Travis E.W. Doom, Ph. D.

Kegerreis Distinguished Professor of Teaching
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Personal statement

Travis Doom (Senior Member IEEE, '03) is Professor and Associate Chair in the Department of Computer Science and Engineering at Wright State University (WSU). Dr. Doom joined the faculty at Wright State University (Dayton, OH) in 1998 after receiving his Ph.D. from Michigan State University (1998).

ON UNIVERSITY-LEVEL LEADERSHIP/SERVICE: Professor Doom currently serves as the Vice-President of Wright State University's Faculty, and has served as a member of the Wright State University Faculty Senate since 2009. During that time, he has held leadership roles on several University-level committees including service on the Faculty Senate Executive Committee (2011-2015, 2016), as chair of the ad-hoc Faculty Senate Committee on Student Success (2011-2012), as chair of the ad-hoc Faculty Senate committee on Information Technology Integration and Effectiveness (2012-2013), as chair or the Executive Steering Committee for Information Technology (2013), as chair of the University Academic Policies Committee (2013-2014, co-chair 2016-2017), and as co-chair of the ad hoc Faculty Senate General Education core review committee (2014-2015). Prior to his service on the Faculty Senate, Dr. Doom served the Faculty through leadership roles on the Executive Committee of the Wright State Chapter of the American Associate of University Professors (2005-2010), and as chair of the University Academic Integrity Hearing Panel (2006-2008).

ON RESEARCH: Professor Doom is a co-director of WSU's bioinformatics research group and pursues research in the fields of undergraduate engineering education, data science, bioinformatics, and digital/computer systems. His education research focuses on the impact of active learning and culturally relevant teaching on student success in STEM. He applies computational and statistical techniques to identify, retrieve, classify, simulate, characterize, and analyze data from a variety of domains. Much of his research involves the analysis of biological data, including raw instrumentation data, as well as processed DNA sequence, protein sequence, metabolite, or population data. Notable research includes techniques for forensic DNA analysis (cited by the Supreme Court), improved quantification techniques and Kernal-based binning methods for NMR spectroscopic data, isolation and visualization of translational efficiency biases, characterization and synthesis of 1H NMR spectroscopic data, and knowledge discovery in large biological data sets. He served as chair for the IEEE Task Force (Technical Committee) on Bioinformatics 2007-2009. Dr. Doom has advised graduate research in the Computer Science (Ph.D. and M.S.), Computer Engineering (Ph.D. and M.S.), Electrical Engineering (M.S.), and Biomedical Sciences (Ph.D.) programs at WSU.

ON TEACHING: Dr. Doom would not mind being remembered as someone who spent "too much effort" on his teaching. Dr. Doom is recognized as outstanding educator and educational researcher. He currently holds the position of WSU's Robert J. Kegerris Distinguished Professor of Teaching, was awarded an Outstanding Engineers' and Scientists' Award (Education) by the Affiliate Societies Council of Dayton (2015), and was Southern Ohio Council for Higher Education's (SOCHE) awardee for Excellence in Teaching (2014). Dr. Doom served on the Faculty Advisory Board for WSU's Center for Teaching and Learning (2014-2016). Dr. Doom was the 2000 and 2005 recipient of the WSU College of Engineering Excellence in Teaching award, a 2001 invitee to the Ohio Teacher's Excellence Program (OTEP), and a 2002 sponsored attendee of the National Effective Teaching Institute (NETI). Dr. Doom has disseminated his educational work through venues including the American Society for Engineering

Education (ASEE), the ACM special interest group on computer science education (SIGCSE), and IEEE Transactions on Education. Teaching interests include both undergraduate and graduate computer science, computer engineering, and electrical engineering courses.

ON OUTREACH: In the field of data science, Dr. Doom has served as an expert witness in depositions and in person for courts ranging from the local to Federal level. The results of his studies on forensic DNA data have been used to promote justice in courts throughout the world. His work/opinions in bioinformatics have been disseminated in a variety of archival venues ranging from those for engineers (IEEE/ACM Transactions on Bioinformatics and Computational Biology), for forensic and data scientists (Journal of Forensic Science, Jurimetrics), for legal advocates (The Champion), and for scientists in general (Science). Dr. Doom is a founding partner of Forensic Bioinformatics Services, Inc. - a company devoted to promoting social justice through the automated and objective evaluation of forensic data.

Education

Computer Science and Engineering, Ph.D. (1998)
Computer Science and Engineering, M.S. (1994)
Michigan State University, East Lansing, MI.
Focus: Design automation, Formal Analysis of Digital Systems, Computer Architecture/Systems, Distributed Computing, and Computational Mathematics.

