Department of Civil Engineering
Standardized Resume Format

George M. Turkiyyah
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1 General Biographical Information

George M. Turkiyyah
University of Washington
Department of Civil Engineering
233 More Hall, Box 352700
Seattle, WA 98195-2700
Tel: (206) 543-8741
Fax: (206) 543-1543
Email: `george@ce.washington.edu`
URL: `http://www.ce.washington.edu/~george`

2 Academic Background

- Ph.D. in Civil Engineering, Carnegie Mellon University, May 1990
- M.S. in Civil Engineering, Carnegie Mellon University, May 1986
- B.E. in Civil Engineering, American University of Beirut, July 1984 (with Distinction)

3 Professional History

- Associate Professor, University of Washington, Sep 1997 - present
- Assistant Professor, University of Washington, Sep 1991 - Aug 1997
- Visiting Assistant Professor, Carnegie Mellon University, May 1990 - Aug 1991
- Visiting Faculty, University of California, Berkeley, Feb-Aug 1998 (sabbatical leave)
- Visiting Faculty, American University of Beirut, Sep-Dec 1998 (sabbatical leave)

4 Journal Publications

- Jayachandra M. Reddy and George M. Turkiyyah. Computation of 3D Skeletons by a Generalized Delaunay Triangulation Approach. *Computer Aided Design*. Vol. 27, No. 9, pp. 677-694, 1995.
- George M. Turkiyyah, Dorothy A. Reed, and Jiyao Yang. Fast Vortex Methods for Predicting Wind-induced Pressures on Buildings. *Journal of Wind Engineering*. Vol. 58, No. 1, pp. 51-79, 1995.
- Munikumar Vimawala and George M. Turkiyyah. Computational Procedures for Topological Shape Design. *Computer Methods in Applied Mechanics and Engineering*. Vol. 125, pp. 257-285, 1995.
- George Turkiyyah and Steven Fenves. Knowledge-Based Assistance for Finite Element Modeling. *IEEE Expert*. Vol. 11, No. 3, pp. 23-32, 1996.
- Santosh Zachariah, Joan Sanders and George Turkiyyah. Automated Hexahedral Mesh Generation From Biomedical Image Data: Applications in Limb Prosthetics. *IEEE Transactions on Rehabilitation Engineering*. Vol. 4, No. 2, pp. 91-102, 1996.
- George Turkiyyah, Duane Storti, Mark Ganter, Hao Chen, and Munikumar Vimawala. An Accelerated Triangulation Method for Computing Skeletons of Free-form Solid Models. *Computer Aided Design*. Vol. 29, No. 1, pp. 5-19, 1997.
- William Davids and George Turkiyyah. Development of an Embedded Bending Member to Model Dowel Action. *Journal of Structural Engineering*, Vol 123, No 10, pp 1312-1320, 1997.
- William Davids, George Turkiyyah, and Joe Mohoney. EVERFE: A Rigid Pavement 3D Finite Element Analysis Tool. Transportation Research Record, No. 1629, pp 41-49, 1998.
- William Davids and George Turkiyyah. A Multigrid Preconditioner for Unstructured 3D FE Models Incorporating Contact Nonlinearities. *Journal of Engineering Mechanics*, Vol. 125, No. 2, pp 186-196, 1999.
- Rob Blanding, George Turkiyyah, Duane Storti, and Mark Ganter. Skeleton-based Three-dimensional Geometric Morphing. *Journal of Computational Geometry*, Vol. 15, pp 129-148, 2000.
- A Skeletal/Metaball Shape Representation to Support Deformable Solid Modeling. Cole Brooking, Mark Ganter, Duane Storti, and George Turkiyyah. *Journal of Mathematical Modeling and Scientific Computation*, Vol 10, June 2000.

5 Fully-Refereed Conference Proceedings

- George Turkiyyah and Omar Ghattas. Geometric Reasoning for Shape Design. *Ninth National Conference on Artificial Intelligence* (AAAI-91), pp. 874-879, 1991.

- Check Lim, George Turkiyyah, Mark Ganter, and Duane Storti. Implicit Reconstruction of Solids from Cloud Point Sets. *Third ACM Symposium on Solid Modeling and Applications*, pp. 393-402, May 1995.

- Derek Stal and George Turkiyyah. Skeleton-Based Techniques for the Creative Synthesis of Structural Shapes. *Artificial Intelligence in Design '96.* pp 761-780. Kluwer Academic Publishers, 1996.

- Duane Storti, George Turkiyyah et al. Skeleton Based Modeling Operations on Solids. *Fourth ACM Conference on Solid Modeling and Applications*, May 1997.

