASA Headquarters, Washington, D.C., \$44,000, August 1990 - August 1991.

8. "Parallel-Vector Processing For Nonlinear Finite Element Analysis," Principal Investigator, \$37,996 (including \$18,000 cost-sharing from ODU for NCUBE parallel computer), AFOSR (January 1, 1990 - December 31, 1990).
7. NASA Minority Graduate Grant (for Mr. Kevin R. Pullen, ODU Student), \$18,000 per year, NASA Headquarters, Washington, D.C., August 1989 - August 1990.
6. "Parallel Nonlinear Unconstrained Optimization," Principal Investigator, \$12,998, NASA LaRC, Hampton, VA, June 15, 1989 - June 15, 1990.
5. "Substructuring Formulation and Domain Decomposition In a Parallel Test Bed Environment," \$27,800, Principal Investigator, NASA LaRC, Hampton, VA, April 1, 1989 - April 1, 1990.
4. "Parallel Procedures For Statics, Eigenvalue Analysis and Structural Dynamics," \$21,188, NASA Langley Research Center, Hampton, VA, March 1, 1988 to February 28, 1989.
3. "Simplified Procedures for Dynamic Analysis of Complex Structures," \$61,000, Newport News Shipbuilding and Drydock Company, and Center for Innovative Technology Engineering Clinic, One of the Principal Investigators (with Dr. Jean W. Hou), November 20, 1986 to August 20, 1987.
- 2.* "An Element-By-Element Algorithm for Large Scale Structural Dynamics," \$3,700 (out of which \$500 was used to buy the computer equipment for the CE Department), Principal Investigator. Old Dominion University Research Foundation, Summer 1986.
- 1.* Recipient of Travel Support Grant (July 1983, sponsored by NSF and IFIF, \$1,000, to Copenhagen, Denmark).

Note: *indicates the grant directly goes to the Principal Investigator

14. SCHOLARLY ACTIVITIES COMPLETED:

JOURNAL ARTICLES

34. W.R. Watson, D.T. Nguyen, C.J. Reddy, V.N. Vatsa, and W.H. Tang, "Algorithms and Application of Sparse Matrix Assembly and Equation Solvers for Aeroacoustics", April (2002), Volume 40, No.4.
33. Nguyen, D.T., Qin, J., Sancer, M.I. and McClary, R., "Finite Element-Boundary Integral Methods in Electro-magnetics", March 2002, pp. 391-400, in Finite Element in Analysis and Design, and International Journal (Elsevier Science publisher).
32. Nguyen, D.T., Hou, Gene, Runesha, H. and Han, Bangfei, "Alternative approach for solving Sparse INDEFINITE Symmetrical system of Equations," Advances in Engineering Software, Volume 31, Nos. 8-9, pages 581-584 (August-Sept. 2000)

