Curriculum Vitae

Andrew Martin Pownuk

1 Contact Information

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2 Education

- 2021 – Machine Learning, An online non-credit course authorized by Stanford University and offered through Coursera, Instuctor Andrew Ng.

- 2015-2017 – Ph.D. degree in Computational Science, Computational Science Ph.D. Program, The University of Texas at El Paso, El Paso, Texas, USA. Dissertation title: Combining Interval and Probabilistic Uncertainty in Engineering Applications. Supervisor: Prof. Vladik Kreinovich.

- 2015-2016 – Master's degree in Computational Science, Computational Science Program, The University of Texas at El Paso, El Paso, Texas, USA. Thesis title: Combining Interval and Probabilistic Uncertainty in Engineering Applications. Supervisor: Prof. Vladik Kreinovich.

- 2013-2014 – Master's degree in Mathematics, Department of Mathematical Sciences, The University of Texas at El Paso, El Paso, Texas, USA. Thesis title: Fast Algorithm for Finding Lattice Subspaces in R^n and its Implementation. Supervisor: Prof. Piotr Wojciechowski.

- 1995-2001 – Ph.D. degree, Department of Civil Engineering, Silesian University of Technology in Gliwice, Poland. Dissertation title: Application of Fuzzy Sets Theory to Assessment of Reliability of Civil Engineering Structures. Supervisor: Prof. Jerzy Skrzypczyk.

- 1997-1998 – Postgraduate Diploma (PGDip) in Computer Science, Speciality: Computer Networks and Databases, Department of Automatic Control, Electronics and Computer Science, Silesian University of Technology in Gliwice, Poland. Thesis title: Web Applications for Teaching of the Finite Element Method. Supervisor: Prof. Wojciech Mielczarek.

- 1990-1995 – M.S./B.S. degree and Engineering degree, Applied Mechanics, Department of Applied Mathematics, Silesian University of Technology, Gliwice, Poland. Diploma with honorable mention. Thesis title: Variational Equations in the Theory of Torsion of Prismatic Bars with Numerical Analysis. Supervisor: Prof. Szczepan Borkowski.

3 Work Experience

3.1 Reasearch and Teaching

- Fall 2023 - Present – Full Time Computer Science Instructor, El Paso Community College, El Paso, Texas, USA.

- Spring 2020 - Summer 2023 – Part Time Computer Science Instructor, El Paso Community College, El Paso, Texas, USA.

- 2006-Present – Department of Mathematical Sciences, The University of Texas at El Paso, El Paso, Texas, USA.

  - 2021-Present – Associate Professor of Instruction
  - 2006-2021 – Lecturer

  2020-Present – Adjunct (Part-Time) Faculty, Division: Education and CTE, Discipline: Computer Science and ITS, El Paso Community College, El Paso, Texas, USA.

- 1995-2010 – Institute of Theoretical Mechanics, Department of Civil Engineering, Silesian University of Technology in Gliwice, Poland.

  - 2001-2010 – Assistant Professor (2006-2010 - sabbatical leave)
  - 1995-2001 – Lecturer and Ph.D. Student

3.2 Postdoctoral Positions

- 2020 - Summer Faculty Research Fellowship at U.S. Army CCDC Army Research Laboratory, Adelphi, MD., Machine Learning Based Optimization, Supervisor: Jade Freeman.

- 2006 – Postdoctoral Position (Researcher), Bergen Language Design Laboratory (BLDL), Department of Computer Science, The University of Bergen, Bergen, Norway. Project: SAGA - Scientific Computing with Algebraic and Generative Abstractions. Supervisor: Prof. Magne Haveraaen.

- 2003 – Postdoctoral Position (Researcher), Department of Mathematics, Faculty of Natural Sciences and Mathematics, University of Vienna, Vienna, Austria. COCONUT Project - COntinuous CONstraints - Updating the Technology. Supervisor: Prof. Arnold Neumaier.

- 2002 – Research Engineer, Chevron Corporation, San Ramon, California, USA.

4 Supplementary Education

- 08.12.2023 – Adult Mental Health First Aid USA, National Council for Mental Wellbeing.

- 11.07.2022 – HyFlex Academy, Center for Instructional Design, University of Texas at El Paso.

- 07.22.2022 – Teaching Online Academy, Center for Instructional Design, University of Texas at El Paso.

- 06.24.2022 – Blackboard Learn Ultra Training, Distance Support Services, El Paso Community College.

- 09.12.2019 – QPR Gatekeeper Certificate, QPR Suicide Prevention Gatekeeper Program, University of Texas at El Paso.

- 2018-2019 – Effective Teaching Practices, Association of College and University Educators (ACUE), ACUE-17630296.

- May 22-26, 2017 – Conference Board of the Mathematical Sciences (CBMS), Conference on Sparse Approximation and Signal Recovery Algorithms, Las Cruces, New Mexico. Principal Lecturer, Anna C. Gilbert.

- 1999 (July) – Brno University of Technology, Czech Republic, Central European Exchange Program for University Studies (CEPUS). The stochastic finite element method and the theory of reliability.

- 1995-1999 – British Council, School of English Language.

- 1993-1995 – Course for teachers at the Research Center and Improvement of Didactics, Gliwice, Poland.

- 1994 (July-August) – Student Internship, CMG KOMAG, Mining Mechanization Center, Gliwice, Poland. Applications of the engineering software (PAFEC FEM) for the design of mining machines.

5 Community Service

- 2019 – El Paso Chopin Music Festival Committee.

6 Awards

- 2018 – 2018 NAFIPS Best Thesis Award.

- 2017 – Academic and Research Excellence Graduate Student in Computational Science, the University of Texas at El Paso, El Paso, Texas, USA.

- 2014 – Academic and Research Excellence Graduate Student in Mathematics, the University of Texas at El Paso, El Paso, Texas, USA.

- 2000 – Award for Scientific Achievements, Silesian University of Technology, Gliwice, Poland.

- 1995 – Master's thesis with honorable mention.

7 Grants

- 2012 – Principal Investigator – Project for Chevron Oil Company in Houston, Texas.

- 2006 – Participant – Scientific Computing with Algebraic and Generative Abstractions. University of Bergen, Bergen, Norway.

- 2003-2004 – Participant – Continuous Constraints - Updating the Technology. Vienna University, Vienna, Austria.

- 1998-2001 – Participant – Interval and Qualitative Methods of Modeling Uncertainty in Physical Systems. Silesian University of Technology, Gliwice, Poland.

- 1996-1997 – Participant – Application of Boundary Element Method in Some Problems of Computational Mechanics. Silesian University of Technology, Gliwice, Poland.

8 Book

1. M.V. Rama Rao and A. Pownuk, Finite Element Analysis of Structures using MATLAB, BS Publications 2023, ISBN 978-93-95038-53-9

2. A. Pownuk and V. Kreinovich, Combining Interval, Probabilistic, and Other Types of Uncertainty in Engineering Applications, Springer 2018.

9 Book Chapters

1. P. Melin, O. Castillo, A. Pownuk, O. Kosheleva, and V. Kreinovich, How to Gauge the Accuracy of Fuzzy Control Recommendations: A Simple Idea, In: P. Melin, O. Castillo, J. Kacprzyk, M. Reformat, and W. Melek

(eds.), Fuzzy Logic in Intelligent System Design: Theory and Applications, Springer Verlag, Cham, Switzerland, 2018, pp. 287-292.

2. A. Pownuk, V. Kreinovich, and S. Sriboonchitta, Fuzzy Data Processing Beyond Min t-Norm, In: C. Berger-Vachon, A. Maria Gil Lafuente, J. Kacprzyk, Y. Kondratenko, J. M. Merigo Lindahl, and C. Morabito (eds.), *Complex Systems: Solutions and Challenges in Economics, Management, and Engineering*, 237-250, Springer 2018.

3. A. Pownuk and V. Kreinovich, (Hypothetical) negative probabilities can speed up uncertainty propagation algorithms, In: A. E. Hassanien, M. Elhoseny, A. Farouk, and J. Kacprzyk (eds.), *Quantum Computing: an Environment for Intelligent Large Scale Real Application*, 251-271, Springer 2018.

4. V. Kreinovich, A. Pownuk, and O. Kosheleva, Combining interval and probabilistic uncertainty: What is computable?, in: P. Pardalos, A. Zhigljavsky, and J. Zilinskas (eds.), *Advances in Stochastic and Deterministic Global Optimization*, 13-32, Springer, Cham, Switzerland 2016.

5. M. Ceberio, V. Kreinovich, A. Pownuk, and B. Bede, From interval computations to constraint-related set computations: towards faster estimation of statistics and ODEs under interval, p-box, and fuzzy uncertainty, in: JingTao Yao (ed.), *Novel Developments in Granular Computing: Applications for Advanced Human Reasoning and Soft Computation*, 131-147, IGI Global 2010.

6. A. Pownuk, Numerical solutions of fuzzy partial differential equation and its application in computational mechanics, in: M. Nikravesh, L. Zadeh and V. Korotkikh, (eds.), *Fuzzy Partial Differential Equations and Relational Equations: Reservoir Characterization and Modeling*, 308-347, Springer 2004.

10   Textbook

1. J. Jedrzejczyk-Kubik, A. Pownuk, and J. Skrzypczyk, *Selected Mathematical Problems with Exercises* (in Polish), Publishing House of the Silesian University of Technology, ISBN 978-83-7335-578-1, Gliwice, Poland, 2010.