6 Conference Proceedings and Other Non-journal Articles

- William Whittaker, George Turkiyyah, Martial Hebert. An Architecture and Two Case Studies in Range-Based Modeling and Planning. Proceedings of the Third International Conference on Robotics and Automation, IEEE Publications, 1987.

- George Turkiyyah, Steven J. Fenves. Getting Finite Element Programs to Reason About Their Analysis Assumptions. Computer Utilization in Structural Engineering. Proceedings of ASCE Structures Congress, May 1989.

- George Turkiyyah, Omar Ghattas. Systematic Shape Parameterization for Shape Optimization. Sensitivity Analysis and Optimization with Numerical Methods. AMSE Winter Annual Meeting, 1990.

- George Turkiyyah, John Jaeger, Sunil Saigal. A Mechanical Strength Critic for a Simultaneous Engineering Design Environment. ASCE Tenth Conference on Electronic Computation. 1991.

- Dorothy A. Reed, George M. Turkiyyah. A Computational Modeling Environment for Wind Engineering, 7th National Conference on Wind Engineering, June, 1993.

- Suzanne Pollon, Lea Adams, Richard Palmer, George Turkiyyah. A Multimedia Knowledge Based System for Bridge Scour Inspection. *Proceedings of the 1994 ASCE Civil Engineering Computing Congress*, 1994.

- George Turkiyyah, Dorothy Reed, Jiyao Yang. Random Vortex Models in Wind Engineering. *Proceedings of the 1994 ASCE Civil Engineering Computing Congress*, 1994.

- Calvin Lin, Lawrence Snyder, George Turkiyyah. A Portable Parallel N-body Solver. *Seventh SIAM Conference on Parallel Processing for Scientific Computing*, Feb 1995.

- George Turkiyyah, Duane Storti, Mark Ganter, Hao Chen. A Skeleton-Based Approach to Automated Hexahedral Mesh Generation for Solid Models. *Fourth International Meshing Roundtable.* Sandia National Labs, Oct 1995.

- George Turkiyyah, Dorothy Reed, Cecile Viozat, Calvin Lin. Parallel performance of a Meshless method for Wind Engineering simulations. *Proceedings of the Twelfth Analysis and Computation Conference, ASCE Structures Congress*, April 1996.

- George Turkiyyah, Dorothy Reed. 3D Discrete Vortex Methods and their Parallel Implementation. *Proceedings of the International Symposium on Advances in Bridge Aerodynamics*, May 1998.

- George Turkiyyah, Greg Fenves. Simulation Tools to Support Performance-based Earthquake Engineering. *Proceedings of the NSF Invitational Workshop on Distributed Information, Computation, and Process Management for Scientific and Engineering Environments*, May 1998.

- Duane Storti, Chad Redl, Mark Ganter, George Turkiyyah, and Tony Woo. Encapsulated Transmission of Part Specifications for Distributed Solid Freeform Fabrication. *Proceedings of ASME Design Automation Conference*, Oct 1999.

- Jeff Berkeley, Peter Oppenheimer, Suzanne Weghorst, Dan Berg, Greg Raugi, Mark Ganter, and George Turkiyyah. Creating Fast Finite Element Models from medical Images. *Proceedings of MMVR 2000*, Jan 2000.

- Hongyu Wu, George Turkiyyah, and Walid Keirouz. ZPLCLAW: A Parallel Portable Toolkit for Wave Propagation Problems. *Proceedings of the Fourteenth Analysis and Computation Conference, ASCE Structures Congress*, May 2000.

- Duane Storti, Mark Ganter, George Turkiyyah, and Cole Brooking. Skeleballs: Hybrid Skeleton/Metaball Solid Models for Automated Shape Generation. *Advances in Design Automation*, Aug 2000.

7 Books

- Steven J. Fenves and George Turkiyyah. Artificial Intelligence Techniques in Mathematical Modeling. In T. Oden (editor), *Research Directions in Computational Mechanics*, pp. 39-57, National Academy Press, 1991.

8 Editing and Other Scholarly Papers

- Guest editor of a special section on Computational Wind Engineering in *Engineering Structures*, 18(11), Nov 1996.

9 Sponsored Research

- *A Combined 'Geometric Reasoning and Numerical Optimization' Methodology for Three Dimensional Shape Synthesis*, (w O. Ghattas, Carnegie Mellon).
  10/91-10/93, NSF (DDM), $124,171.

- *Automated Three-Dimensional Finite Element Mesh Generation.*
  1/92–12/92, GSRF, $6282.