Computer Science, B.S. (1992)
Mathematics & Statistics, B.S. (1992)
Bowling Green State University, Bowling Green, OH.
Magna Cum Laude with University Honors and Thesis
Focus: Computer Engineering, Digital Systems, Computational Mathematics.

Work Experience

Wright State University, Dayton, OH.
Professor of Computer Science and Engineering [with Tenure] (2015+)
Robert J. Kegerris Distinguished Professor of Teaching (2014-2017)
Associate Chair of Computer Science and Engineering (2014+)
Director of Undergraduate Studies, Computer Science and Engineering (2011-2014)
Associate Professor of Computer Science and Engineering [with Tenure] (2004-2015)
Faculty member of Biomedical Sciences Ph.D. Program (2003+)
Faculty member of WSU Graduate Program (2000+)
Faculty member of Electrical Engineering (by courtesy, as needed)
Assistant Professor of Computer Science and Engineering (1998-promotion)

Argonne National Laboratory, Argonne, IL.
Research Scientist (STA) (1997-1998)

Intel Corporation, Hillsboro, OR.
Performance Engineer (STA) (1996)

Michigan State University, East Lansing, MI.
Instructor (1998)
System Administrator (1994-1997)

Lead Teaching Assistant (1993-1994)
Teaching Assistant (1992-1993)

Contracts, grants, and licensing agreements

In progress

- D.L. Duren, E. Ey (Co-PI), R.W. Nahhas, R.J. Sherwood, T. Wischgoll, T.E. Doom, T.N. Hangartner (Co-I). "FelsXpress: A Semi-Automated Computer Program for Assessment of Skeletal Maturity in Children." Translational Grant Development Program, Boonshoft School of Medicine. 2014-.
- D. Duren, W. Chumlea, T. Doom, R. Rahhas, and R. Sherwood, "Updating Skeletal Maturity Methods for U.S. Children," DHHS, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMSD), R01 Award amount: $1,985,815, Period: Aug 2014-July 2019.
- T. Doom, J. Gallagher, and M. Raymer, "Research and development of educational methods for use in inverted-lecture computer science classrooms based on a model of the barriers to student success in STEM," Association of American Colleges and Universities, Award amount: $299,999, Period: June 1 2014-Sept 30 2016 [no cost extension, May 31 2017].
- T. Doom, M. Raymer, O. Garcia, D. Krane (inventors). Exclusive license agreement with Forensic Bioinformatic Services, Inc. (licensee) for the use of the Genophiler software and related technology developed at Wright State University, July 19, 2002-.

Completed

- T. Doom (PI), "Infrastructure for assessing retained relevant knowledge," Teaching Innovation Grant, Center for Teaching and Learning, Wright State University, Award amount: $20,000. Period: 2013 - 2014.
- D. Millhorn, T. Boat, R. Fyffe, et al, "A genome research institute in Ohio," Ohio BRTT Grant. Award amount: $1,700,000. Raymer, Doom, Krane (co-PIs) on subcomponent grant under this award. Subcomponent award amount: $427,642. Period: January 2003 - January 2005.
- M. Raymer, T. Doom, and D. Krane (co-PIs), "Crossing the interdisciplinary barrier: An integrated undergraduate program in bioinformatics," NSF CISE Research Infrastructure Grant #EIA-0122582, Award amount: $552,056. Period: September 2001 - August 2004.
- D. Krane, M. Raymer, T. Doom, and O. Garcia (co-PIs), "Commercialization of forensic DNA typing expertise," Wright State University Technology Commercialization Grant #664723. Award amount: $99,951. Period: September 2001 - August 2002.
- T. Doom, J. Gallager, M. Raymer (co-PIs), "Cluster Computing for Bioinformatics and Biocontrol," Ohio Shared Computing Center Resources Grant. Award: A cluster of eight two-processor systems with a value of approximately $50,000. Sept 2001.
- T. Doom (PI), "Development of a bioinformatics option in computer science and engineering," Research Initiation Grant, Wright State University, #241656. Award amount: $8,000. Period: April 2001 - May 2002.
- T. Doom (PI), "Algorithms for functional identification in the reengineering of digital systems," Research Challenge Grant, Wright State University, #663641. Award amount: $25,000. Period: February 1999 - August 2000.

