Thomas E. Bihari, Ph.D.

Associate Professor of Practice
Computer Science and Engineering
The Ohio State University
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Highlights

- **University-level educator**, with classroom and curriculum development experience, and research publications.
- Expertise in applying **data analytics, AI/OR/statistical algorithms, embedded systems (IoT)** and visualization to heterogeneous data to solve complex business problems.
- Experience in **full product lifecycle** and **software engineering methodologies**, from ideation, through market research, R&D, proof of concept, product development, delivery, and support.
- 20+ years experience with **entrepreneurship**, collaborative **university-industry R&D**, and **commercialization of university research**.
- **Project management** and **technical leadership** experience, leading multi-disciplinary project teams composed of **university**, **government**, and **corporate** personnel.
- Training and experience in **organizational change leadership**, and adoption and tailoring of **solution delivery best practices**.
- Leadership experience on **large business/IT programs**.
- Project management and software engineering **curriculum developer**, **instructor** and **mentor** in industrial settings.
- **Ph.D.** in Computer and Information Science.
- **Project Management Professional (PMP)** (ret) certification.
- **Lean Six-Sigma Black Belt**.
- Agile **Certified Scrum Master (CSM)** certification.
- **Stanford Certified Project Manager (SCPM)**.
- Member of **OSU Translational Data Analytics Institute**.

Employment

- 2019-Present, **Associate Professor of Practice, Computer Science and Engineering**, The Ohio State University, Columbus, Ohio.
- 2009-2019, **Sr. Lecturer, Computer Science and Engineering**, The Ohio State University, Columbus, Ohio.
- 2006-2019, **Sr. Consultant, IT Project Management** and **Analysis**, Nationwide Insurance, Columbus, Ohio.
- 1994-2006**, Vice President, Research and Development**, AMT Systems Engineering, Columbus, Ohio.
- 1990, **Visiting Professor of Computer Science**, Naval Postgraduate School, Monterey, CA.

Experience

The Ohio State University

- **Chair of Outreach and Engagement Committee**: Charged with building strong, sustainable relationships with industry partners, other OSU departments, school systems, and other organizations.
- **Member of the Translational Data Analytics Institute's (TDAI) Masters in Translational Data Analytics Advisory Board:** Set direction for program, evaluate prospective student applications, resolve issues, and coordinate responsibilities between TDAI and the CSE Department.

- **CSE Liaison to the 2U/Trilogy Coding Bootcamp Programs:** Review instructor candidates, review Trilogy proposals for new courses (Cloud Computing, Advanced Front-End, Advanced Back-End, UX/UI), meet with Trilogy to resolve issues with ongoing classes.
- **Graduate Student Advisor**: Mentor and coordinate students working on real-world projects in weather and climate analysis, biodynamics (for back pain analysis), and other areas.
- **Course Coordinator and Instructor CSE 3232 – Software Requirements Analysis**: Information systems analysis; object-oriented analysis models and tools; use cases, system modeling using UML; requirements specification development; term project.
- **Instructor GRADTDA 5622 – Big Data Computing Foundations II**: Computational Complexity, Parallel Processing, Hadoop, Spark, SQL, Cloud Analytics. Student assignments in Python (Jupyter Notebooks, Pandas, PySpark, etc.) on the Ohio Supercomputer Center's supercomputers.
- **Instructor CSE 5243 – Introduction to Data Mining**: Data Pre-processing, Classification Analysis, Clustering Analysis, Association Analysis, Text Mining, Sentiment Analysis, Graphs, and other topics. Student assignments in Python (Jupyter Notebooks, Pandas, etc.)
- **Instructor CSE 5194.01 – Group Studies in Computer Science and Engineering (Capstone)**: Structured, agile, customer-focused processes for teams of student researchers working on real-world problems.
- **Instructor CSE 757 (3231) – Enterprise Software Engineering**: business/IT strategy alignment, requirements, analysis, architecture & design, project management, estimation, quality, system deployment and maintenance.
- **Instructor CSE 758 (5911) – Software Engineering Project Capstone**: Principles and applications of programming team organization, cost estimation, scheduling, requirements analysis, design and development, testing. Group term projects have included: an iPhone application for location-aware social networking; a touch-screen instructional system for children with Autism.
- Completed **CITI Human Subjects Protection** and **Responsible Conduct of Research** courses, satisfying the OSU's human subjects training protection requirement.
- **ABET Accreditation Point of Contact** for CSE 3232 for **the BS-CSE program**.
- **Mentor for OSU students and Interns at Nationwide**. To date, have helped over a dozen OSU undergraduate and graduate students find and succeed in positions at Nationwide.