31. Nguyen, D.T., Bunting, C., Moeller, K.J., Runesha H.B., and Qin J., "Subspace and Lanczos Sparse Eigen-Solvers for Finite Element Structural and Electromagnetic Applications" *Advances in Engineering Software*, Volume 31, Nos. 8-9, pages 599-606 (August-Sept. 2000)
30. Nguyen, D.T., Bai, Yu, Qin, J., and Hu, Yusong, "Computational Aspects of Linear programming Simplex Method" *Advances in Engineering Software*, Volume 31, Nos. 8-9, pages 539-546 (Aug-Sept. 2000)
29. Runesha, H.B., and Nguyen, D.T., "Vectorized Sparse UnSymmetrical Equation solver for Computational Mechanics" *Advances in Engineering Software*, Volume 31, Nos. 8-9, pages 563-570 (August-Sept. 2000)
28. Nguyen, D.T., Tang, W.H. Tung, H.K. and Runesha, H.B., "Nonlinear Constrained Optimizer and Parallel Processing for Golden Block Line Search," in *COMPUTER ASSISTED MECHANICS and ENGINEERING SCIENCES Journal (CAMES Journal)*, Vol. 6, no. 3-4, 1999, pages 469-477).
27. Chen, P., Runesha, H., Nguyen, D.T., Tong, P. and Chang, T.Y.P., "Sparse Algorithms For Indefinite Systems of Linear Equations", in *COMPUTATIONAL MECHANICS Journal*, Vol. 25, No. 1, pages 33-42 (Feb. 2000).
26. Qin, J. and Nguyen, D.T., "A Tridiagonal Solver for Massively Parallel Computers", *Advances in Engineering Software*, Vol. 29, No. 3-6, pp. 395-397 (1998).
25. Nguyen, D.T., Qamar, R. and Runesha, H. "Automatic Differentiation for Design Sensitivity Analysis of Structural Systems Using Parallel-Vector Processors", *Advances in Engineering Software*, Vol. 29, No. 3-6, pp. 375-382 (1998).
24. Nguyen, D.T., Runesha, H., Belegundu, A.D., and Chandrupatla, T.R., "Interior Point Method and Indefinite Sparse Solver for Linear Programming Problems", *Advances in Engineering Software*, Vol. 29, No. 3-6, pp. 409-414 (1998).
23. Qin, J., and Nguyen, D.T., "A Parallel-Vector Simplex Algorithm On Distributed Memory Computers," *Structural Optimization Journal*, Vol. 11, Nos. 3 & 4, pp. 260-264, (1996).
22. Agarwal, T.K., Storaasli, O.O., and Nguyen, D.T., "A Parallel-Vector Algorithm For Rapid Structural Analysis on High Performance Computers," to appear in *Computers and Structures Journal*.
21. Baddourah, M.A. and Nguyen, D.T., "Parallel-Vector Computations for Geometrically Nonlinear Finite Element Analysis," *Computers & Structures Journal*, Vol. 51, No. 6, (1994), pp. 785-789.
20. Maker, B.N., Qin, J. and Nguyen, D.T., "Performance of NIKE3D with PVSOLVE On Vector and Parallel Computers," *Computing Systems In Engineering Journal* (1995).

19. Qin, J. and Nguyen, D.T., "Structure/Load Dependent Vectors For Linear Structural Dynamics," *Computers & Structures Journal*, Vol. 50, No. 4 (February 1994), pp. 515-524.
18. Qin, J. and Nguyen, D.T., "Generalized Exponential Penalty Function for Nonlinear Programming," *Computers & Structures Journal*, Vol. 50, No. 4, (February 1994), pp. 509-514.
17. Qin, J. and Nguyen, D.T., "A Parallel-Vector Equation Solver for Distributed Memory Computers," *Computing Systems in Engineering Journal*, Vol. 5. No. 1, (1994).
16. Storaasli, O.O., Nguyen, D.T., Baddourah, M.A. and Qin, J., "Computational Mechanics Analysis Tools for Parallel-Vector Supercomputers", *Computing Systems in Engineering Journal*, Vol. 4, No. 4-6, pp. 349-354 (1993).
15. Qin, J., Agarwal, T.K., Storaasli, O.O., Nguyen, D.T. and Baddourah, M.A., "Parallel-Vector Out-of-Core Equation Solver for Computational Mechanics," *Computing Systems in Engineering Journal*, Vol. 4, No. 4-6, pp. 381-386 (1993).
14. Belvin, W.K., Maghami, P.G. and Nguyen, D.T., "Efficient Use of High Performance Computers for Integrated Controls and Structures Design," *Computing Systems in Engineering Journal*, Vol. 3 No. 1-4, pp.181-188, (1992).
13. Zhang, Y. and Nguyen, D.T., "Parallel-Vector Sensitivity Calculations in Linear Structural Dynamics," *Computing Systems in Engineering Journal*, Vol. 3, No. 1-4, pp. 365-378, (1992).
12. Zhang, Y., Nguyen, D.T. and Hou, G.W., "An Alternative Formulation for Design Sensitivity on Linear Structural Dynamic Systems," *Computers & Structures Journal*, Vol. 44, No. 3, pp. 689-692 (1992).
11. Qin, J., Gray, Jr., C.E., Mei, C. and Nguyen, D.T., "A Parallel-Vector Equation Solver for Unsymmetric Matrices on Supercomputers," *Computing Systems in Engineering, An International Journal*, Vol. 2, No. 2/3, September 1991 (Pergamon Press), pp.197-202.
10. Nguyen, D.T., Storaasli, O.O., Carmona, E.A., Al-Nasra, M., Zhang, Y., Baddourah, M.A. and Agarwal, T.K., "Parallel-Vector Computation for Linear Structural Analysis and Nonlinear Unconstrained Optimization Problems," *Computing Systems in Engineering, An International Journal*, Vol. 2, No. 2/3, September 1991, (Pergamon Press), pp. 175-182.
9. Moayyad, M.A., and Nguyen, D.T., "An Algorithm For Domain Decomposition in Finite Element Analysis," *Journal of Computers and Structures*, Vol. 39, (1-4), 1991, pp. 277-290.
8. Baddourah, M.A., and Nguyen, D.T., "Parallel-Vector Processing for Linear Programming," *Journal of Computers and Structures*, Vol. 38, No. 3, 1991, pp.29-282.
7. Storaasli, O.O., Nguyen, D.T., and Agarwal, T.K., "The Parallel Solution of Large-Scale Structural Analysis Problems on Supercomputers," *AIAA Journal*, Vol. 28, No.7, pp. 1211-1216 (July 1990).