Scholarship

Peer-reviewed articles and papers

- (C31) K. Timmerman and T. Doom. "Infrastructure for continuous assessment of retained relevant knowledge." Accepted for *Proceedings of the 2017 ACM Special Interest Group on Computer Science Education (SIGCSE 2017)*, Seattle (WA), accepted for March 2017. (Best paper award)
- (C30) H. Hu, D. Blank, A. Chan, and T. Doom. "Panel: Teaching to increase diversity and equity in STEM." Accepted for *Proceedings of the 2017 ACM Special Interest Group on Computer Science Education (SIGCSE 2017)*, Seattle (WA), accepted for March 2017.
- (C29) K. Timmerman, M. Raymer, J. Gallagher, and T. Doom. "Educational methods for inverted-lecture Computer Science classrooms to overcome common barriers to STEM student success." *Proceedings of the 2016 IEEE Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT) Conference*, Atlanta (GA), August 2016.
- (C28) T. Doom, K. Timmerman, and M. Raymer. "Infrastructure for continuous assessment of retained relevant knowledge." *Proceedings of the 2013 American Society for Engineering Education (ASEE) North Central Conference*, Columbus (OH), April 2013.
- (J15) D. Raiford, E. Heizer, R. Miller, T. Doom, M. Raymer, and D. Krane. "Metabolic and translational efficiency in microbial organisms." *Journal of Molecular Evolution*, DOI 10.1007/s00239-012-9500-9, Volume 3, Issue 3, pp 206-216, 2012.
- (J14) D. Paoletti, D. Krane, M. Raymer, and T. Doom. "Inferring the number of contributors to mixed DNA profiles." *IEEE/ACM Trans. on Bioinformatics and Computational Biology (TCBB)*, Volume 9, Number 1, pp 113-122, January/February 2012.
- (J13) P. Anderson, D. Mahle, T. Doom, N. Reo, N. DelRaso, M. Raymer. "Dynamic adaptive binning: an improved quantification technique for NMR spectroscopic data." *Metabolomics*, Volume 7, Number 2, pp 179-190, 2011.
- (J12) D. Raiford, D. Krane, T. Doom, M. Raymer. "A genetic optimization approach for isolating translational efficiency bias." *IEEE/ACM Trans. on Bioinformatics and Computational Biology (TCBB)*, 8:342-352, March/April 2011.
- (J11) D. Raiford, D. Krane, T. Doom, and M. Raymer. "Automated isolation of translational efficiency biases that resists the confounding effect of GC(AT)-content." *IEEE/ACM Trans. on Bioinformatics and Computational Biology (TCBB)*, 7:238-250, 2010.
- (J10) P. Anderson, M. Raymer, B. Kelly, N. Reo, N. DelRaso, and T. Doom. "Characterization of 1H NMR spectroscopic data and the generation of synthetic validation sets."*Bioinformatics* 25:2992-3000, November 2009.
- (C27) P. Anderson, C. Maynard, N. Hodson, B. Kelly, N. Reo, N. DelRaso, T. Doom, and M. Raymer. "A web-based framework for the distribution of bioinformatics techniques: Orthogonal projection on latent structures and principal component analysis implemented as RESTful web services." *Proceedings of the Ohio Collaborative Conference on Bioinformatics (OCCBIO) 2009*, Cleveland (OH), June 2009.
- (C26) A. Hanes, M. Raymer, T. Doom, and D. Krane. "A comparison of codon usage trends in prokaryotes." *Proceedings of the Ohio Collaborative Conference on Bioinformatics (OCCBIO) 2009*, Cleveland (OH), June 2009.
- (J09) P. Anderson, N. Reo, N. DelRaso, T. Doom, and M. Raymer. "Gaussian binning: A new kernel-based method for processing NMR spectroscopic data for metabolomics."*Metabolomics*, 4:3, September, 2008.
- (C25) S. Ramachandran and T. Doom. "Validation of the Human ALU phylogeny: a whole genome analysis." *Proceedings of BIOCOMP'08*, Las Vegas, July 2008.
- (C24) D. Raiford, D. Krane, T. Doom, and M. Raymer. "A multi-objective genetic algorithms that employs a hybrid approach for isolating codon usage bias indicative of translational efficiency." *Proceedings of the Seventh IEEE Symposium on Bioinformatics and Bioengineering (BIBE 2007)*, pages 278-285, Cambridge (MA), October 2007.
- (C23) B. Kelly, P. Anderson, N. Reo, N. DelRaso, T. Doom, and M. Raymer. "A proposed statistical protocol for the analysis of metabolic toxicological data derived from NMR spectroscopy." *Proceedings of the Seventh IEEE Symposium on Bioinformatics and Bioengineering (BIBE 2007)*, pages 1414-1418, Cambridge (MA), October 2007.