- *Expert System for Stream Stability and Scour Evaluation*, (w R. Palmer).
  3/93-6/95, NCHRP, $250,000.
- *Systematic Generation, Optimization, and Adaptation of Grids for Complex Three Dimensional Shapes.*
  6/93-3/95, NASA Ames, $53,265.
- *Constructibility Review Framework*, (w J. Stanton and J. McManus).
  9/94-12/95, WSDOT, $58,200.
- *Knowledge Based Scour Inspection System*, (w R. Palmer).
  3/95-6/96, WSDOT, $46,350.
- *Mathematical Representations of Solids for Layered manufacturing and Design*, (w M. Ganter and D. Storti).
  2/95-2/98, ONR, $458,626.
- *Expert System for Stream Stability and Scour Evaluation (Phase II)*, (w R. Palmer).
  3/96-3/98, NCHRP, $250,000.
- *Enhanced Finite Element Tools for Rigid Pavement Analysis*, (w J. Mahoney).
  7/95-6/97, WSDOT, $75,000.
- *Procedures for Analysis of Pavement Response for the High-Speed Road Deflection Tester*, (w J. Mahoney and S. Kramer).
  1/96-1/98, SRA, $120,510.
- *Reduced Instruction Design for Solid Freeform Fabrication*, (w D. Storti, T. Woo, and M. Ganter).
  6/97-6/00, NSF, $726,289.
- *3D Clip Art Animator Prototype Development*, (w D. Storti and M. Ganter),
  7/97-6/99, UW office of Technology Transfer, $42,754.
- *Parallel Implementation of a 3D Finite Element Rigid Pavement Simulation.*
  1/98-9/98, WES, $16,000.
- *A Platform for Nonlinear Dynamic Analysis and Simulation of Structural and Geotechnical Systems.*
  8/15/98 - 8/15/01, NSF/PEER, $140,000.
- *Enhancements to the EVERFE Finite Element Program*, (w J Mahoney)
  9/1/99 - 2/28/01, WSDOT, $75,000.
- *Development and Implementation of Pavement Tools*, (w J. Mahoney)
  5/1/00 - 12/31/01, WSDOT, $119,848.

10 Project Reports

- Generation and Interpretation of Finite Element Models in a Knowledge Based Environment. George Turkiyyah and Steven J. Fenves. Technical Report R-90-188, 114p., Civil Engineering Dept, Carnegie Mellon University. 1990.

- Computational Procedures for Topological Shape Design. Munikumar Vimawala, George Turkiyyah, Technical Report SGEM-94-5, 137p., Department of Civil Engineering, University of Washington, July 1994.
- A Framework for the Constructibility Review of Transportation Facilities. Jim McManus, Nathalie Philip, John Stanton, George Turkiyyah. Prepared for WSDOT, 65p., TRAC report T9903-34, August 1995.
- Expert System for Stream Stability and Scour Evaluation. Richard Palmer, George Turkiyyah, Lea Adams, Sieu Quan. Final Report for NCHRP project 24-6, 140p., National Research Council, Washington D.C., August 1995.
- User's Guide for the Bridge Scour/ Stream Stability Expert System. Richard Palmer, George Turkiyyah, Sieu Quan. Prepared for NCHRP project 24-6, 70p., National Research Council, Washington D.C., August 1995.
- Skeleton Generation and Skeleton-Based Shape Design in Three Dimensions. Derek M. Stal, George M. Turkiyyah. SGEM-95-9, 106p., Department of Civil Engineering, University of Washington, September 1995.
- User's Guide for Everfe. Ross Teneyck, William Davids, George Turkiyyah, and Joe Mahoney. Prepared for WSDOT, 1997.
- CAESAR: An Expert System for Evaluation of Scour and Stream Stability. Richard Palmer, George Turkiyyah. Prepared for NCHRP project 24-6, 156p., National Research Council, Washington D.C., Sept 1998.

11 Other Research-Related Activities

Widely Distributed Software

- EVERFE: A software system for the analysis of rigid pavements.
`http://www.ce.washington.edu/~everfe`
- CAESAR: A software system for the evaluation of scour at bridge sites.
`http://www.ce.washington.edu/~scour`
- Electronic WSDOT Pavement Design Guide: A Multimedia Pavement Design Guide. CDs available through WSDOT.

Patents Granted

- Apparatus and Method for Using a Computer to Construct Accurate Shape Skeletons of 3D Objects. US patent to issue May 2000, (Application serial No. 08/862,217). G. Turkiyyah, D. Storti, M. Ganter, and H. Chen.