Nationwide Insurance

- Led requirements and data analysis for large ($500MM+) transformational program, **managed teams of requirements and data analysts for data-intensive projects**, across legacy policy systems, data warehouse and next-generation analytics platforms, and packages (e.g., Guidewire PolicyCenter). Releases to date deployed on schedule with strong user acceptance.
- Led requirements and quality assurance for program targeted with developing the next generation foundation for Nationwide's **data warehousing and "big data" analytics capabilities**. Key areas include architectural standardization, scalability, cost containment, data quality and certification, privacy and confidentiality, and support for business agility.
- Co-led special project for Chief Data Officer to develop enterprise **Information Lifecycle Management** model and evaluate tools (e.g., IBM InfoSphere Optim data tools, test data management, data masking).
- Co-developed methodology for **"agile" data analysis and modeling** teams, team structure, tool use (e.g., Informatica Data Quality), work products, integration with business, development and test work. Improved effectiveness of end-to-end, data-heavy projects.
- Member of enterprise IT **Internet of Things (IoT)** skill uplift team – leading requirements uplift area.
- **Mentor** analysts and work with them to **identify skill gaps** and **uplift skills**.
- **Consult with executives** on best practices to be used on large programs.
- **Teach methodology courses** to IT and business professionals. **Developed curriculum** for lean/agile estimating and backlog management - teach class and train other instructors.

AMT Systems Engineering

- **Vice President, R&D** – **Managed project teams** that developed solutions in many industries (transportation, bio-medicine, telecom/internet, insurance, and others), **in collaboration with university and government partners**.

- Projects ranged from fast iterative / incremental projects (e.g., for **venture-capital-funded technology companies**) to heavily-regulated, safety-critical applications (e.g., for Goodrich/L3 Aerospace).
- **Government** and **commercial** clients included US DOD, US DOT, NIH, NASA, FAA, ABB, CompuServe, General Electric, General Railway Signal, Goodrich, Honeywell, L-3, Lucent, Metron, and many others.
- **Collaborated on government-funded R&D** projects with university partners and technology incubators (e.g., **Business Technology Center**). Developed technology, led commercial product development, supported start-up companies formed to commercialize the technology. A partial list includes:
  - **Transmap, Inc.** – GPSVan, OSU Center for Mapping (NASA). Mobile mapping technology (GPS, digital video) used by government agencies to manage infrastructure. Deep expertise in **geographical information analysis**.
  - **BioDynamic Solutions, Inc.** – Lumbar Motion Monitor, OSU ISE, (NIH). Device used to evaluate the impact of job design on the reduction of low back injuries in the workplace.
  - **Cognitive Systems Engineering, Inc.** – Post-Operations Evaluation Tool, OSU ISE, (FAA). **Integrated data analytics system** used by the FAA and airlines to analyze air traffic congestion near high traffic airports.
  - **Paraspinal Diagnostic Corp**. – 63-channel electromyography device for imaging muscle activity in the lower back (FDA 510(k) and UL approval). Funded by venture capital from the Ohio Innovation Fund, Nationwide Foundation, and angel investors.
- Expertise in **all aspects of the solution development lifecycle** (from Business Case and Requirements development through Solution V&V, Deployment and Maintenance).
- Experience in **Business Development** and general **Business/Financial Management**. Worked with the board of directors to set **strategic corporate goals,** developed **financial models** and tracked performance. Worked with attorneys on **employment**, **business partnership**, and **intellectual property** matters.

Naval Postgraduate School

- As a **Visiting Professor of Computer Science**, collaborated with the faculty and staff on software development for the AUV-II, a self-contained autonomous underwater vehicle controlled by an on-board expert system.

Education

- Ph.D., **Computer and Information Science**, Ohio State University, 1987.
- M.S., **Computer and Information Science**, Ohio State University, 1983.
- M.S., **Mathematics**, Ohio State University, 1982.
- B.S., **Mathematics**, Kent State University, 1978.