- (C22) B. Kelly, P. Anderson, N. Reo, N. DelRaso, T. Doom, and M. Raymer. "Comparison of statistical techniques for the analysis of metabolic toxicological data derived from NMR spectroscopy." *Proceedings of the Ohio Collaborative Conference on Bioinformatics*(OCCBIO) 2007, Oxford (OH), July 2007.
- (J08) J. Gilder, T. Doom, K. Inman, and D. Krane. "Run-specific limits of detection and quantitation for STR-based DNA testing." *Journal of Forensic Sciences*, January 2007.
- (C21) S. Ramachandran, T. Doom, M. Raymer, and D. Krane. "Parsimony based approach to test the Evolving Master Gene hypothesis for human ALU repeats." *Proceedings of the 6th IEEE Symposium on Bioinformatics and Bioengineering (BIBE 2006)*, Washington D.C., October 2006. (Best Original Research Paper Award, also Best Student Paper Award).
- (C20) D. Raiford, D. Krane, T. Doom, and M. Raymer. "Isolation and visualization of codon usage biases." *Proceedings of the 6th IEEE Symposium on Bioinformatics and Bioengineering (BIBE 2006)*, pages 179-182, Washington D.C., October 2006.
- (J07) E. Heizer, D. Raiford, M. Raymer, T. Doom, R. Miller, and D. Krane. "Amino acid cost and codon usage biases in six prokaryotic genomes: A whole genome analysis." *Journal of Molecular Biology and Evolution*, Vol. 23, No. 9, pp, 1670-1680, September 2006.
- (C19) D. Raiford, T. Doom, D. Krane, and M. Raymer. "An Investigation of Codon Usage Bias Including Visualization and Quantification in Organisms Exhibiting Multiple Biases". *In Proceedings of the Ohio Collaborative Conference on Bioinformatics (OCCBIO) 2006*, Athens (OH), June 2006.
- (C18) S. Ramachandran, T. Doom, M. Raymer, and D. Krane. "ALU elements as time series genomic data." *In Proceedings of the Ohio Collaborative Conference on Bioinformatics (OCCBIO) 2006*, Athens (OH), June 2006.
- (J06) D. Paoletti, T. Doom, M. Raymer, and D. Krane. "Assesing the implications for close relatives in the event of similar but non-matching DNA profiles." *Jurimetrics*, Vol. 46, No. 2, pp. 161-175, Winter 2006.
- (C17) P. Anderson, D. Raiford, D. Sweeney, T. Doom, and M. Raymer. "Stochastic model of protease-ligand reactions." *Proceedings of the 5th IEEE Symposium on Bioinformatics and Bioengineering (BIBE 2005)* , Minneapolis, Minnesota, pp 306-310, October 2005.
- (J05) D. Paoletti, T. Doom, C. Krane, M. Raymer, and D. Krane. "Empirical Analysis of the STR profiles resulting from conceptual mixtures." *Journal of Forensic Sciences*, Vol. 50, No. 6, pp. 1361-1366, November 2005.
- (C16) M. Peterson, T. Doom, and M. Raymer. "GA-facilitated KNN classifier optimization with varying similarity measures." *Proceedings of the 2005 IEEE Congress on Evolutionary Computation*, vol 3, pp. 2514-2521, 2005.
- (C15) M. Peterson, T. Doom, and M. Raymer. "GA-facilitated knowledge discovery and pattern recognition optimization applied to the biochemistry of protein solvation."*Proceedings of ACM Genetic and Evolutionary Computation Conference (GECCO) 2004*, Seattle (WA), pp. 426-437, June 2004.
- (C14) M. Raymer, M. Peterson and T. Doom. "Knowledge discovery in large biological data sets using hybrid classifier/evolutionary algorithms", *Proceedings the 36th Symposium on the Interface: Computational Biology and Bioinformatics*, Baltimore, MD, May 26 - 29, 2004.
- (C13) G. Cooper, M. Raymer, T. Doom, D. Krane, and N. Futamura. "Indexing genomic databases". *Proceedings of 2004 IEEE international symposium on Bioinformatics and Bioengineering (BIBE)* , Taichung (Taiwan), pp. 587-591, May 2004.
- (C12) D. Burhans, M. DeJohgh, T. Doom, and M. LeBlanc. "Bioinformatics in the undergraduate curriculum: Opportunities for computer science educators." *Proceedings of the ACM Special Interest Group on Computer Science Education (SIGCSE) 2004*, Norfolk (VA), March 2004.
- (J04) J. Gilder, S. Ford, T. Doom, M. Raymer, and D. Krane. "Systematic differences in electropherogram peak heights reported by different version of the Genescan (R) software." *Journal of Forensic Sciences*, pgs. 92-95, Vol 49, No. 1, January 2004.
- (J03) M. Raymer, T. Doom, L. Kuhn, and W. Punch. "Knowledge Discovery in Medical and Biological Datasets Using a Hybrid Bayes Classifier/Evolutionary Algorithm." *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. 33, No. 5, October 2003.
- (J02) T. Doom, M. Raymer, D. Krane, and O. Garcia. "Crossing the interdisciplinary barrier: A baccalaureate computer science option in bioinformatics." *IEEE Transactions on Education*, Volume 46, No. 3, pp 387-393, August 2003.