- Apparatus and Methods for Object Interpolation and Metamorphosis Using Skeletons. US patent to issue Summer 2000, (Application serial No. 08/862,621). G. Turkiyyah, D. Storti, and M. Ganter.
- System and Method for Using a Computer to Construct Solid Models from layered Surface Data. US patent to issue Summer 2000, (Application serial No. 08/862,838). G. Turkiyyah, D. Storti, M. Ganter, and C. Lim.

12 Invited Lectures and Seminars

- "Integrated Strategies for Modeling and Synthesis of Shape", Computer Science Department, UW, November, 1992.
- "Conceptual Plan for a Scour and Stream Stability Expert System", NCHRP, Washington, DC, February, 1994.
- "Fast Vortex Methods for Predicting Wind-induced Pressures on Building Systems", Applied Math Department, UW, March, 1994.
- "Mesh Generation for High Performance Simulations in Complex 3D Geometries", NASA - Ames, Moffett Field, CA, August, 1994.
- "A Computational Environment for Geometric and Topological Shape Optimization", Boeing (Computer Services Division), September, 1994.
- "Developments in 3D CAD Environments" Washington State County Road Administration Board CEAL Conference, Olympia, October, 1994.
- "Implementation Plan for a Constructibility Review Framework", WSDOT, Olympia, June 1995.
- "Fast Vortex Methods in Wind Engineering", Symposium on Bridge Aerodynamics, COWI, Copenhagen, May 1998.
- "Finite Element Modeling of Rigid Pavement Joints: Shear Transfer and solutions strategies", American University of Beirut, Nov 1998.

13 Presentations Given at Conferences

- "An Adaptive Optimization Methodology for Shape Design" Second SIAM Conference on Geometric Design, Tempe, AZ, November, 1991.
- "A Multimedia Knowledge Based System for Bridge Scour Inspection". 1994 Civil Engineering Computing Congress, Washington, DC, June 1994.
- "Random Vortex Models in Wind Engineering". 1994 Civil Engineering Computing Congress, Washington, DC, June 1994.

- "Knowledge-Based tools and Multimedia Interfaces for Scour Inspection", TRB Annual meeting, Washington, DC, 1995.
- "Implicit Reconstruction of Solids from Cloud Point Sets". Third Symposium on Solid Modeling and Applications, Salt Lake City, May 1995.
- "Fast Parallel Multilevel Methods for Vortex Simulations", Second Computational Mechanics Congress, Dallas, June 1995.
- "Skeleton-Based Hexahedral Mesh Generation", Fourth International Meshing Roundtable, Albuquerque, October 1995.
- "Meshless Methods in Wind Engineering", Fourteenth ASCE Structures Congress, Chicago, April 1996.
- "Performance Based Shape Design", Fifth IFIP Workshop on Geometric Modeling in CAD, Airlie, May 1996.
- "Skeleton-Based Techniques for the Creative Synthesis of Structural Shapes", Fourth International Conference on Artificial Intelligence in Design, Stanford, June 1996.
- "Parallel Performance of a 3-Dimensional Grid-free Vortex Method for Wind Engineering simulations", Second International Symposium on Computational Wind Engineering, Fort Collins, August 1996.

14 Professional Licenses

15 Professional Society Memberships

- American Society of Civil Engineers (1992-present)
- Association for Computing Machinery (1992-present)
- Society for Industrial and Applied Mathematics (1992-present)

16 Professional Society and Other Service

- Committee on Emerging Computing Technology. Control Group. ASCE Structures Institute. (1995-present).

17 Reviews Made

- ASCE Journal of Computing, Engineering with Computers, IEEE Expert, Journal of Aerospace Engineering, Journal of Structural Engineering, Engineering Structures,

Computer Aided Design, Journal of Wind Engineering, Journal of Manufacturing Science and Engineering, International Journal on Computational Geometry & Applications, Journal of Engineering Mechanics, Graphical Models and Image Processing.

- NSF proposals (2 in 1998).

18 Awards and Honors

- Graduated with distinction and ranked first in graduating class, AUB, 1984
- Robotics Institute Fellowship, Carnegie Mellon, 1985-1986
- Ben Franklin Fellowship, Carnegie Mellon, 1986-1987
- Finalist in Robert Melosh "Best Finite Element Paper" competition, 1991
- DOE (Ames Laboratory) Undergraduate Computational Science Award (Honorable Mention), 1994