Professional Activities

- Co-founder of the **IEEE International Conference on Engineering of Complex Computer Systems**.
- Co-founder and first chairperson of the ITC **Information Technology Forum**.
- Former member of the Columbus Chamber of Commerce's **Task Force on Manufacturing and Technology**.
- Former member of the **Ohio Business Roundtable's Biosciences Task Force**, and corporate contact for **BioOhio**, Ohio's bioscience discovery, innovation, and commercialization organization.
- Former member of the **IEEE Technical Council on Software Engineering**; the **IEEE Systems, Man, and Cybernetics Society**; the **IEEE Robotics and Automation Society**; the **IEEE Technical Committee on Real-Time Systems**; and the **IFIP Working Group 8.6 on the Diffusion and Adoption of Information Technology**; Program Committee for the **IEEE Real-Time Systems Symposium**.
- Reviewer for a number of publications, including **IEEE Computer**, **IEEE Transactions on Software Engineering**, **IEEE Expert**, **IEEE Software**, and **Real-Time Systems journal**. Speaker at conferences and seminars.

- Member of the **Association for Computing Machinery** (ACM), the **Institute of Electrical and Electronics Engineers Computer Society** (IEEE-CS), and the **Project Management Institute** (PMI).

Certifications

- Project Management Professional (PMP) (ret) through Project Management Institute.
- Certified Scrum Master.
- Lean Six-Sigma Black Belt.
- Stanford Certified Project Manager.
- Certified SAFe® Agilist: Scaled Agile.

Awards and Patents

- AMT Systems Engineering was elected "1999 Enterprise of the Year" by the ITC, due largely to collaborative work with university researchers, **generating an estimated $20MM in research funding for The Ohio State University**.
- United States Patent 6,004,312: Computerized EMG Diagnostic System.

Publications

- T. Bihari, I. Malkiman, M. Chaabouni, J. Bolinger, J. Ramanathan R. Ramnath, M. Herold, Enabling Scalability, Richer Experiences and ABET-Accreditable Learning Outcomes in Computer Science Capstone Courses Through Inversion of Control, 41st ASEE/IEEE Frontiers in Education Conference, October 12 - 15, 2011, Rapid City, SD.
- M. Herold, J. Bolinger, R. Ramnath, T. Bihari, J. Ramanathan, Providing End-to-End Perspectives in Software Engineering, 41st ASEE/IEEE Frontiers in Education Conference, October 12 - 15, 2011, Rapid City, SD.
- T. Lynch, M. Herold, J. Bolinger, S. Deshpande, T. Bihari, J. Ramanathan, R. Ramnath, An Agile Boot Camp: Using a LEGO®-Based Active Game to Ground Agile Development Principles, 41st ASEE/IEEE Frontiers in Education Conference, October 12 - 15, 2011, Rapid City, SD.
- T. Bihari, Evaluating COTS Source Code For Use In Certified Embedded Systems, COTS Journal, February 2003.
- T. Bihari and P. Gopinath, Using Real-Time Linux in Safety Critical Applications, IEEE Workshop on Real Time Operating Systems and Applications and Second Real Time Linux Workshop, Orlando, FL, November 27-28, 2000.
- T. Bihari, Practical Issues in Information Technology Transfer, IFIP Working Conference on Diffusion, Transfer and Implementation of Information Technology, Seven Springs, PA, October 10-13, 1993.
- T. Bihari, Real-Time Software Product Development, First IEEE Workshop on Real-Time Applications, New York, May 12, 1993.
- C. Layton, P. Smith, C. McCoy, and T. Bihari, An Empirical Evaluation of Computer-based Tools to Aid in Enroute Flight Planning, IEEE International Conference on Systems, Man, and Cybernetics, 1992.
- C. Layton, P. Smith, C. McCoy, and T. Bihari, An Empirical Evaluation of Tools to Aid in Enroute Flight Planning, 36th Annual Meeting of the Human Factors Society, 1992.
- T. Bihari and P. Gopinath, Object-Oriented Real-Time Systems: Concepts and Examples, IEEE Computer, December 1992.
- P. Gopinath, T. Bihari, and R. Gupta, Compiler Support for Object-Oriented Real-Time Software, IEEE Software, pp. 45-50, September 1992.
- P. Gopinath, T. Bihari, and R. Gupta, Compiler Techniques for Generating Predictable Object Oriented Real Time Software, Ninth IEEE Workshop on Real-Time Operating Systems and Software, Pittsburgh, May 13-14, 1992.
- P. Gopinath and T. Bihari, Concepts and Examples of Object-Oriented Real-Time Systems, in "Readings in Real-Time Systems" by Lee and Krishna, IEEE Computer Society Press, 1992.
- S. Kwak, R. McGhee, and T. Bihari, Rational Behavior Model: A Tri-Level Multiple Paradigm Architecture for Robot Vehicle Control Software, Technical Report NPSCS-92-003, Naval Postgraduate School, March 1992.