11   Journal Papers

1. A. Pownuk and V. Kreinovich, Towards Decision Making under Interval Uncertainty, *Journal of Uncertain Systems*, 12, 3, 200-207, 2018.

2. A. Pownuk and V. Kreinovich, How Interval Measurement Uncertainty Affects the Results of Data Processing: A Calculus-Based Approach to

Computing the Range of a Box, *Mathematical Structures and Modeling*, 46, 118-124, 2018.

3. A. Pownuk, O. Kosheleva, and V. Kreinovich, Towards Decision Making under General Uncertainty, *Mathematical Structures and Modeling*, 44, 109-119, 2017.

4. A. Pownuk and V. Kreinovich, Why linear interpolation?, *Mathematical Structures and Modeling*, 43, 43-49, 2017.

5. A. Pownuk and V. Kreinovich, Why Mixture of Probability Distributions?, *International Journal of Intelligent Technologies and Applied Statistics (IJITAS)*, 10(2), 41-45, 2017.

6. V. Kreinovich, O. Kosheleva, A. Pownuk, and R. Romero, How to take into account model inaccuracy when estimating the uncertainty of the result of data processing, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*, 3(1), Paper No. 011002, 2017.

7. A. Pownuk, P. Barragan Olague, and V. Kreinovich, Why Compaction Meter Value (CMV) Is a Good Measure of Pavement Stiffness: Towards a Possible Theoretical Explanation, *Mathematical Structures and Modeling*, 40, 48-54, 2016.

8. A. Pownuk, L. Longpre, and V. Kreinovich, Checking monotonicity is NP-Hard even for cubic polynomials, *Reliable Computing*, 18, 90-96, 2013.

9. M.V. Rama Rao, A. Pownuk, M. De Munck, and D. Moens, Fuzzy analysis of the moment of resistance of a doubly reinforced concrete beam with uncertain structural parameters, *Life Cycle Reliability and Safety Engineering*, 2(1), 9-20, 2013.

10. M.V. Rama Rao, A. Pownuk, S. Vandewalle, and D. Moens, Transient response of structures with uncertain structural parameters. *Journal of Structural Safety,* 32(6), 449-460, 2010.

11. A. Pownuk, N. Kumar, and G. Ramunigari, Application of order-preserving functions to the modeling of computational mechanics problems with uncertainty, *Reliable Computing*, 15, 132-143, 2011.

12. A. Pownuk, Mathematical aspects of grading student's homework in online web applications, *Journal of Uncertain Systems,* 5(2), 141-153, 2011.

13. M. V. Rama Rao, A. Pownuk, and I. Skalna, Stress analysis of a singly reinforced concrete beam with uncertain structural parameters, *International Journal of Reliability and Safety*, 3(1/2/3), 307-329, 2009.

14. I. Skalna and A. Pownuk, Global optimization method for computing interval hull solution for parametric linear systems, *International Journal of Reliability and Safety*, 3(1/2/3), 235-245, 2009.

15. I. Skalna, M.V. Rama Rao, and A. Pownuk, Systems of fuzzy equations in structural mechanics, *Journal of Computational and Applied Mathematics*, 218(1), 149-156, 2008.

16. A. Neumaier and A. Pownuk, Linear Systems with Large Uncertainties, with Applications to Truss Structures, *Journal of Reliable Computing*, 13(2), 149-172, 2007.

17. A. Pownuk, Optimization of mechanical structures using interval analysis, *Computer Assisted Mechanics and Engineering Sciences*, 7(4), 699-705, 2000.

18. M. Jasinski and A. Pownuk, Modeling of heat transfer in biological tissue by interval FEM, *Computer Assisted Mechanics and Engineering Sciences*, 7(4), 551-558, 2000.

19. Z. Kulpa, A. Pownuk, and I. Skalna, Analysis of linear mechanical structures with uncertainties by means of interval methods, *Computer Assisted Mechanics and Engineering Sciences*, 5, 443-477, 1998.

12 Peer-reviewed Papers Published in the Research Bulletins

1. A. Pownuk, Interval methods for solution of nonlinear equations of structural mechanics (in Polish), *Research Bulletin of the Institute of Applied Mechanics*, 9, Silesian University of Technology, Gliwice, Poland, 321-236, 1999.

2. A. Pownuk, Modeling of uncertain parameters in mechanical structures by using the Interval Mathematics (in Polish), *Research Bulletin of the Institute of Applied Mechanics*, 9, Silesian University of Technology, Gliwice, Poland, 225-230, 1999.

3. A. Pownuk, Application of regular interval Jacobian matrices for calculation of extreme value of mechanical quantities. Part I - theoretical foundations (in Polish), *Scientific Bulletin of the Silesian University of Technology, Civil Engineering Series*, 86, 167-174, 1999.

4. A. Pownuk, Application of regular interval Jacobian matrices for calculation of extreme value of mechanical quantities. Part II - numerical examples (in Polish), *Scientific Bulletin of the Silesian University of Technology, Civil Engineering Series*, 86, 175-182, 1999.

5. A. Pownuk, Interval methods for solution of the equation of structural mechanics (in Polish), *Scientific Bulletin of the Silesian University of Technology, Civil Engineering Series*, 85, 61-74, 1998.

6. J. Skrzypczyk and A. Pownuk, On some method of estimation of upper value of mechanical quantities under interval uncertainty (in Polish), *Scientific Bulletin of the Institute of Applied Mechanics*, 7, Silesian University of Technology, Gliwice, Poland, 323-328, 1998.

7. J. Skrzypczyk and A. Pownuk, Methods for solution of the interval system of equations in the fuzzy mechanics (in Polish), Scientific Bulletin of the Institute of Applied Mechanics, 4, Silesian University of Technology, Gliwice, Poland, 323-328, 1997.

13   Papers in Conference Proceedings

1. V. Kreinovich, A. M. Pownuk, O. M. Kosheleva, and A. Belina, When is Propagation of Interval and Fuzzy Uncertainty Feasible? *Proceedings of the 8th International Workshop on Reliable Engineering Computing REC'2018*, Liverpool, UK, July 16-18, 2018.

2. A. Pownuk and V. Kreinovich, Why Unexpectedly Positive Experiences Make Decision Makers More Optimistic: An Explanation, *Proceedings of the 10th International Workshop on Constraint Programming and Decision Making CoProd'2017*, El Paso, Texas, November 3, 2017, pp. 33-37.

3. A. Pownuk and V. Kreinovich, Which Value $\widetilde{x}$ Best Represents a Sample $x_1, \ldots, x_n$: Utility-Based Approach Under Interval Uncertainty, *Proceedings of the 10th International Workshop on Constraint Programming and Decision Making CoProd'2017*, El Paso, Texas, November 3, 2017, pp. 43-47.

4. S. Kumkov, V. Kreinovich, and A. Pownuk, In System Identification, Interval (and Fuzzy) Estimates Can Lead to Much Better Accuracy than the Traditional Statistical Ones: General Algorithm and Case Study, *Proceedings of the IEEE Conference on Systems, Man, and Cybernetics SMC'2017*, Banff, Canada, October 5-8, 2017.

5. L. Dymova, P. Sevastjanov, A. Pownuk, and V. Kreinovich, Practical Need for Algebraic (Equality-Type) Solutions of Interval Equations and for Extended-Zero Solutions, *Proceedings of the 12th International Conference on Parallel Processing and Applied Mathematics PPAM'17*, Lublin, Poland, September 10-13, 2017.

6. B. J. Kubica, A. Pownuk, and V. Kreinovich, What Decision to Make In a Conflict Situation under Interval Uncertainty: Efficient Algorithms for the Hurwicz Approach, *Proceedings of the 12th International Conference on Parallel Processing and Applied Mathematics PPAM'17*, Lublin, Poland, September 10-13, 2017.

7. A. Pownuk and V. Kreinovich, Isn't Every Sufficiently Complex Logic Multi-Valued Already: Lindenbaum-Tarski Algebra and Fuzzy logic Are

Both Particular Cases of the Same Idea, *Proceedings of the Joint 17th Congress of International Fuzzy Systems Association and 9th International Conference on Soft Computing and Intelligent Systems*, Otsu, Japan, June 27-30, 2017.

8. A. Pownuk and V. Kreinovich, Which point from an interval should we choose?, *Proceedings of the 2016 Annual Conference of the North American Fuzzy Information Processing Society NAFIPS'2016*, El Paso, Texas, October 31 - November 4, 2016.

9. A. Pownuk, O. Kosheleva, and V. Kreinovich, Limitations of realistic Monte-Carlo techniques in estimating interval uncertainty, *Proceedings of the 7th International Workshop on Reliable Engineering Computing REC'2016*, Bochum, Germany, 269-284, June 15-17, 2016.

10. V. Kreinovich, O. Kosheleva, A. Pownuk, and R. Romero, How to take into account model inaccuracy when estimating the uncertainty of the result of data processing, *Proceedings of the ASME 2015 International Mechanical Engineering Congress & Exposition IMECE'2015*, Houston, Texas, November 13-19, 2015.