6. Nguyen, D.T., "Multilevel Structural Sensitivity Analysis," *Computers & Structures Journal*, Vol. 25, No. 2, pp. 191-202, April 1987.
5. Nguyen, D.T. and Arora, J.S., "An Algorithm for Solution of Large Eigenvalue Problems," *Computers & Structures*, Vol. 24, No. 4, pp. 645-650, August 1986.
4. Nguyen, D.T. and Rogers, J.L., Jr., "Optimal Design of Structures with Multiple Design Variables Per Group and Multiple Loading Conditions on the Personal Computer," *Computers & Structures*, Vol. 22, No. 2, pp. 179-184, April 1986.
3. Nguyen, D.T., Arora, J.S., and Belegundu, A.D., "Design Optimization Codes for Structures: DOCS Computer Program," *Journal of Aircraft*, Vol. 2, No. 9, pp. 817-824, September 1983.
2. Nguyen, D.T. and Arora, J.S., "Fail-Safe Optimal Design of Complex Structures with Substructures," *ASME Journal of Mechanical Design*, Vol. 104, No. 4, October 1982.
1. Arora, J.S. and Nguyen, D.T., "Eigen-solution for Large Structural Systems with Substructures," *International Journal for Numerical Methods in Engineering*, Vol. 15, 1980, pp. 333-341.

PROCEEDINGS/CONFERENCE PAPERS

50. D.T. Nguyen[^], M.D. Deshpande[~], S.D. Rajan[^], and L. Harrell[^] "Optimal Design of Engineering Systems Using Genetic Algorithms" 9-th International Conference on Numerical Methods and Computational Mechanics (July 15-19'02, Univ. of Miskolc, Miskolc, Hungary)
49. S. Tungkahotara[^], W.R. Watson[~], D.T. Nguyen[^] and H.B. Runesha "Simple and Efficient Parallel Dense Equation Solvers" 9-th International Conference on Numerical Methods and Computational Mechanics (July 15-19'02, Univ. of Miskolc, Miskolc, Hungary)
48. Y. Hu[^], K.E. Gould[^] and D.T. Nguyen[^] "Linear Programming Domain Decomposition Solutions Using Simplex and Interior Point Methods Under Parallel Computer Environments" 9-th International Conference on Numerical Methods and Computational Mechanics (July 15-19'02, Univ. of Miskolc, Miskolc, Hungary)
47. D.T. Nguyen[^], W.R. Watson[~], S. Tungkahotara[^], and S.D. Rajan "Domain Decomposition Formulation and Implementation for Finite Element Structural/Acoustic Analysis Under Parallel MPI/FORTRAN Computer Environments" 9-th International Conference on Numerical Methods and Computational Mechanics (July 15-19'02, Univ. of Miskolc, Miskolc, Hungary)
46. Duc T. Nguyen and Siroj Tungkahotara, "Parallel-Vector/Cache Algorithms/Software for Large-Scale Computation", the 2002 Space Radiation Shielding Technology Workshop, NASA Langley Research Center, Hampton, VA (Thursday, April 4, 2002).