- D. Payton and T. Bihari, Intelligent Real-Time Control of Robotic Vehicles, Communications of the ACM, pp. 48-63, September 1991. Translated to Japanese in Nikkei AI Quarterly, pp. 158-175, Winter 1992, Nikkei Business Publications, Tokyo.
- C. Layton, P. Smith, C. McCoy, and T. Bihari, Multiple Representations for Adaptive Planning, IEEE International Conference on Systems, Man, and Cybernetics, 1991.
- T. Bihari, P. Gopinath, and T. Walliser, Managing Beliefs, Desires, and Time in Real-Time Systems, Eighth IEEE Workshop on Real-Time Operating Systems and Software, Atlanta, May 15-17, 1991. Published in the IEEE Real-Time Systems Newsletter, pp. 119-123, Fall 1991.
- T. Bihari and K. Schwan, Dynamic Adaptation of Real Time Software for Reliable Performance, ACM Transactions on Computer Systems, May 1991.
- T. Bihari, and K. Schwan, RESAS: A Real-Time Software Adaptation System, Technical Report GTRC-TR-90/67, School of Information and Computer Science, Georgia Institute of Technology, December 1990.
- T. Bihari, T. Walliser, and E. Ribble, Designing Software for Real-Time Intelligent Control Systems, Workshop on Design Principles for Real-Time Knowledge Based Control Systems, AAAI, Boston, July 29, 1990.
- T. Bihari, R. McGhee, Luqi, and Y. Lee, Applying a Computer Aided Prototyping System to the Software of an Autonomous Underwater Vehicle, Proceedings of the Workshop on Software Tools for Distributed Intelligent Control Systems, DARPA, Pacifica, California, July 17-19, 1990. Lawrence Livermore National Laboratory publication CONF-9007134, pp. 11-19.
- D. Pugh, E. Ribble, V. Vohnout, T. Bihari, T. Walliser, M. Patterson, and K. Waldron, A Technical Description of the Adaptive Suspension Vehicle, International Journal of Robotics Research, pp. 24-42, April 1990.
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- P. Gopinath and T. Bihari, Experiences with a Family of Multiprocessor Real-Time Operating Systems, in Proceedings of the Workshop on Experiences with Distributed and Multiprocessor Systems, Ft. Lauderdale, Florida, USENIX, pp. 205-226, October 5-6, 1989.
- P. Gopinath, T. Bihari, and K. Schwan, Operating System Constructs for Managing Real-Time Software Complexity, 1989 Workshop on Operating Systems for Mission Critical Computing, DOD Office of Naval Technology, Washington D.C., September 1989. Published in Mission Critical Operating Systems: Studies in Computer and Communications Systems, Volume 1, IOS Press, Burke, Virginia.
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- T. Bihari, Functional vs. Object Oriented Development of Real Time Software (A Comparison of Two Robot Control Programs), Fifth Workshop on Real Time Operating Systems, Washington D.C., IEEE, May 1988.
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- T. Bihari, Adapting Real Time Software for Reliable Performance, Workshop on Fault Tolerance in Parallel and Distributed Computing, San Diego, California, IEEE, December 1987.
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- T. Bihari, Adapting Real Time Software for Reliable Performance. Doctoral Dissertation, Department of Computer and Information Science, The Ohio State University, June 1987.
- K. Schwan, T. Bihari, and B. Blake, Adaptable Reliable Software for Distributed and Parallel Real Time Systems, in Proceedings of the Sixth Symposium on Reliability in Distributed Software and Database Systems, Williamsburg, Virginia, IEEE, pp. 32 44, March 1987.

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- T. Bihari, The Rayleigh Ritz Method for Finding the Eigenvalues of a Self Adjoint Linear Differential Operator. Masters Thesis, Department of Mathematics, The Ohio State University, December 1982.

References

- Available on request.