11. C.D. Stylios, A. Pownuk, and V. Kreinovich, Sometimes, it is beneficial to process different types of uncertainty separately, *Proceedings of the Annual Conference of the North American Fuzzy Information Processing Society NAFIPS'2015 and 5th World Conference on Soft Computing, Redmond*, Washington, August 17-19, 2015.

12. I. Skalna, M.V. Rama Rao, and A. Pownuk, Dynamic response of beams to interval load, *5th International Conference on Reliable Engineering Computing*, Brno University of Technology, Brno, Czech Republic, June 13-15, 2012.

13. A. Pownuk, Solution of the interval equations of dynamics by using adaptive approximation, *Proceedings of the Annual Conference of the North American Fuzzy Information Processing Society NAFIPS'2011*, El Paso, Texas, March 18-20, 2011.

14. I. Skalna and A. Pownuk, Applications of the global optimization methods for the solution of truss structures with interval parameters, *Proceedings of the Workshop on Global Optimization*, Toulouse, France, August 31-September 3, 2010.

15. A. Pownuk, B. Djafari-Rouhani, and N.K. Goud Ramunigari, Finite Element Method with the interval set parameters and its applications in computational science, *Proceedings of the American Conference on Applied Mathematics*, Harvard University, Cambridge, ISBN: 978-960-474-150-2, ISSN: 1790-2769, 310-315, January 27-29, 2010.

16. A. Pownuk and N.K. Goud Ramunigari, Design of 2D elastic structures with the interval parameters, *Proceedings of the 11th WSEAS Int. Mathematical and Computational Methods in Science and Engineering*, Baltimore, MD. ISBN 978-960-474-133-5, 25–29, November 7-9, 2009.

17. A. Pownuk, J. Cerveny, and J.J. Brady, Fast algorithms for uncertainty propagation, and their applications to structural integrity, *Proceedings of the Annual Conference of the North American Fuzzy Information Processing Society NAFIPS'2008*, New York, NY, Paper number 60510, May 19-22, 2008.

18. M.V. Rama Rao and A. Pownuk, Design of truss and frame structures with interval and fuzzy parameters, *Proceedings of the Annual Conference of the North American Fuzzy Information Processing Society NAFIPS'2008*, New York, New York, Paper number 60511, May 19-22, 2008.

19. A. Pownuk, General interval FEM program based on sensitivity analysis, *Proceedings of the NSF Workshop on Reliable Engineering Computing*, Savannah, Georgia, 397-428, February 20-22, 2008.

20. M.V. Rama Rao, A. Pownuk, and I. Skalna, Stress analysis of a singly reinforced concrete beam with uncertain structural parameters, *Proceedings of the NSF Workshop on Reliable Engineering Computing*, Savannah, Georgia, 459-478, February 20-22, 2008.

21. I. Skalna and A. Pownuk, On using global optimization method for approximating interval hull solution of parametric linear systems, *Proceedings of the NSF workshop on Reliable Engineering Computing*, Savannah, Georgia, February 20-22, 81-89, 2008.

22. M.V. Rama Rao and A. Pownuk, Stress distribution in a reinforced concrete flexural member with uncertain structural parameters, *Proceedings of the International Conference on Recent Developments in Structural Engineering*, Manipal Institute of Technology, Manipal, India, August 30 - September 1, 138-148, 2007.

23. G. Xiang, A. Pownuk, S.A. Starks, and O. Kosheleva, Von Mises failure criterion for ductile materials: how to efficiently use it under interval and fuzzy uncertainty, *Proceedings of the Annual Conference of the North American Fuzzy Information Processing Society NAFIPS'2007*, San Diego, California, 570-575, June 24-27, 2007.

24. M. Ceberio, V. Kreinovich, A. Pownuk, and B. Bede, From interval computations to constraint-related set computations: towards faster estimation of statistics and ODEs under interval, p-Box, and fuzzy uncertainty, *Proceedings of the Conference IFSA (International Fuzzy Systems Association)*, Cancun, Mexico, 33-42, June 24-27, 2007.

25. M. Betkowski and A. Pownuk, Analysis of the financial risk of the civil engineering projects with uncertain data (in Polish), *Proceedings of the VII International Scientific Conference, Risk 2005*, ISBN 83-915990-5-1, 349-356, Bydgoszcz, Poland, 23-25 October, 2005.

26. M. Betkowski and A. Pownuk, Application of fuzzy arithmetic for analysis of the risk of civil engineering projects (in Polish), *Proceedings of the VII International Scientific Conference, Risk 2005*, ISBN 83-915990-5-1, 221-228, Bydgoszcz, Poland, 23-25 October, 2005.

27. M. Betkowski and A. Pownuk, Estimation of the financial risk by using the random variables with the fuzzy parameters and the BPFPRAL language (in Polish), *Proceedings of the VII International Scientific Conference, Risk 2005*, 33-38, ISBN 83-915990-5-1, Bydgoszcz, Poland, 23-25 October, 2005.

28. M. Betkowski and A. Pownuk, Calculating risk of cost using Monte Carlo simulation with fuzzy parameters in civil engineering, *Proceeding of the NSF Workshop on Reliable Engineering Computing*, Savannah, Georgia, USA, 179-192, September 15-17, 2004.

29. A. Pownuk, Efficient method of solution of large scale engineering problems with interval parameters based on sensitivity analysis, *Proceeding of the NSF Workshop on Reliable Engineering Computing*, Savannah, Georgia, USA, 305-316, September 15-17, 2004.

30. A. Pownuk, Reliability of structures with interval and random parameters (in Polish), *Proceedings of the II Scientific of Civil Engineering Ph.D. students from the Silesian University of Technology, Scientific Bulletin of the Silesian University of Technology, Civil Engineering Series*, Gliwice, Wisla, Poland, 23-24 November, 2001.

31. A. Pownuk, Calculation of reliability of structures using random sets, *Proceeding of the Symposium on Methods of Artificial Intelligence in Mechanics and Mechanical Engineering*, AI-MECH 2001, Gliwice, Poland, 217-220, November 14-16, 2001.

32. A. Pownuk, Reliability of structures with interval and random parameters (in Polish), *Proceedings of the XL Symposion Modeling in Mechanics*, Gliwice, Wisla, Poland, 205-206, 19-23 February, 2001.

33. A. Pownuk, New inlcusion functions in the iterval global optimization (in Polish), *Proceedings of the XL Symposion Modeling in Mechanics*, Gliwice, Wisla, Poland, 207-208, 23-24 November, 2001.

34. A. Pownuk, Application of the sensitivity analysis for modeling of structures with the interval parameters (in Polish), *Proceedings of the XLVI Conference of the Civil Engineering Committee PAS and Science Committee PZiTB, Krynica'2000*, 1, 145-152, 2000.

35. A. Pownuk, Hybrid interval method for global optimization of engineering structures, *Proceeding of the III. slovensko - polsko - czeske sympozium "Nelinearna Mechanika"*, Faculty of Civil Engineering STU, Slovakia, Bratislava, 125-129, 2000.

36. A. Pownuk, Modeling of mechanical structures with uncertain parameters (in Polish), *Proceeding of the Workshop "Symulacja 2000"*, Szczyrk, Poland, 2000.

37. A. Pownuk, Calculation of reliability of structures by using interval probability, *Proceeding of the Symposium on Methods of Artificial Intelligence in Mechanics and Mechanical Engineering*, AI-MECH 2000, Gliwice, Poland, 273-276, 2000.

38. A. Pownuk, Hybrid interval and gradient method for optimization of engineering structures (in Polish), *Proceedings of the I Scientific of Civil Engineering Ph.D. students from the Silesian University of Technology, Scientific Bulletin of the Silesian University of Technology, Civil Engineering Series*, 89, 179-186, Gliwice, Poland, 6 December, 2000.

39. A. Pownuk, Interval methods for solution of the equations of dynamics of structures (in Polish), *Proceedings of the X Symposium Dynamics of Structures*, Rzeszow, Poland, 77-84, 25-26 May 1999.

40. E. Majchrzak, M. Jasinski, and A. Pownuk, Modeling of heat transfer in biological tissue by interval Boundary Element Method (in Polish), *Proceedings of the IV Scientific Conference "Biomechanics'99"*, 305-308, 8-11 October, 1999.

41. A. Pownuk, Interval method for optimization of engineering structures (in Polish), *Proceedings of the XLV Conference of the Civil Engineering Committee PAS and Science Committee PZiTB, Krynica'99*, 135-142, 13-18 September, 1999.

42. A. Pownuk, Application of interval global optimization to calculation extreme values of mechanical quantities, *Proceedings of the 20 International Scientific Symposium for Students and Young Scientists,* Zielona Gora, Poland, Vol. IV "Mechanics", 211-215, 1998.

43. A. Pownuk, Interval methods for solution of nonlinear algebraic equations in the mechanics of structures (in Polish), *Proceedings of the XLIV Conference of the Civil Engineering Committee PAS and Science Committee PZiTB, Krynica'1998*, Vol. 1, 187-194, 1998.

44. J. Skrzypczyk, A. Pownuk, and G. Nowak, Applications of the theory of fuzzy sets in calculations the theory of strength of materials (in Polish), *Proceedings of the Scientific Conference in Occasion of the 70'th Birthday of Prof. Glomb*, Gliwice, Poland, 253-262, 1997.