- (C11) J. Gilder, D. Krane, T. Doom and M. Raymer. "Identifying patterns in DNA change." *Proceedings of the 2003 Midwest Artificial Intelligence and Cognitive Science Conference*, Columbus OH, April 2003.
- (J01) J. Gilder, M. Peterson, J. Wright, and T. Doom. "A versatile tool for student projects: An ASM programming language for the LEGO mindstorm." *ACM Journal on Educational Resources in Computing (JERIC)*, III:1, ISSN: 1531-4278, March 2003.
- (C10) M. Peterson, T. Doom, and M. Raymer. "GA-facilitated cosine classifer optimization with application to the biochemistry of protein-water interactions." *Proceedings of the 6th International Conference/Exhibition on High Performance Computing (HPC-Asia 2002)*, Banglore (India), December 2002.
- (C09) T. Doom, M. Raymer, D. Krane, and O. Garcia. "A proposed undergraduate bioinformatics curriculum for computer scientists." *Proceedings of the 2002 ACM Special Interest Group on Computer Science Education (SIGCSE 2002)*, Covington (KY), February 2002.
- (C08) J. Gilder, M. Raymer, and T. Doom. "PocketMol: A Molecular Visualization Tool for the PocketPC." *2001 IEEE International Symposium on Bioinformatics and Bioengineering (BIBE 2001)*, November 2001.
- (C07) D. Sweeney, J. Alter, M. Raymer, and T. Doom. "Profile Combinatorics for Fragment Selection in Comparative Modeling." *2001 IEEE International Symposium on Bioinformatics and Bioengineering (BIBE 2001)*, November 2001.
- (C06) J. White, M.C. Chung, A. Wojcik, and T. Doom. "Efficient algorithms for subcircuit enumeration and classification." *Proceedings of the 2001 IEEE Conference on Computer Design*, Austin (TX), September 2001.
- (C05) C. Leighber and T. Doom. "Using output signatures to enhance semantic matching." *Proceedings of the 44th IEEE Midwest Symposium on Circuits and Systems*, Dayton (OH), August 2001.
- (C04) T. Doom and O. Garcia. "Bioinformatics: An option in computer science." *Proceedings of the 2001 Midwest Artificial Intelligence and Cognitive Science Conference*, March 2001.
- (C03) J. White, A. S. Wojcik, M. Chung, and T. Doom. "Candidate subcircuits for functional module identification in logic circuits." *Proceedings of the 2000 Great Lakes Symposium on VLSI*, March, 2000.
- (C02) T. Doom, A. S. Wojcik, and M. Chung. "Design recovery for incomplete combinational logic." *Proceedings of the IEEE 1999 Great Lakes Symposium on VLSI*, March, 1999.
- (C01) T. Doom, J. White, A. S. Wojcik, and G. Chisholm. "Identifying high-level components in combinational circuits." *Proceedings of the IEEE 1998 Great Lakes Symposium on VLSI*, February, 1998.

Book chapters, letters, abstracts, posters, and other notable technical communications

- (M25) K. Timmerman, M. Raymer, J. Gallagher, T. Doom. "Effectiveness of Sequenced Inverted-lecture Interventions to STEM Student Success", AAC&U Crossing Boundaries: Transforming STEM Education conference, November, 2015. (Peer reviewed abstract and conference presentation).
- (M24) K. Timmerman, M. Raymer, J. Gallagher, and T. Doom. "Effectiveness of sequenced inverted-lecture interventions to STEM student success." Poster at the Teaching for Student Success Symposium, Wright State University, August 2015. (Second place winner, best poster award).
- (M23) K. Timmerman, M. Raymer, J. Gallagher, and T. Doom. "Educational methods for inverted-lecture Computer Science classrooms to overcome common barriers to STEM student success." Ohio-PKAL First Annual Conference: Increasing STEM Student Success in Higher Education, Westerville, OH, May 2015.
- (M22) D. Krane, V. Bahn, D. Balding, B. Barlow, H. Cash, B. Desportes, P. Deustachio, K. Devlin, T. Doom, I. Dror, S. Ford, C. Funk, J. Gilder, G. Hampikian, K. Inman, A. Jamieson, P. Kent, R. Koppl, I. Kornfield, S. Krimsky, J. Mnookin, L. Mueller, E. Murphy, D. Paoletti, D. Petrov, M. Raymer, D. Risinger, A. Roth, N. Rudin, W. Shields, J. Siegel, M. Slatkin, Y. Song, T. Speed, C. Spiegelman, P. Sullivan, A. Swienton, T. Tarpey, W. Thompson, E. Ungvarsky, and S. Zabell. "Time for DNA Disclosure." Letter in *Science*, Vol. 326, pages 1631-1632, December 18, 2009.
- (M21) S. Khetarpal, S. Ramachandran, and T. Doom. "A survey of hardware description languages for high level synthesis." Proceedings of the *First Annual Ohio Graduate Student Symposium on Computer and Information Science & Engineering* (OGSS-CISE 2005), June 10, 2005.