45. Y. Hu, D.T. Nguyen and K. Gould, "Large-Scale Linear Programming Problems by Decomposition and Parallel Procedures", the 8-th AIAA/USAF/NASA/ASSMO Symposium on Multidisciplinary Optimization, Sept. 6-8 '2000, Westin, Long Beach, CA.
44. Nguyen, D.T., Hou, Gene, Runesha, H. and Han, Bangfei, "Alternative Approach for Solving Sparse INDEFINITE Symmetrical System of Equations," 5th National Symposium on Large-scale Analysis, Design and Intelligent Synthesis Environment, October 12-15, 1999, Williamsburg, VA.
43. Nguyen, D.T., Bunting, C., Moeller, K.J., Runesha H.B., and Qin, J., "Subspace and Lanczos Sparse Eigen-Solvers for Finite Element Structural and Electromagnetic Applications." 5th National Symposium on Large-scale Analysis, Design and Intelligent Synthesis Environment, October 12-15, 1999, Williamsburg, VA
42. Nguyen, D.T., Bai, Yu, Qin, J., and Hu, Yusong, "Computational Aspects of Linear Programming Simplex Method" 5th National Symposium on Large-Scale Analysis, Design and Intelligent Synthesis Environment, October 12-15, 1999, Williamsburg, VA.
41. Runesha, H.B., and Nguyen, D.T., "Vectorized Sparse UnSymmetrical Equation solver for Computational Mechanics" 5th National Symposium on Large-Scale analysis, Design and Intelligent Synthesis Environment, October 12-15, 1999, Williamsburg, VA.
40. Nguyen, D.T., Tang, W.H., Tung, H.K. and Runesha, H.B., "Nonlinear Constrained Optimizer and Parallel Processing for Golden Block Line Search," August 24-27, '98), Miskolc, Hungary.
39. Nguyen, D.T., Runesha, H.B. and Qin, J., "Parallel Finite Element Analysis on Inexpensive Clusters of Sun Workstations," Numerical Methods, and Computational Mechanics in Science and Engineering, (August 24-27 '98), Miskolc, Hungary.
38. Qin, J. and Nguyen, D.T., "A Tridiagonal Solver for Massively Parallel Computers", Proceedings of the 4th NASA National Symposium on Large-Scale Applications on High-Performance Computers and Workstations, Williamsburg, VA (October 15-17, 1997).
37. Nguyen, D.T., Qamar, R. and Runesha, H. "Automatic Differentiation for Design Sensitivity Analysis of Structural Systems Using Parallel-Vector Processors", Proceedings of the 4th NASA National Symposium on Large-Scale Applications on High-Performance Computers and Workstations, Williamsburg, VA (October 15-17, 1997).
36. Nguyen, D.T., Runesha, H., Belegundu, A.D., and Chandrupatla, T.R, "Interior Point Method and Indefinite Sparse Solver for Linear Programming Problems", Proceedings of the 4th NASA National Symposium on Large-Scale Applications on High-Performance Computers and Workstations, Williamsburg, VA (October 15-17, 1997).
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- (b1) ODU (upper triangular) sparse row formats
- (b2) User Controlled Options for ND, MMD, METIS, or Without Reordering Algorithms
- (b3) User Controlled Options for Loop unrolling level 1, 2, or 8
- (b4) User Controlled Options for Symbolic factorization only, or
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 15. Nguyen, D.T., “Recent Progress In Parallel Computational Mechanics,” presented at CSA-NASTRAN Corp., Agoura Hills, CA (July 7, 1995)
 14. Nguyen, D.T., “Parallel Computational Research Activities at the MPVC Center of Old Dominion University,” presented at Maui High-Performance Computing Center, Maui, Hawaii (August 3, 1995)
 13. Nguyen, D.T., “Multidisciplinary Computational Mechanics in A Parallel-Vector Computer Environment,” The Hong Kong University of Science and Technology, Dept. of Civil Structural Engineering, Hong Kong (December 19, 1994)
 12. Nguyen, D.T., “Parallel Computational Mechanics: From Research to Practical Applications,” Civil Engineering Department, Arizona State University, Tempe, AZ (October 26-27, 1993).
 11. Nguyen, D.T., “Parallel-Vector Numerical Algorithms for High Performance Computers: Research Applications, Needs and Opportunities,” presented at NASA LaRC, Fluid Mechanics Div.(December 5, 1991), The Goodyear Technical Center, Akron, OH (December 20, 1991), NASA LaRC, Structural Mechanics Branch (December 20, 1991), Wright Patterson AFB, Dayton, OH (December 18, 1991).
 10. Nguyen, D.T., “Parallel-Vector Computational Mechanics at O.D.U.,” a seminar given to the