45. A. Pownuk, Interval methods for solution of system of linear equations of solid mechanics (in Polish), *Proceedings of the Scientific and Educational Conference New Trends in Teaching of Mechanics*, Kolobrzeg, Poland, 219-228, 1997.

46. J. Skrzypczyk and A. Pownuk, Fuzzy Finite Element Method (in Polish), *Proceedings of the Scientific and Educational Conference New Trends in Teaching of Mechanics*, Kolobrzeg, 175-184, 1997.

14 Published Abstracts

1. A. Pownuk and M.V. Rama Rao, Autonomous Development of Online Assignments Supported by the Large Language Models Related to Mathematics, Computer Science, and Engineering, *Abstracts of the 30th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, October 28, 2023.

2. E. Fang and A. Pownuk, Applications of Autonomous Machine Learning Algorithms for Automated Development of Online Assignments, *35 GMIS Conference*, Pasadena, California, October 11-14, 2023.

3. A. Pownuk, I. Skalna, and E. Fang, Self-organizing Scientific Databases and Related Applications in Automated Development of Online Assignments, *Abstracts of the 29th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 1, 2023.

4. A. Pownuk, I. Skalna, and M.V. Rama Rao, Goal Oriented Self-adaptive Development of Online Assignments Based on Autonomous Computational Methods, *Abstracts of the 28th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 5, 2022.

5. A. Pownuk, I. Skalna, and M. V. Rama Rao, Automated development of the theory of equations with uncertain parameters using self-adaptive and self-learning autonomous systems with the applications for estimation of reliability in engineering, *Abstracts of the AMS Sectional Meeting*, El Paso, Texas, September 17-18, 2022.

6. A. Pownuk and I. Skalna, Algebraic Expressions with Uncertain Syntax and Their Applications in Online Learning, *Abstracts of the 27th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 2, 2022.

7. A. Pownuk, Applications of Autonomous Computational Methods and In Online Learning, *Abstracts of the 26th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 6, 2021.

8. A. Pownuk, Solution of Algebraic Equations by Using Autonomous Computational Methods, *Abstracts of the 25th AMS Fall Central Sectional Meeting*, Virtual Conference, September 12-13, 2020.

9. A. Pownuk and Jose Gonzalez, Solution of Algebraic Equations by Using Autonomous Computational Methods, *Abstracts of the 25th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 2, 2019.

10. A. Pownuk, I. Skalna, C. Melton, and Hyung Kyung Yi, Solution of Algebraic Equations by Using Self-Adaptive Computational Methods and Machine Learning, *Abstracts of the 24rd Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 6, 2019.

11. A. Pownuk, Applications of Autonomous Computational Methods for Finding Step-by-Step Solutions, *Abstracts of the 23rd Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 3, 2018.

12. A. Pownuk, Applications of Self-Adaptive Computational Methods in Online Learning, *Abstracts of the 22th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 7, 2018.

13. A. Pownuk, I. Skalna, and J. Quezada, Guaranteed Bounds for Solution of Parameter Dependent System of Equations, *Abstracts of the 22th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 7, 2018.

14. A. Pownuk, J. Quezada, I. Skalna, M. V. Rama Rao, and A. Belina, Which Method for Solution of the System of Interval Equations Should we Choose? *Abstracts of the 21th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 4, 2017.

15. A. Pownuk and J. Quezada, A Posteriori Error Bounds for Two Point Boundary Value Problem with Uncertain Parameters, *Abstracts of the 20th Sixteenth New Mexico Analysis Seminar, Department of Mathematical Sciences*, New Mexico State University, Las Cruces, May 21, 2017.

16. A. Pownuk, I. Skalna, and J. Quezada, Solution of the Wave Equation with Interval and Random Parameters, *Abstracts of the 20th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 8, 2017.

17. A. Pownuk and V. Kreinovich, Why Linear Interpolation?, *Abstracts of the 20th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexic, April 8, 2017.

18. A. Pownuk, Combining Interval and Probabilistic Uncertainty in Engineering Applications, *Abstracts of the 19th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 5, 2016.

19. A. Pownuk, Approximate method for computing the sum of independent random variables, *Abstracts of the 17th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Science*s, El Paso, Texas, November 7, 2015.

20. A. Pownuk, Fast algorithm for finding lattice subspaces in R^n and its implementation, *Abstracts of the 16th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, Texas, April 11, 2015.

21. A. Pownuk, I. Skalna, Parallel Methods for Monotonicity Verification, *Abstracts of the 13th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, Saturday, April 6, 2013.

22. A. Pownuk, I. Skalna, and N. K. Goud Ramunigari, Parallel methods for solution of equations with uncertain parameters, *Abstracts of the 12th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, Saturday, October 27, 2012.

23. A. Pownuk, Dependency Problem in the Modeling of Beams with Uncertain Parameters, *Abstracts of the 11th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, Saturday, March 31, 2012.

24. A. Pownuk, Linear dynamics of an elastic beam and plate under moving loads with uncertain parameters, *Abstracts of the 10th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, Saturday, November 5, 2011.

25. A. Pownuk, Finite difference equations with the interval parameters, *Abstracts of the 9th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, April 2nd, 2011.

26. A. Pownuk, Finite difference equations with the interval parameters, *Constraint Programming and Decision Making*, El Paso, Texas, March 17, 2011.

27. A. Pownuk, J.I. Alonso, R.A. Casillas Pacheco, A. Chavez, D. Canales, S. Edmundo, and R.W. Arriaga, On-line applications in science and education, *Abstracts of the 8th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*. El Paso, Texas, November 13, 2010.

28. M.V. Rama Rao, A. Pownuk, and S. Vandewalle, Uncertain dynamic response of a simply-supported thin rectangular plate subjected to an impact load. *Abstracts of the International Congress on Computational and Applied Mathematics*, Leuven, Belgium, July 05-09, 2010.

29. A. Pownuk and M. Betkowski, Calculating risk of cost in civil engineering projects by using imprecise probability and HPC computing, *Abstracts of the American Mathematical Society Meetings*, Albuquerque, New Mexico, Meeting 1059, April 17-18, 2010.

30. A. Pownuk, Adaptive Taylor series and its applications in the Interval Finite Element Method, *Abstracts of the 7th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 3, 2010.

31. R. Azizi and A. Pownuk, Parallel method for the solution of stochastic differential equations with the interval parameters, *Abstracts of the 7th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences*, Las Cruces, New Mexico, April 3, 2010.

32. R. Casillas and A. Pownuk, Parallel web computing, *Abstracts of the Southwestern Undergraduate Mathematics Research Conference*, The University of Texas at El Paso, Texas, March 5-6, 2010.

33. D. Canales and A. Pownuk, Applications of parallel computing to the solution of equations with the random parameters, *Abstracts of the Southwestern Undergraduate Mathematics Research Conference*, The University of Texas at El Paso, Texas, March 5-6, 2010.

34. A. Pownuk, Online Homework Assignments and Visualizations in Modern Teaching of Numerical Analysis, *Sun Conference on Teaching and Learning*, Poster, March 4-5, 2010, The University of Texas at El Paso, Texas, USA.

35. J. Alonso and A. Pownuk, System of equations with random set parameters, *Abstracts of the Southwestern Undergraduate Mathematics Research Conference*, The University of Texas at El Paso, Texas, March 5-6, 2010.

36. M. Ceberio, V. Kreinovich, A. Pownuk, and Barnab´as Bede, Constraints-related set computations: a new fem-motivated approach to propagating uncertainty, *Abstracts of the Second International Conference on Finite Element Methods in Engineering and Science*, Reno, Nevada, Dec. 2009.

37. A. Pownuk, M.A. Jankowska, and N. K. Ramunigari, Applications of higher order monotonicity tests to the solution of equations with the interval parameters, *Abstracts of the Constraint Solving Workshop CoProD 2009*, El Paso, Texas, November 9-10, 2009.

38. A. Pownuk, Calculating risk of cost in civil engineering projects by using imprecise probability and the theory of soft sets, *Abstracts of the 6th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 7, 2009.

39. A. Pownuk and M. Ortiz, Topological derivative and its applications to the modeling of uncertainty and optimization, *Abstracts of the 5th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences.* Las Cruces, New Mexico, April 4th, 2009.

40. A. Pownuk, Mathematical aspects of grading students' homework in online web applications, *Abstracts of the 4th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences*, El Paso, Texas, November 8, 2008.

41. M. Ceberio, V. Kreinovich, and A. Pownuk, From interval computations to constraint-related set computations: towards faster estimation of statistics and ODEs under interval and p-box uncertainty constraint programming and decision making, *Abstracts of the Workshop Constraint Programming and Decision Making*, El Paso, Texas, October 3-4, 2008.

42. M.V. Rama Rao, A. Pownuk, and D. Moens, Stress analysis of a doubly reinforced concrete beam with uncertain structural parameters, *Abstracts of the 13th GAMM - IMACS International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations*, El Paso, TX, September 29 - October 3, 2008.

43. M.V. Rama Rao, A. Pownuk, and R.L Muhanna, Modeling of failure surface of a reinforced concrete slab with fuzzy loading - an interval approach, *Abstracts of the 13th GAMM - IMACS International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations*, El Paso, Texas, USA, September 29 - October 3, 2008.