- (M20) M. Peterson, T. Doom, and M. Raymer. "GA-facilitated classifier optimization with varying similarity measures." Abstract and poster at the *ACM Genetic and Evolutionary Computation Conference (GECCO) 2005*, April 2005.
- (M19) D. Krane, T. Doom, L. Mueller, M. Raymer, W. Shields, and W. Thompson. "Commentary on: Budowle B, Shea B, Niezgoda S, Chakraborty R. CODIS STR loci data from 41 sample populations. J Forensic Sci 2001; 46:453-489." Letter in *Journal of Forensic Sciences*, Vol. 49, No. 6, pgs. 1388-1389, November 2004.
- (M18) S. Ramachandran, N. Futamura and T. Doom. "Hardware Implementation of a Scalable, Efficient and High Speed lookup Algorithm for IP Routing." Proceedings of the *First Annual Ohio Graduate Student Symposium on Computer and Information Science & Engineering* (OGSS 2004), June 10, 2004.
- (M17) D. Krane, M. Raymer, and T. Doom. "An interdisciplinary undergraduate bioinformatics curriculum for biological scientists." Letter in *Journal of College Science Teaching*, XXXII:296, 2003.
- (M16) T. Doom, M. Raymer, and D. Krane. "Bioinformatics: Where Biology meets Computer Science." *IEEE Potentials*, pgs. 24-28, Vol. 23, No. 1, Feb/March 2004.
- (M15) W. Thompson, S. Ford, T. Doom, M. Raymer, and D. Krane. "Evaluating forensic DNA evidence: Breaking open the black box (how to review electronic data)." *The Champion*, pgs. 25-28, Vol. XXVII, No. 3, May 2003.
- (M14) W. Thompson, S. Ford, T. Doom, M. Raymer, and D. Krane. "Evaluating forensic DNA evidence: Essential elements of a competent defense review." *The Champion*, (cover) pgs. 16-25, Vol. XXVII, No. 3, April 2003. (Note: This article is cited by the Supreme Court of the United States in "District Attorney's Office for the Third Judicial District et al. v. Osborne, October Term 2008.)
- (M13) T. Doom. Appendix Chapter B.1 "Introduction to Altera MAX+plus II" of *D. Givone's* Digital Principles and Design, McGraw-Hill, 2002.
- (M12) J. Gilder, M. Raymer, and T. Doom. "PocketMol: A Molecular Visualization Program for the Pocket PC." Abstract and poster at the *Symposium on Bioinformatics for Drug-Development*, Toledo (OH), November 2001.
- (M11) M. Peterson, M. Raymer, and T. Doom. "Prediction Enhancement of Protein-Water Binding Conservation through Evolutionary Computation." Abstract and poster at the *Symposium on Bioinformatics for Drug-Development*, Toledo (OH), November 2001.
- (M10) D. Sweeney, T. Doom, and M. Raymer. "Profile Combinatorics for Fragment Selection in Comparative Protein Structure Modeling." Abstract and poster at the *Symposium on Bioinformatics for Drug-Development*, Toledo (OH), November 2001.
- (M09) K. Velichetii and T. Doom. "A framework for design recovery of digital systems." *Proceedings of the On-line Symposium for Electronics Engineers*, November 28, 2000.
- (M08) K. Dowd and C. Severance. High Performance Computing. 2nd Edition, O'Riley & Associates, Inc., 1999. [Dr. Doom is acknowledged for informal contributions to the technical content of this book].
- (M07) T. Doom, J. White, and A. S. Wojcik. "Design recovery for incomplete combinational Logic." *Record of the Argonne/DoD Workshop on Reverse Engineering of Digital Systems*, January 1998.
- (M06) J. White, T. Doom, and A. S. Wojcik. "Candidate subgraph enumeration to facilitate design recovery." *Record of the Argonne/DoD Workshop on Reverse Engineering of Digital Systems*, January 1998.
- (M05) T. Doom, J. White, G. Chisholm, and A. S. Wojcik. "The identification of functional components in combinational circuits." Tech. Rep. ANL/DIS/TM-47, Division of Information Science, Argonne National Laboratory, January 1998.
- (M04) J. White, T. Doom, A. Wojcik, M. Chung, and G. Chisholm. "Candidate subcircuit generation to facilitate identification of high-level components in logic circuits." Tech. Rep. MSUCPS:TR97-48 Department of Computer Science, Michigan State University, December 1997.
- (M03) A. Wojcik, C. Wey, T. Doom, and J. Samarziya. "An approach to the redesign of digital circuits from partial information." Tech. Rep. MSUCPS:TR97-47 Department of Computer Science, Michigan State University, December 1997.
- (M02) T. Doom and A. S. Wojcik. "Reengineering from partial specifications through BDD representation of functional constraint." Tech. Rep. MSUCPS:TR97-3, Department of Computer Science, Michigan State University, February 1997.