Structural Mechanics Branch, NASA Lewis Research Center, Cleveland, OH (June 28, 1990).

9. Nguyen, D.T., "A New Generation of Finite Element Based, Structural Optimization Code in A Parallel-Vector Computer Environment," a seminar given to the C.S.I. Group, NASA LaRC, Hampton, VA (January 11, 1990).
8. Nguyen, D.T., "A Preview of 3½ day short course in Parallel Computation for Structural Analysis," a seminar given to the I.R.O., NASA LaRC, Hampton, VA (April 13, 1989).
7. Nguyen, D.T., "A Summary of Research Activities in Parallel Computations," a presentation to Colonel Edward Oliver, Deputy Chief Scientist, Air Force Weapons Lab., KAFB, Albuquerque, NM (January 9, 1989).
6. Nguyen, D.T., "A New Look Into The Software Architecture for Structural Analysis-Synthesis Codes in a Parallel Computer Environment," Seminar given to the I.R.O., NASA LaRC, Hampton, VA (November 16, 1988).
5. Nguyen, D.T. and Niu, K.T., "Multilevel Design Sensitivity Analysis in a Parallel Computer Environment," presented at NASA Langley Research Center, I.R.O., Hampton, VA (October 17, 1986).
4. Nguyen, D.T., "COBSTRAN and MHOST Computer Programs for the Analysis of Composite Balde-Type Structures," presented at NASA Lewis Research Center, Cleveland, OH (August 16, 1985).
3. Nguyen, D.T., "Finite Element Based Optimal Design of Large Scale Structural and Mechanical Systems Using Mini, Micro or Super-Computer," Seminar given at Tufts University, Medford, MA (November 29, 1984).
2. Nguyen, D.T., "Distributed Structural Optimization Programs over a Network of Microcomputers," presented at NASA Langley Research Center, Hampton, VA, July 31, 1984. NASA Contractor Report 172403.
1. Nguyen, D.T., "A Programming System for Structural Optimization on Microcomputer," presented at NASA Langley Research Center, Hampton, VA, July 21, 1983.

DOCTORAL STUDENTS SUPERVISED

09. Mr. Waverly Hampton (started August'2001).
08. Mr. Siroj Tungkahotara (started Jan. 2001)
07. Mr. Yusong Hu (started August 1998), Ph.D. candidate: Jan. 2002.
06. Mr. Bangfei Han (started August 1998)
05. Mr. Glenn Hrinda (started August 1998), Ph.D. candidate: Oct. 2001.
Currently employed as NASA LaRC Consultant, Hampton, VA

04. Dr. Runesha (May 1998), “Sparse Equation Solvers For Symmetric/ Unsymmetric Positive-Negative-Indefinite Matrices with Finite Element and Linear Programming Applications”
Currently employed as a MSI Consultant, High-Performance Computing, Minneapolis, MN
03. Dr. Moayyad Al-Nasra (May 1992), “Materially Nonlinear Finite Element Analysis: Theory and Applications” Currently employed as a Professor, and Dept. Chair, Gaston College, North Carolina
02. Dr. Majdi A. Baddourah (August 1991), “Parallel-Vector Computation for Geometrically Nonlinear Frame Structural Analysis”
Currently employed as NERSC Consultant, High-Performance Computing, Livermore, CA
01. Dr. Y. Zhang (August 1991), “Parallel-Vector Design Sensitivity and Analysis in Structural Dynamics” Currently employed as Senior Research Engineer, Minneapolis, MN