44. A. Pownuk and N.K. Goud Ramunigari, Application of order-preserving functions to the modelling of computational mechanics problems with uncertainty, *Abstracts of the 13th GAMM - IMACS International Symposium on Scientific Computing, Computer Arithmetic, and Verified Numerical Computations*, El Paso, Texas, September 29 - October 3, 2008.

45. A. Pownuk and A. Rivera, Sensitivity analysis of truss and frame structures with uncertain geometry, *Abstracts of the 3rd Joint NMSU/UTEP Workshop on Mathematics and Computer Science, New Mexico State University*, Las Cruces, New Mexico, April 26, 2008.

46. A. Pownuk, General Interval FEM Program Based on Sensitivity Analysis Method, *Abstracts of the 2nd Joint UTEP/NMSU Workshop on Mathematics and Computer Science*, El Paso, Texas, November 17, 2007.

47. A. Pownuk, Numerical solution of FEM equations with uncertain functional parameters, *Abstracts of the Conference FEMTEC* , El Paso, TX, December 11-15, 2006.

48. I. Skalna, M.V. Rama Rao, and A. Pownuk, Systems of fuzzy equations in structural mechanics, *Abstracts of the FEMTEC*, El Paso, TX, December 11-15, 2006.

49. M. Betkowski and A. Pownuk, Applications of the fuzzy algebra for predicting of the financial risk in civil engineering projects (in Polish), *Abstracts of the Scientific Conference "Polish Civil Engineering One Year After Accession of Poland to the European Union"*, Gdansk, Poland, 9-11 June, 2005.

50. M. Betkowski and A. Pownuk, Concept of the random variable with fuzzy parameters and their applications for estimation of the financial risk of civil engineering projects (in Polish), *Abstracts of the Scientific Conference "Polish Civil Engineering One Year After Accession of Poland to the European Union"*, Gdansk, Poland, 9-11 June, 2005.

51. M. Betkowski and A. Pownuk, Estimation of the financial risk of civil engineering project by using fuzzy random variables and Monte Carlo Simulations (in Polish), *Abstracts of the Scientific Conference "Polish Civil Engineering One Year After Accession of Poland to the European Union'*, Gdansk, Poland, 9-11 June, 2005.

52. A. Pownuk, Worst case finite element computations, Abstracts of the CO-CONUT meeting, University of Vienna, Vienna, Austria, 14-16 April, 2003.

53. A. Pownuk, Numerical solutions of fuzzy partial differential equations and its application in computational mechanics, *Abstracts of the Workshop on Assessment and New Directions for Research, Fuzzy Partial Differential Equations, Fuzzy Relational Equations, Fuzzy Difference Equations.* BISC Program, University of California-Berkeley, California, USA, March 15-17, 2002.

54. A. Pownuk, Modeling of structures with taking into account uncertainty of the parameters. *Abstracts of the XLI Symposium Modeling in Mechanics*, Poland, 2002.

55. A. Pownuk, Reliability of structures with fuzzy parameters (in Polish). *Abstracts of the XL Symposium Modeling in Mechanics*, Poland, 205-206, 19-23 February, 2001.

56. A. Pownuk, New inclusion functions in the interval global optimization (in Polish), *Abstracts of the XL Symposium Modeling in Mechanics*, Poland, 207-208, 19-23 February, 2001.

57. A. Pownuk, New inclusion functions in interval global optimization of engineering structures, *Abstracts of the European Conference on Computational Mechanics*, Cracow, 460-461, 26-29 June, 2001.

58. A. Pownuk, Design of systems with uncertain parameters (in Polish), *Abstracts of the Symposium Durability of Structures, Kamien Slaski, Poland*, 14-15, 2-3 July, 2001.

59. A. Pownuk, Applications of regular interval Jacobian matrics for modling of mechanical structures with the interval parameters (in Polish), *Abstracts of the XXXIX Symposium Modeling in Mechanics*, Wisla, Poland, 269-270, 2000.

60. A. Pownuk, Calculation of reliability of structures using fuzzy sets theory, *Abstracts of the 32nd Symposium on Mathematical Physics with special session "Symmetries in Nonlinear Systems"*, Torun, Poland, June 6-10, 2000.

61. A. Pownuk, Calculation of displacement in elastic and elastic-plastic structures with interval parameters, *Abstracts of the 33rd Solid Mechanics Conference (SolMech2000)*, Zakopane, Poland, 160-161, 5-9 September, 2000.

62. A. Pownuk, Applications of sensitivity analysis for modeling of structures with uncertain parameters, *Abstracts of the International Conference on Interval Methods in Science and Engineering "Interval'2000"*, Karlsruhe, Germany, 116-117, 2000.

63. M. Jasinski and A. Pownuk, Modeling of Heat Transfer in Biological Tissue by Interval FEM, *Abstracts of the 14th Polish Conference on Computer Methods in Mechanics (PCCMM'99)*, Rzeszow, Poland, 127-128, May 26-29, 1999.

64. A. Pownuk, Optimization of Mechanical Structures using Interval Analysis, *14th Polish Conference on Computer Methods in Mechanics (PCCMM'99)*, Rzeszow, Poland, May 26-29, 301-302, 1999.

65. A. Pownuk, Applications of Regular Interval Jacobian Matrices to Calculation Extreme Values of Mechanical Quantities, *Abstracts of the Workshop Reliable Computations and Interval Algebra*, Sozopol, Bulgaria, September 27-29, 1999.

15   Invited Talks

1. *Automated solution of equations with uncertain parameters*, University of Nevada, Reno, Nevada, USA, 04/12/2012.

2. *Modeling of Uncertainty in Computational Mechanics, Presentation for REU Summer Site in Applied Intelligent Systems*, The University of Texas at El Paso, El Paso, Texas, USA, 07/02/2010.

3. *Modeling of Uncertainty in Computational Mechanics, Presentation for Computational Science Ph.D. students*, The University of Texas at El Paso, El Paso, Texas, USA, 04/22/2010.

4. *Overview of the Methods of Solution for the Equations with the Interval Parameters and its Applications in Structural Mechanics*, The University of Texas at El Paso, El Paso, Texas, USA, 09/11/2009.

5. *General Interval FEM Program Based on Sensitivity Analysis Method*, The University of Texas at El Paso, El Paso, Texas, USA, 09/07/2007.

6. *Coordinate free numerics*, The University of Texas at El Paso, El Paso, Texas, USA, 08/09/2006.

7. *Mathematical modeling of uncertainty in computational mechanics*, The University of Texas at El Paso, El Paso, Texas, USA, 07/03/2006.

8. *Mathematical basis of the design of structures with uncertain parameters*, University of Vienna, Vienna, Austria, 10/03/2003.

9. *Applications of the theory of fuzzy sets for estimation of reliability of civil engineering structures* (in Polish), Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland, 05/10/2001.

10. Applications of Interval Analysis in Mechanics, Brno University of Technology, Brno, Czech Republic, 07/20/1999.

11. *Applications of the interval global optimization for estimation of extreme values of mechanical quantities* (in Polish), Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland, 12/04/1997.

12. *Methods for solutions of the system of interval equations and their applications in mechanics* (in Polish), Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland, 01/23/1997.

16 Other Scientific Activity

1. I participated in the meeting of Polish Standardization Committee, 12/15/2023.

2. I participated in the meeting of Polish Standardization Committee, 10/27/2023.

3. *Modeling of Uncertainty in Computational Mechanics*, Poster Session, Sandia National Lab, Albuquerque, New Mexico, USA, 01/12/2016.

4. *Confidential Presentation for Chevron Inc.* , Chevron Inc., Houston, Texas, USA, 01/11/2012.

5. *Application of Fuzzy Sets Theory to Assessment of Reliability of Civil Engineering Structures*, Presentation, Institute of Theoretical Mechanics, Silesian University of Technology, Gliwice, Poland, 05/28/2001.

17 Thesis Supervising

1. Kiran Katta, PhD. dissertation,Computational Science Ph.D. Program, dissertation defense 07/23/2012, member of the Ph.D. committee.

2. Luis Basurto, PhD. dissertation, Computational Science Ph.D. Program, dissertation defense 12/20/2012, member of the Ph.D. committee.

3. Marco Olguin, PhD. dissertation, Computational Science Ph.D. Program, dissertation defense 12/20/2012, member of the Ph.D. committee.