- (M01) M. Brehob, T. Doom, R. J. Enbody, S. Moore, W. Moore, R. Sass, and C. Severance. "Beyond RISC - The Post-RISC Architecture." Tech. Rep. MSUCPS:TR96-11, Department of Computer Science, Michigan State University, March 1996.

Dissertations and theses supervised (as major professor)

- K. Timmerman. "Educational Methods for Inverted-lecture Computer Science and Engineering Classrooms to Overcome Common Barriers to STEM Student Success." Ph.D. dissertation, Computer Science & Engineering, Wright State University, 2016. Dr. Timmerman is a faculty member at Xavier University.
- C. Leong. "Pond and Lake Primary Production Calculator" M.S. thesis, Computer Science, Wright State University, 2015.
- V. Tendulkar. "Behavioral signature-based framework for identifying unsatisfiable variable mappings between digital designs" Ph.D. dissertation, Computer Science & Engineering, 2012. Dr. Tenduklar is now a Senior Design Engineer at AMD in San Francisco, CA.
- D. Gangadharaiah. "Patterns of di-peptide usage for gene prediction." M.S. thesis, Computer Engineering, Wright State University, 2010.
- J. Gilder. "Computational methods for the objective review of forensic DNA testing results." Ph.D. dissertation, Computer Science & Engineering, Wright State University, 2007. Dr. Gilder is now the Director of Analytics and Informatics at IBM/Explorys.
- S. Ramachandran. "Characterization of the Human Genome using ALU repeat elements." Ph.D. dissertation, Computer Science & Engineering, Wright State University, 2006. Dr. Ramachandran is a faculty member and the Coordinator of Informatics at Indiana University Southeast.
- D. Paoletti. "Liklihood ratios for the number of contributors to a forensic DNA mixture: A probabilisitic approach." Ph.D. dissertation, Computer Science & Engineering, 2006. Dr. Paoletti is now a faculty member at the University of Michigan.
- P. Athri (co-director). "Enhanced QSAR studies using Synthetic Descriptors." M.S. thesis, Computer Science, Wright State University, 2003.
- S. Anand. "Statistical boundaries for recognizing positive selection in mammalian orders using nucleotide substitution rates." M.S. thesis, Computer Science, Wright State University, 2003.
- J. Gilder. "Developing an expert system and discovering new standards for forensic DNA analysis." M.S. thesis, Computer Engineering, Wright State University, 2003.
- M. Peterson (co-director). "EC-facilitated cosine-based Knn classifier optimization as applied to solvation site prediction." M.S. thesis, Computer Science, Wright State University, 2003.
- C. Leighber. "Anti-aliasing signatures: An enhancement for semantic matching." M.S. thesis, Electrical Engineering, Wright State University, 2001.
- K. K. Velicheti. "An iterative algorithm for semantic matching in the design recovery of digital systems." M.S. thesis, Electrical Engineering, Wright State University, 2000.

- Dissertation committee member for: M. Peterson, P. Anderson, D. Raiford, G. Cooper, D. Sweeny, E. Hieser, A. Herner, F. Wang.

- Thesis committee member for: B. Abiramikumar, H. Botha, J. Chen, D. Shindel, N. Namratha, J. Akash, R. Flynn, B. Kelly, A. Hanes, B. Jackson, B. Gump, B. James, Y. Zhang.

Awards and Honors

- Outstanding Engineers' and Scientists' Award (Education), Affiliate Societies Council of Dayton (2015).
- Robert J. Kegerreis Distinguished Professor of Teaching, Wright State University (2014-2017).

- Southwestern Ohio Council for Higher Education (SOCHE) 2014-2015 Faculty Excellence in Teaching Award.
- College of Engineering and Computer Science Excellence in Service Award (2007-2008), Wright State University.
- Senior Member, IEEE Computer Society (inducted as Senior Member, 2003).
- College of Engineering and Computer Science Excellence in Teaching Award (1999 (finalist), 2000, 2001-2003 (ineligible), 2004 (finalist), 2005, 2006-2009 (ineligible), 2010 (finalist), 2011 (finalist), Wright State University.
- University honors, Bowling Green State University (1992).
- Top graduating student in Department of Computer Science, Bowling Green State University (1991).
- Academic Achievement Award, Bowling Green State University (1988-1992).
- National Merit Scholar (1988-1992).