19 Teaching

Quarter	Course	TA/Grader Hrs/Wk used	Number of Students	Student Evaluations Line 3	Line 4	Ave 1-4
Aut 91	CIVE 379	20 hrs/wk	85	3.43	3.12	3.29
Win 92	CESM 480	—	28	3.50	3.27	3.47
Spr 92	CESM 599[1]	—	22	—	—	—
Spr 92	CIVE 379	20 hrs/wk	78	3.80	3.59	3.66
Aut 92	CESM 599[1]	—	17	4.31	4.08	4.04
Aut 92	CIVE 379	20 hrs/wk	81	4.15	4.11	4.01
Spr 93	CIVE 451	10 hrs/wk	36	4.08	3.68	3.88
Spr 93	CESM 599[2]	—	5	5.00	5.00	4.94
Aut 93	CESM 599[1]	—	20	3.68	3.63	3.66
Aut 93	CIVE 441	—	24	4.35	4.06	4.09
Spr 94	CIVE 451	—	30	4.13	4.17	4.10
Spr 94	CESM 599[2]	—	7	4.33	4.33	4.42
Aut 94	CESM 599[1]	—	12	3.50	3.70	3.63
Aut 94	ENGR 210	20 hrs/wk	51	3.89	3.89	3.82
Spr 95	CIVE 451	—	32	3.79	3.64	3.73
Spr 95	CESM 599[2]	—	4	4.25	4.25	4.25
Aut 95	CESM 599[1]	—	12	3.9	3.5	3.8
Win 96	ENGR 210	40 hrs/wk	110	team taught with Janssen		
Win 96	CIVE 441	—	17	4.6	4.1	4.1
Spr 96	CESM 599[2])	—	3	4.3	4.3	4.3
Aut 96	CESM 599[1]	—	18	4.0	3.8	3.9
Win 97	CESM 504	—	14	4.0	4.0	4.1
Win 97	CIVE 457	—	18	4.0	3.9	3.8
Spr 97	CIVE 379	20 hrs/wk	44	3.6	3.3	3.5
Aut 97	CIVE 379	20 hrs/wk	55	3.64	3.67	3.43
Aut 97	CESM 501B	—	18	4.0	3.83	3.8
Spr 99	ENGR 220	3 TAs	117	3.35	3.86	3.38
Aut 99	CIVE 498	2 TAs	52	-	-	-
Win 00	CIVE 379	2 TAs	51	4.19	4.23	4.13
Spr 00	CIVE 498	2 TAs				
Spr 00	CIVE 457	2 TAs				

[1] Introduction to Computer Aided Engineering
[2] Nonlinear Analysis Methods in Structural Mechanics

20 Short Courses, Workshops, and Other Educational Programs

- Professional Engineering Practice Liaison (PEPL) Course, "Introduction to Earthquake Engineering", (Fall 92, Fall 94)
- ASCE Tutorial, "Object Oriented Programming for Structural Engineering Applica-

tions", April 1996

21 Chaired Doctoral Degrees

- Bill Davids, 6/98
- Hongyu Wu, PhD candidate (passed his quals 3/98)
- Rob Blanding (started PhD 9/99)
- Jeff Berkeley (w/ M. Ganter).

22 Chaired Masters Degrees

- Jayachadra Reddy (CMU), 6/92
- Michael Rehder, 12/92
- Jiyao Yang, 6/93
- Won-Seok Do, 9/93
- Munikumar Vimawala, 6/94
- Suzanne Pollon, 12/94
- Harri Yli-Villamo, 12/94
- Robert Goldstein, 12/94
- Cecile Viozat, 3/95
- Derek Stal, 9/95
- Eric Soroos, 3/97
- Paul Harmsen, 9/97
- Mason Yamaki, 6/98
- Cole Brooking (ME), 9/99
- Sieu Quan, 9/99?
- Ahmad Husseiny, 12/00?

23 Other Student Supervision

- PhD Committees: Ana Barros, Michael Rucki, Chaoming Zhang, Jean Schweitzer, Chek-Toon Lim, John Horne, Jinkyu Yu, Craig Newtson
- MS Committees: Leo McKinley, Janice Zahn, Anne Van Eaton, Harry Hye, Scott Rodehaver, James Strout, Andrew Mole, Stanley Ryter, Marianne Redanz, Sandro Kodoma, Kazuhiko Morishita, Soo Kuan Teo, Nathalie Philip, Byron Miranda

24 Departmental Service

- Departmental Computer Committee, 1991-present.
- Undergraduate Admissions Committee, 1993.
- Departmental Resource Committee, 1994.
- Faculty Search committee, 1996.
- SGEM PhD Preliminary Exam committee (1993, 1995, member; 1994, chair).

25 College Service

- CRISP

26 University Service

- Review of "Elevator Study" for the EE/CSE building, 1993.
- Faculty Senate 96-98

27 Student Service

28 Community Service

29 National Service