4. Brenda Medina, Master's thesis, Mathematics, thesis defense 12/07/2011, chair of the committee.

5. Kiran Katta, Master's thesis, Computational Science Program, thesis defense 06/10/2011, member of the committee.

18 Undergraduate Student Contracts

1. Spring 2018 - Delilah Knapp - Selected Problems in Optimization

2. Fall 2017 - Abugalyon Yasmeen - Limits of the function with one variable.

3. Fall 2016 - Hernandez Nayely - Applications of derivatives.

4. Fall 2016 - Tellez Alan - Statistical methods in Economy.

5. Fall 2016 - Katherine Cobb - Combinatorics.

6. Spring 2016 - Velasco Victor - Applications of Integration

7. Fall 2010 - Deborah Martinez - Correlation matrix.

8. Summer 2008 - Marcela Mendoza - Optimization of truss structures.

9. Fall 2008 - Peregrino Edgardo - Complex numbers.

10. Spring 2007 - Alfredo Riveira - Truss structures with uncertain parameters.

19 Individual Students

1. Fall 2019 - MATH 4399 - Jose Gonzales - Machine learning and autonomous computational methods.

2. Spring 2019 - MATH 4399 - Yi, Hyung Kyung S - Machine learning.

3. Fall 2018 - MATH 4399 - Marroquin-Sandoval, Adrian - Parallel computing and machine learning.

4. Fall 2018 - MATH 4399 - Edwin Torres - Numerical analysis and machine learning.

5. Spring 2011 - MATH 4399 - Casillas, Ruben A. - Visualizations.

6. Spring 2010 - MATH 5370 - Falcon, Fernando - Numerical analysis.

7. Fall 2010 - MATH 4399- Canales, Diego A. - Financial mathematics.

8. Fall 2010 - MATH 4399 - Chavez, Ana E. - Web applications in education.

9. Fall 2010 - MATH 4399 - Alonso, Jorge I. - Parallel computing.

10. Spring 2009 - Math 4399 - Garcia, Monica - Shape optimization.

11. Fall 2009 - Math 4399 - Arriaga, Richard W. - Shape optimization.

12. Fall 2009 - MATH 4370 - Ramunigari, Naveen G. - Math Software and Web Computing

13. Fall 2008 - Math 4399 - Monica Ortiz - Shape optimization.

20 Professional Activities/Membership

- 2017-present – member of the Editorial board/Review committee of the International Journal of Research Innovations in Civil Engineering.

- 2006-present – scientific and educational allocations on parallel computers at the Texas Advanced Computing Center (TACC) and Extreme Science and Engineering Discovery Environment (XSEDE).

- 2016-2018 – treasurer in the SIAM student's organization at the University of Texas at El Paso.

- 2016-present – Member of Society for Industrial and Applied Mathematics (SIAM).

- Referee for the following journals: Optimization and Engineering, Information Science, Journal of Intelligent and Fuzzy Systems, Journal Computational and Applied Mathematics, Information Science, Fuzzy Sets and System, Engineering Structures.

- Member of the Scientific Committee of The Forth Workshop on Reliable Engineering Computing, Brno University of Technology in Brno, Czech Republic, June 13-15, 2012.

- Member of the Organizational Committee of 11th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, New Mexico State University, Las Cruces, New Mexico, Saturday, March 21, 2012.

- Member of the Organizational Committee of 10th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences, University of Texas at El Paso, El Paso, Texas, Saturday, November 5, 2011.

- Member of the Organizational Committee of 9th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, New Mexico State University, Las Cruces, New Mexico, Saturday, April 2nd, 2011.

- Member of the Organizational Committee of 8th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences, University of Texas at El Paso, El Paso, Texas, Saturday, November 13, 2010.

- Member of the Organizational Committee of 7th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, New Mexico State University, Las Cruces, New Mexico, Saturday, April 3, 2010.

- Member of the Organizational Committee of 6th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences, University of Texas at El Paso, El Paso, Texas, Saturday, November 7, 2009.

- Member of the Organizational Committee of 5th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, New Mexico State University, Las Cruces, New Mexico, Saturday, April 4, 2009.

- Member of the Organizational Committee of 4th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences, University of Texas at El Paso, El Paso, Texas, Saturday, November 8, 2008.

- Member of the Organizational Committee of 3th Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, New Mexico State University, Las Cruces, New Mexico, Saturday, April 26, 2008.

- Member of the Organizational Committee of 2th Joint UTEP/NMSU Workshop on Mathematics, Computer Science, and Computational Sciences, University of Texas at El Paso, El Paso, Texas, Saturday, November 17, 2007.

- Member of the Scientific Committee of The Forth Workshop on Reliable Engineering Computing National University of Singapore, March 3-5, 2010.

- Cooperation with Microsoft in the framework of The Microsoft HPC++ CompFin Lab (2008-2010).

- Member of the Program Committee of the Third International Symposium on Imprecise Probabilities and Their Applications ISIPTA '03 and ISIPTA'05.

- Member of the Local Organization Committee of the conference FEMTEC 2006 at the University of Texas at El Paso, December 11-15, 2006.

- Member of the Local Organization Committee of the conference FEMTEC 2009. Granlibakken Conference Center, Lake Tahoe, January 5-9, 2009.

- Member of the Scientific Committee of The Third Workshop on Reliable Engineering Computing Georgia Institute of Technology, February 20-22, 2008, Savannah, GA, USA.

- Former Member of the International Association for Shell and Special Structures (IASS).

- Collaborator of the Qualitative Analysis Group at the Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland.

21 Sample Educational and Commercial Software

- Numerical of solution of torsion problem of prismatic bars with non-circular cross-section using FEM method (PASCAL). Part of my first MS/BS Thesis.

- Solution of truss, frame, and 2D elasticity problem with interval parameters using FEM method and sensitivity analysis (C++). Reseatch Software.

- Numerical solution of slightly compressible flow equation with uncertain parameters for Chevron Oil Company (C++). Reseatch software.

- c2dag converter (C++). This program converts a function written in C to an expression represented as directed acyclic graph.

- Commercial FEM program for modeling of frame structures for Specud Company (C++).

- System for on-line grading of student's homework (Asp.net, WebForms, C#, ADO.NET, Microsoft SQL Server Express 2008, Latex equations, custom users controls, and user controls, automated e-mail reports).

- Parallel solution of system of nonlinear equations and visualization of fractals (C++, MPICH2, MATLAB, VTK). Educational software.

- Self-adaptive and self-learning system for solving selected abstract mathematical problems.

22 Software Related Activity and Skills

- Webmaster for the Institute of Theoretical Mechanics.

- Server administrator (Linux, Windows Server).

- Cloud computing technology (Amazon AWS, Windows Azure).

- Mathamatical software (Mathematica, Matlab, Scilab, Octave, Maxima, R, Minitab).

- Numerical libraries (BLAS, LAPACK, ATLAS, Intel MKL, GSL Library, IMSL Numerical Libraries, PETSc, ScaLAPACK, Kokkos).

- Machine learning (TensorFlow, Keras, ML.NET).

- Engineering software (ANSYS, ABACUS, NASTRAN).

- Database system (MS SQL Server, MySQL, MS Access, Excel).

- Computer languages (C, C++, FORTRAN, Java, Java Script, C#, VB, Asp.Net, PHP, SQL, Pascal, Delphi, Python, XML, Bash, Windows PowerShell). I am familiar with Assembler, Lisp, F#, Scheme, and Hascal. I developed many domain specific scripting languages which I use in my software.

- Parallel programming (MPI, OpenMP, POSIX Threads, Nvidia CUDA, Intel Cilk, Kokkos, System.Threading in C#).

23 Teaching at the University of Texas at El Paso (2006-present)

23.1 Graduate Classes

- Fall 2022, Complex Analysis, MATH 5370.

  - L. Ahlfors, Complex Analysis, MaGraw-Hill, Inc. 1966.

- Spring 2022, Numerical Analysis, MATH 5370.

  - D. Kincaid, W. Cheney, Numerical Analysis: Mathematics of Scientific Computing, MaGraw-Hill, Inc. Brooks/Cole 2002.

- Summer 2021, Linear Algebra, MATH 5370.

  - S. Axler, Linear Algebra Done Right, Springer 2015.

- Mathematical and Computer Modeling, CPS 5310.

  - D. Kiryanov and Kiryanova, Computational Science, Infinity Science Press LCC, 2007.
  - D.P. Bertsekas and J.N. Tsitsiklis, Parallel and Distributed Computation: Numerical Methods, Prentice Hall 1989.
  - A. Grama, G. Karypis, V. Kumar, and A. Gupta, Introduction to Parallel Computing, 2nd Edition, Pearson 2003.
  - K. Velten, Mathematical Modeling and Simulation: Introduction for Scientists and Engineers, Wiley-VCH 2009.
  - V. Eijkhout, Introduction to High-performance Scientific Computing, lulu.com 2011.
  - S.M. Ross, Introduction to Probability Models, 9th Edition, Elsevier 2007.
  - VTK User's Guide, https://www.vtk.org/vtk-users-guide

- Introduction to Computational Science, CPS 5401.

  - G.E. Karniadakis and R.M. Kirby, Parallel Scientific Computing in C++ and MPI: A Seamless Approach to Parallel Algorithms and Their Implementation, Cambridge University Press, 2003.
  - M.J. Quinn, Parallel Programming in C with MPI and Open MP, TATA McGraw-Hill, 2004.
  - W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes 3rd Edition: The Art of Scientific Computing, Cambridge University Press 2007.
  - J. Dongarra, I. Foster, G. Fox, W. Gropp, K. Kennedy, and L. Torczon, The Sourcebook of Parallel Computing, Morgan Kaufmann Publishers 2002.

- – P. Bjorstad and M. Luskin, Parallel Solution of Partial Differential Equations, Springer 2000.
- – A.N. Bruaset and A. Tveito, Numerical Solution of Partial Differential Equations on Parallel Computers, Springer 2006.

- Spring 2011, Graduate Seminar, CPS 5195.

  - – W. Gropp, E. Lusk, and A. Skjellum, Using MPI, 2rd Edition, MIT Press, 1999.
  - – W. Gropp, T. Hoefler, R. Thakur, and E. Lusk, Using Advanced MPI, MIT Press, 1999.
  - – B. Chapman, G. Jost, R. van der Pas, W. Gropp, and E. Lusk, Using OpenMP: Portable Shared Memory Parallel Programming (Scientific and Engineering Computation), Scientific and Engineering Edition, The MIT Press 2007.
  - – J. Sanders and E. Kandrot, CUDA by Example: An Introduction to General-Purpose GPU Programming, Addison-Wesley Professional 2010.