Service

University service

- Faculty Vice-President, Faculty Senate, Wright State University (2016-2017)
- University Budget Priorities committee, Wright State University (2016+)
- University Building and Grounds committee, Wright State University (ex-officio, 2016+)
- Biomedical Sciences Ph.D. program curriculum committee, College of Science and Mathematics, Wright State University (2016+)
- Board of Trustees Student Affairs committee, Wright State University (ex-officio, 2016+)
- University promotion and tenure appeals committee, Wright State University (2016)
- Faculty advisory board, Center for Teaching and Learning, Wright State University (2014-2016)
- General education core review committee, Wright State University (co-Chair, 2014-2015)
- Associate Chair, Department of Computer Science and Engineering, Wright State University (2014+).
- Faculty recruitment fellow, College of Engineering and Computer Science, Wright State University (2013+).
- University Academic Policies Committee, Wright State University (Chair 2013-2014, 2015-2016, co-Chair 2016-2017).
- Executive Steering Committee for Information Technology, Wright State University (Chair, 2013)
- Faculty Development Committee, College of Engineering and Computer Science, Wright State University (2013-2015).
- College Completion Committee, Wright State University (2013-2016).
- ad-hoc Faculty Senate Committee on Information Technology Integration and Effectiveness, Wright State University (Chair, 2012-13).
- ad-hoc Faculty Senate Committee on Student Success, Wright State University (Chair, 2011-12).
- Director of Undergraduate Programs, Dept. of Computer Science, Wright State University (2011-2014).
- Curriculum committee, College of Engineering and Computer Science, Wright State University (2011-2013, Chair 2012-2013).
- WSU Faculty Senate, senator (2009+), Executive Committee (2011-2015, 2016+).
- Faculty Governance Committee, Wright State University (2007-2008).
- Steering Committee, Department of Computer Science and Engineering, Wright State University (2007-2009, chair 2008-2010, chair 2012-2016).
- Enrollment/Recruitment Committee, Department of Computer Science and Engineering, Wright State University (2006-2008).
- Center for Teaching and Learning Advisory Council, Wright State University (2005-2006).
- Executive Committee, Wright State University chapter of the American Association of University Professors (Member-at-large, 2005-2006; Treasurer 2006-2008; Member-at-large 2008-2010; Chapter council 2010-2012).

- Ad-hoc Program Assessment and Planning Committee, Department of Computer Science and Engineering, Wright State University (Chair, 2004-2005).
- Academic Computing Committee, College of Engineering and Computer Science, Wright State University (2004-2005).
- Petitions Committee, College of Engineering and Computer Science, Wright State University (2004-2006).
- Ad-hoc Engineering Math Committee, College of Engineering and Computer Science, Wright State University (2001-2002).
- University Athletic Council, Wright State University (2001-2002).
- Teaching Awards Committee, College of Engineering and Computer Science, Wright State University (2000-2003, 2006-2009).
- University Academic Integrity Hearing Panel, Wright State University (2000+; Chair (acting), Summer 2004; Chair, 2006-2008).
- Instructor for the College of Engineering Academic Advantage Program (2000+).
- Various Department Committees, Department of Computer Science and Engineering, Wright State University (1998+, often Chair).

Professional service

- Sigma Phi Delta (ΣΦΔ), International Fraternity of Engineers, Adviser (2015+).
- Task Force (Technical Committee) on Bioinformatics, IEEE Computer Society, Chair (2007-2009).
- Elsevier's Journal of Theoretical Biology, Reviewer (2009).
- IEEE Bioinformatics and Bioengineering, Program committee (2006, 2007).
- Reviewer for Academic Texts: Peterson, John Wiley and Sons, Oxford Press, Brooks/Cole, McGraw-Hill.
- Reviewer for NSF Pathways to Revitalized Undergraduate Computing Education panel (2007).
- Reviewer for NSF Dynamic Data Driven Applications Systems panel (2005).
- Reviewer for NSF Educational Innovation panel (2003, 2004).
- Reviewer for IEEE Bioinformatics and Bioengineering (2002, 2005, 2006).
- Reviewer for IEEE Transactions on Computer-aided Design (1998).
- Reviewer for IEEE Transactions on Education (1998+).
- Reviewer for IEEE Great Lakes Symposium on VLSI (1997-1998).
- Reviewer for IEEE Design Automation Conference (1997-2000).

Professional membership

- Tau Beta Pi (inducted 2007).
- Member, Association for Computing Machinery, Special Interest Group on Computer Science Education (ACM SIGCSE) (inducted 2002).
- Member, American Society for Engineering Education (inducted 2001).
- Senior Member, IEEE Computer Society (inducted as Member, 1998; inducted as Senior Member, 2003).