MASTER STUDENTS SUPERVISED

17. Mr. Isaradatta Rasmidatta (started August'2000 ,completed May 2002). “Numerical Evaluation of Iterative Solver Programs”, M.S. Project.
16. Mr. Siroj Tungkahotara (started January 2000). “Parallel MPI/FORTRAN Choleski Block Algorithms for Large-Scale, Symmetrical, Dense System of Equations” M.S. Project (August 2001).
15. Currently supervising Mr. Kevin Gould (started Jan. 1999). “Out-of-Core Revised Simplex By Decomposition and MPI” Currently employed as an ENGINEER at NNS, Newport News, VA.
14. Ms. Vanessa Hill (December 1999). “FEM For 2-D Fields and Structure Problems” Currently employed as an ENGINEER at NNS, Newport News, VA.
13. Mr. Behoboody (MS project, Dec 1988)
12. C. Kamal, “The Frontal Method For Finite Element Analysis On IBM-3090 Vector Computer’s”, M.S. Thesis, May 1990.
11. V.R. Modi, “Dynamics Analysis of Linear Structural System Using Ritz Vector Method and Substructuring Formulation”, M.S. Thesis, May 1989.
10. K.T. Niu, “Structural Sensitivity Analysis On a Parallel Computer”, M.S. Thesis, August 1987.
9. S.B. Clark, “Super element Versus Standard Analysis: Run Time Comparisons of Four Dynamic Analysis Techniques”, M.S. Project, January 1987.
8. B.A. Mollaoglu “The Geometrical Nonlinear Analysis of Truss”, M.S. Project, August 1991.
7. R.Qamar, “Implementation of NEWSUMT-A Optimizer With Different Constraint

Approximations On Trusses”, M.S. Project, May 1994.

6. P.D. Patwa, “Two-Dimensional Truss Optimization Using STAP, ADS and LINRM With Finite Difference Sensitivity Analysis”, M.E. Project, May 1994.
5. G. Al-Migdadi, “Structural Analysis Using SPAR Finite Element Code”. M.S. Project, May 1989.
4. C.K. Wong, “Finite Element Analysis Using Triangular Plate Bending Element”, M.E. Project, November 1986.
3. P.D. Quante, “Dynamic Analysis Using Ritz Vectors”, M.E. Project, February 1987.
2. P. Runesha, “Eigen-Vector Design Sensitivity Analysis”, M.S. Project, May 1994.
1. Michelle Cosidines, “Force Derivative Method For Structural Dynamics” (Just started her first semester at ODU, Fall 1995 semester).

RESEARCH AND MANUSCRIPTS IN PROGRESS

- [1] "Optimal Design of Engineering Systems Using Genetic Algorithms" by S.D. Rajan, D.T. Nguyen, M.D. Deshpande and L. Harrell.

Submitted to Journal Computer Assisted Mechanics and Engineering Sciences

- [2] "Simple and Efficient Parallel Dense Equation Solvers" by S. Tungkahotara, W.R. Watson, D.T. Nguyen, and H.B. Runesha.

Submitted to Journal Computers & Mathematics

- [3] "Linear Programming Domain Decomposition Solutions Using Simplex and Interior Point Methods Under Parallel Computer Environments" by Y. Hu, K.E. Gould and D.T. Nguyen

Submitted to Journal Computers & Mathematics

- [4] "Domain Decomposition Formulation and Implementation for Finite Element Structural/Acoustic Analysis Under Parallel MPI/FORTRAN Computer Environments" by D.T. Nguyen, W.R. Watson, S. Tungkahotara, and S.D. Rajan

Submitted to Journal of Computational & Applied Mechanics

- [5] "Design Optimization of Discrete Structural Systems Using MPI-enabled Genetic Algorithm" by S.D. Rajan, and D.T. Nguyen

Submitted to STRUCTURAL OPTIMIZATION Research Journal

- [6] "Domain Decomposition Formulation and Implementation for Finite Element Structural/Acoustic Analysis Under Parallel MPI/FORTRAN Computer Environments"