- Fall 2010, Graduate Seminar, CPS 5195.

  - – W. Gropp, E. Lusk, and A. Skjellum, Using MPI, 2rd Edition, MIT Press, 1999.
  - – W. Gropp, T. Hoefler, R. Thakur, and E. Lusk, Using Advanced MPI, MIT Press, 1999.
  - – B. Chapman, G. Jost, R. van der Pas, W. Gropp, and E. Lusk, Using OpenMP: Portable Shared Memory Parallel Programming (Scientific and Engineering Computation), Scientific and Engineering Edition, The MIT Press 2007.
  - – J. Sanders and E. Kandrot, CUDA by Example: An Introduction to General-Purpose GPU Programming, Addison-Wesley Professional 2010.

- Summer 2010, Graduate Research, CPS 5397.

  - – K. Velten, Mathematical Modeling and Simulation: Introduction for Scientists and Engineers, Wiley-VCH 2009.
  - – O.C. Zienkiewicz, R.L Taylor, and J.Z. Zhu, The Finite Element Method: Its Basis and Fundamentals, 6th Edition, Butterworth-Heinemann 2005.
  - – O.C. Zienkiewicz, R.L Taylor, and D.D. Fox, The Finite Element Method for Solid and Structural Mechanics, 6th Edition, Butterworth-Heinemann 2005.
  - – O.C. Zienkiewicz, R.L Taylor, and P. Nithiarasu, The Finite Element Method for Fluid Dynamics, 6th Edition, Butterworth-Heinemann 2005.

- – T. Ertekin, J.H. Abou-Kassem, and G.R. King, Basic Applied Reservoir Simulation, Society of Petrolium Engineers 2001.

- Spring 2010, Graduate Seminar, CPS 5195.

  - – D.P. Bertsekas and J.N. Tsitsiklis, Parallel and Distributed Computation: Numerical Methods, Prentice Hall 1989.
  - – G.E. Karniadakis and R.M. Kirby, Parallel Scientific Computing in C++ and MPI: A Seamless Approach to Parallel Algorithms and Their Implementation, Cambridge University Press, 2003.
  - – W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in Fortran 90: The Art of Parallel Scientific Computing, 2nd Edition, Cambridge University Press 1996.
  - – P. Bjorstad and M. Luskin, Parallel Solution of Partial Differential Equations, Springer 2000.

- Spring 2010, Seminar, MATH 5370, Geometry and Calculus.

  - – Z. Usiskin, A.L. Peressini, E. Marchisotto, and D. Stanley, Mathematics for High School Teachers- An Advanced Perspective, Pearson 2002.

- Fall 2009, Seminar, MATH 5370, Geometry and Calculus.

  - – Z. Usiskin, A.L. Peressini, E. Marchisotto, and D. Stanley, Mathematics for High School Teachers - An Advanced Perspective, Pearson 2002.

23.2   Undergraduate Classes

- Fall 2020, Individual Studies in Mathematics, MATH 4399, Artificial Intelligence, Machine Learning and Reinforcement Learning.

  - – C. Szepesvári, Algorithms for Reinforcement Learning, Morgan & Claypool Publishers 2009.
  - – Richard S. Sutton and Andrew G Barto, Reinforcement Learning: An Introduction, A Bradford Book, 2018.
  - – CS 230 Deep Learning Lectures, Stanford Engineering, online class.
  - – Stanford CS 234, Reinforcement Learning, online class.
  - – MIT Introduction to Deep Learning 6.S191, online class.
  - – UCL Course on Reinforcement Learning, DeepMind, online class.
  - – Self-Afaptive Computational Methods (based on my research).

- Spring 2020, Individual Studies in Mathematics, MATH 4399, Artificial Intelligence, Machine Learning, and Reinforcement Learning.

- Dan Simovici, Mathematical Analysis for Machine Learning and Data Mining, World Scientific Publishing Company, 2018.
- C. Bishop, Pattern Recognition and Machine Learning, Springer 2006.
- Andrew Ng, Machine Learning, online class.
- Stanford CS 234, Reinforcement Learning, online class.
- MIT Introduction to Deep Learning 6.S191, online class.
- UCL Course on Reinforcement Learning, DeepMind, online class.
- Self-Afaptive Computational Methods (based on my research).

- Fall 2019, Individual Studies in Mathematics, MATH 4399, Artificial Intelligence and Machine Learning.

    - Dan Simovici, Mathematical Analysis for Machine Learning and Data Mining, World Scientific Publishing Company, 2018.
    - C. Bishop, Pattern Recognition and Machine Learning, Springer 2006.
    - Andrew Ng, Machine Learning, online class.
    - Self-Afaptive Computational Methods (based on my research).

- Spring 2019, Individual Studies in Mathematics, MATH 4399, Artificial Intelligence and Machine Learning.

    - Dan Simovici, Mathematical Analysis for Machine Learning and Data Mining, World Scientific Publishing Company, 2018.
    - C. Bishop, Pattern Recognition and Machine Learning, Springer 2006.
    - Andrew Ng, Machine Learning, online class.
    - Self-Afaptive Computational Methods (based on my research).

- Fall 2018, Individual Studies in Mathematics, MATH 4399, Parallel Computing and Machine Learning.

    - Andrew Ng, Machine Learning Yearning, free draft copy from http://www.mlyearning.org
    - Andrew Ng, Machine Learning, online class.
    - W. Gropp, E. Lusk, and A. Skjellum, Using MPI, 3rd Edition, MIT Press, 2014.
    - W. Gropp, T. Hoefler, R. Thakur, and E. Lusk, Using Advanced MPI, MIT Press, 2014.
    - B. Chapman, G. Jost, R. van der Pas, W. Gropp, and E. Lusk, Using OpenMP: Portable Shared Memory Parallel Programming (Scientific and Engineering Computation), Scientific and Engineering Edition, The MIT Press 2007.

- Fall 2018, Individual Studies in Mathematics, MATH 4399, Numerical Analysis and Machine Learning.

- C. Bishop, Pattern Recognition and Machine Learning, Springer 2006.
- D. Kincaid and W. Cheney, Numerical Analysis: Mathematics of Scientific Computing, American Mathematical Society, 2002.

- Spring 2011, Individual Studies in Mathematics, MATH 4399.

  - N. Matloff, The Art of R Programming: A Tour of Statistical Software Design, No Starch Press 2011.
  - C. Bishop, Pattern Recognition and Machine Learning, Springer 2006.
  - M. Lutz, Programming Python, Edition 3, O'Reilly Media, Inc. 2006.
  - J. Kepner, Parallel MATLAB for Multicore and Multinode Computers (Software, Environments and Tools), Society for Industrial and Applied Mathematics 2009.

- Fall 2010, Individual Studies in Mathematics, MATH 4399.

  - P.G. Ciarlet, The Finite Element Method for Elliptic Problems, SIAM: Society for Industrial and Applied Mathematics 2002.
  - O.C. Zienkiewicz, R.L Taylor, and J.Z. Zhu, The Finite Element Method: Its Basis and Fundamentals, 6th Edition, Butterworth-Heinemann 2005.
  - K.J. Bathe, Finite Element Procedures in Engineering Analysis, Prentice Hall 1982.
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- Fall 2010, Individual Studies in Mathematics, MATH 4399.

  - F. Magoules (Editor), Fundamentals of Grid Computing: Theory, Algorithms and Technologies (Chapman & Hall/CRC Numerical Analysis and Scientific Computing Series), Chapman and Hall/CRC 2009.
  - J. Kepner, Parallel MATLAB for Multicore and Multinode Computers (Software, Environments and Tools), Society for Industrial and Applied Mathematics 2009.
  - A.M. Bruaset and A. Tveito, Numerical Solution of Partial Differential Equations on Parallel Computers, Springer-Verlag 2006.
  - D.E. Keyes, A. Sameh, and V. Venkatakrishnan (Editors), Parallel Numerical Algorithms, Spring-Science-Business Media 1997.

- Fall 2009, Individual Studies in Mathematics, MATH 4399.

  - M.L.L. Abell and J.P. Braselton, Mathematica by Example, Academic Press 2008.
  - A. Siciliano, Matlab: data analysis and visualization, Wspc 2009.

- M.E. Herniter, Programming in MATLAB, Cengage Learning 2000.

  - J. Kepner, Parallel MATLAB for Multicore and Multinode Computers (Software, Environments and Tools), Society for Industrial and Applied Mathematics 2009.

- Spring 2009, Individual Studies in Mathematics, MATH 4399.

  - W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes 3rd Edition: The Art of Scientific Computing, Cambridge University Press 2007.

  - D. Kincaid and W. Cheney, Numerical Analysis: Mathematics of Scientific Computing, American Mathematical Society, 2002.

- Precalculus, MATH 1508.

  - R. Larson, Precalculus, 10th Edition, Cengage Learning 2017.

- Calculus I, II, III, MATH 1411, MATH 1312, MATH 2313.

  - R. Larson, B.H. Edwards, Calculus, 11th Edition, Cengage Learning, 2017.

- Applied Analysis I, MATH 3335.

  - E. Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley 2011.

- Math for Social Sciences, MATH 1320.

  - S. Waner, S. Constenoble, Finite Mathematics & Applied Calculus, 6th Edition, Cengage Learning 2013.

- Introduction to Higher Mathematics, MATH 2325.

  - G. Cobb, G. Davidoff, A. Durfee, J. Gifford, D. Oshea, M. Peterson, H. Pollatsek, M. Robinson, L. Senechal, R Weaver, J.W. Bruce, Laboratories in Mathematical Experimentation: A Bridge to Higher Mathematics, Key College 1997.

- Matrix Algebra, Math 3323

  - Lee W. Johnson, R. Dean Riess, Jimmy T. Arnold, Introduction to Linear Algebra, Fifth Edition, Pearson 2001.

- Introduction to Numerical Analysis, MATH 4329.

  - K. Atkinson and W. Han, Elementary Numerical Analysis, J. Wiley & Sons, 2003.

24 Teaching at the Silesian University of Technology (1995-2005), Poland

24.1 Graduate Classes

- Theory of Elasticity

  - Cz. Rymarz, Continuum Mechanics, Polish Scientific Publisher (PWN), Warsaw 1995 (in Polish).
  - P.G. Ciarlet, An Introduction to Differential Geometry with Applications to Elasticity, Spring 2005.
  - S.S. Antman, Nonlinear Problems of Elasticity, Springer 1995.
  - S. Timoshenko and J.N. Goodier, Theory of Elasticity, McGraw-Hill, 1970.
  - W. Nowacki, Theory of Elasiticity, Polish Scientific Publisher (PWN), Warsaw 1970 (in Polish).
  - S. Bielak, Theory of Shells, Part 1, Geometry and Physics, Publishing House of Silesian University of Technology, Gliwice 1990 (in Polish).
  - S. Bielak, Theory of Shells, Part 2, Theory and Applications, Publishing House of Silesian University of Technology, Gliwice 1988 (in Polish).
  - P.G. Ciarlet, Mathematical Elasticity, Volume 2: Theory of Plates (Studies in Mathematics and its Application), North Holland 1997.
  - ANSYS Theory Reference, ANSYS Inc. 1999.

- Theory of Plasticity

  - L. Washizu, Variational methods in elasticity and plasticity, Pergamon 1975.
  - R. Hill, The Mathematical Theory of Plasticity, Oxford University Press 1998.
  - F. Dunne and N. Petrinicm, Introduction to computational plasticity, Oxford University Press 2005.
  - D.R.J. Owen and E. Hinton, Finite Elements in Plasticity, Theory and Practice, Pineridge Press Limited 1980.
  - M. Kleiber, Incremental Finite Element Modelling in Non-Linear Solid Mechanics, Ellis Horwood 1989.
  - M. Kleiber and C. Wozniak, Nonlinear Mechanics of Structures, Springer 1991.
  - ANSYS Theory Reference, ANSYS Inc. 1999.

- Computer Methods in Civil Engineering

- O.C. Zienkiewicz, R.L Taylor, and J.Z. Zhu, The Finite Element Method: Its Basis and Fundamentals, 5th Edition, Butterworth-Heinemann, 2000.

- O.C. Zienkiewicz, R.L Taylor, and D.D. Fox, The Finite Element Method for Solid and Structural Mechanics, 5th Edition, Butterworth-Heinemann, 2000.

- K. Rektorys, Variational Methods in Mathematics, Science and Engineering, Springer 1977.

- M. Kleiber, Computer Methods in the Solid Mechanics, Polish Scientific Publisher (PWN), Warsaw 1995 (in Polish).

- T. Burczyński, Boundary Element Method in Mechanics, Scientific and Technical Publisher (WNT) 1995 (in Polish).

- K.J. Bathe, Finite Element Procedures in Engineering Analysis, Prentice Hall 1982.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 1, Finite Difference Methods, Elsevier 1990.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 2, Finite Element Methods (Part 1), Elsevier 1991.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 3, Techniques of Scientific Computing (Part 1), Numerical Methods for Solids (Part 1), Elsevier 1994.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 4, Finite Element Methods (Part2), Numerical Methods for Solids (Part 2), Elsevier 1996.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 5, Techniques of Scientific Computing (Part 2), Elsevier 1997.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 6, Numerical Methods for Solids (Part 3), Numerical Methods for Fluids (Part 1), Elsevier 1998.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 7, Solution of Equation in R^n (Part 3), Techniques of Scientific Computing (Part 3), Elsevier 2000.

- P.G. Ciarlet and J.L. Lions (Editors), Handbook of Numerical Analysis, Volume 8, Solution of Equations in R^n (Part 4), Techniques of Scientific Computing (Part4), Numerical Methods for Fluids (Part 2), Elsevier 2002.

- ANSYS Theory Reference, ANSYS Inc. 1999.

24.2   Undergraduate Classes

- Mathematical Methods in Civil Engineering

- J. Jedrzejczyk-Kubik, A. Pownuk, and J. Skrzypczyk, Selected Mathematical Problems with Exercises (in Polish), Publishing House of the Silesian University of Technology, ISBN 978-83-7335-578-1, Gliwice, Poland, 2010. (book used as a lecutre notes)
- G.N. Berman, A Problem Book in Mathematical Analysis, Mir Publishers 1977.
- B.P Demidovich, Problems in Mathematical Analysis, Gordon & Beach 1968.

- Theoretical Mechanics

  - V. I. Arnold, A. Weinstein, and K. Vogtmann, Mathematical Methods of Classical Mechanics, Springer 1980.
  - S. Borkowski, General Mechanics - Newtonian Dynamics, Publishing House of Silesian University of Technology, Gliwice 1998 (in Polish).
  - S. Borkowski, General Mechanics - Lagrangian and Hamiltonian Mechanics, Publishing House of Silesian University of Technology, Gliwice 1998 (in Polish).
  - J. Misiak, Genera Mechanics, Scientific and Technical Publisher (WNT), Warsaw 1999 (in Polish).

- Reliability and Safety of Structures

  - J. Murzewski, Reliability of Engineering Structures, Warsaw, Arkady 1989 (in Polish).
  - D. Kececioglu, Reliability Engineering Handbook, Volume 1, DEStech Publications Inc. 2002.
  - M. Kleiber and T. D. Hien, The Stochastic Finite Element Method (Basic Perturbation Technique and Computer Implementation), Volume 1, Wiley 1992.
  - R. Ghanem and P. D. Spanos, Stochastic Finite Elements: A Spectral Approach, Springer-Verlag, New York 1991.
  - W. Feller, An Introduction to Probability Theory and its Applications, Volume I, 3rd Edition, Wiley 1968.

- Introduction to Computer Science

  - Introduction to operating systems and computer hardware.
  - MS Word, MS Excel, Autocad.
  - Progamming in C/C++ and Fortran.

- Numerical Methods in Civil Engineering

  - E. Majchrzak and B. Mochnacki, Numerical Methods, Publishing House of Silesian University of Technology, 4th Edition, Gliwice 2004 (in Polish).

- M. Jankowski and J. Jankowska, Numerical Methods, Volume 1, Scientific and Technical Publisher (WNT), Warsaw 1981 (in Polish).
- M. Jankowski, M. Dryja, and J. Jankowska, Numerical Methods, Volume 2, Scientific and Technical Publisher (WNT), Warsaw 1982 (in Polish).
- J.H. Mathews and K.D. Fink, Numerical Methods Using Matlab, 3th Edition, Prentice Hall 1999.
- J.D. Hoffman, Numerical Methods for Engineers and Scientists, Marcel Dekker Inc. 2001.

- Strength of Materials

  - Z. Dylag, A. Jakubowicz, and Z. Orlos, Strength of Materials, Scientific and Technical Publisher (WNT), Warsaw 1999 (in Polish).
  - Z. Brzoska, Strength of Materials, Scientific and Technical Publisher (WNT), Warsaw 1980 (in Polish).
  - P. Jastrzembowski, J. Mutermilch, and W. Orłowski, Strength of Materials, Scientific and Technical Publisher (WNT), Arkady 1986 (in Polish).

- Statistics for Civil Engineers

  - H. Jasiulewicz and W. Kordecki, Probability Theory and Mathematical Statistics - Examples and Exercises, GIS 2002 (in Polish).
  - W. Feller, An Introduction to Probability Theory and its Applications, Volume I, 3rd Edition, Wiley 1968.

25 Service at the University of Texas at El Paso

- 2010-present Undergraduate Advisor.

  - orientations for new students
  - credit transfers
  - career advising
  - selection of courses

- 2009-2010 I was scheduling colloquia at the Department of Mathematical Sciences.

- 2007-2009 Hiring Lecturers Committee.

- 2008-2009 Graduate Recruiting Committee,

- 2007-2008 Student Competitions Committee.

- 2008 Undergraduate Core Curriculum Committee.

- 2007 Graduate Recruiting Committee.

- 2006 Undergraduate Recruitment Committee.

26 Service at Silesian University of Technology

- 1995-2005 Qualifying Exam Committee.

- 1999-2001 Service for the Library.

- 1997-1999 Scheduling of classes for the Department of Civil Engineering.

- 1995-2006 Website and network administrator for the Institute of Theoretical Mechanics.

27 Languages

- English

- Polish

- Spanish - basic,

- German - basic.