Vita

Jeffrey Horn

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EDUCATION

Ph.D. Computer Science: University of Illinois at Urbana-Champaign, IL, USA
October 1997.

M.S. Computer Science: University of Illinois at Urbana-Champaign, IL, USA
August 1995.

B.A. Computer Science: Cornell University, Ithaca, NY, USA
May 1985. *Concentration in Operations Research and Industrial Engineering*

ACADEMIC EXPERIENCE

8/02 – present: **Associate Professor, Northern Michigan University**. Direct the activities of the NERL (Northern Evolutionary Robotics Laboratory), including research into coevolution of intelligent agents, multi-objective genetic algorithms, evolutionary robotics, telepresence robots and immersive 3D computation, visualization, and simulation.
8/96 – 8/02: **Assistant Professor, Northern Michigan University**. Teach upper level computer science classes (algorithms, theory, programming languages). Continue leading active research program in the artificial evolution of cooperative agents which together solve difficult problems in engineering and machine learning.
9/95 – 6/96: **Graduate Researcher, Illinois Genetic Algorithms Laboratory**. Model and predict the evolution of optimal, cooperative populations in genetic algorithms. Supervise the Illinois Genetic Algorithms Laboratory (IlliGAL). Supported by the Air Force Office of Scientific Research. (Supervisor: David E. Goldberg)

+ Demonstrated the correspondence between *implicit* and *explicit* niching,
+ Derived closed form bounds on niching convergence times,
+ Proved that cooperation maximizes a multiplicative population function, and

+ Managed hardware, software, facilities, and personel at the IlliGAL, establishing lab procedures for maintenance, internal communication, internet (ftp, WWW) presence, technical report service, and an archival library of thousands of papers on evolutionary computation.

6/92 – 8/95: **NASA Graduate Fellow, University of Illinois at Urbana-Champaign**. Performed research on the modality of fitness landscapes and the implications for genetic algorithms. Also began research into the nature and applicability of evolved cooperation under genetic algorithm selection pressure. (Faculty advisor: David E. Goldberg; NASA Technical Advisors: Robert Savely and Leh Wang)

+ Proposed and won $66,000 research grant,
+ Managed $18,000 fund for travel and other research support,
+ Presented results at international conferences and workshops,
+ Wrote annual research reports for NASA,
+ Visited NASA Johnson Space Center to present results immediately practicable to NASA JSC scientists and engineers,
+ Integrated results on multimodality and genetic algorithms (MS thesis), and
+ Proved the existence of steady-state cooperative populations in highly competitive genetic algorithms and classifiers systems.

1/92 – 5/92: **Graduate Research Assistant, Center for Complex Systems Research, the Beckman Institute, University of Illinois at Urbana-Champaign**. Tracked the evolution of complexity and organism interdependence in artificial life simulations. (Supervisor: Norman Packard)

+ Developed novel measure of complexity for stimulus-response strategies, and
+ Published new method at the European Conference on Artificial Life in Paris.

INDUSTRY EXPERIENCE

8/89 – Present: **Independent Computer Consultant**, Marquette, MI. Conduct seminars, publish articles, and deliver written and verbal expertise directly to clients, in the areas of computer networking and evolutionary computation.

8/89 – 12/91: **Network Designer, University of Illinois Computing and Communications Services Office**, Urbana, IL. Designed local area and building-wide computer networks for academic departments and campus units, including gateways to the campus backbone and the world-wide internet. Coordinated the installation and maintenance of such “subnets”.

3/88 – 3/91: **Instructor, Systems Technology Forum**, Fairfax, VA. Developed and conducted three-day seminars on data communications, local area networks, and network protocols and architectures for groups of data communications professionals at locations across the United States.

10/88 – 7/89: **Manager, Ernst & Young**, Fairfax, VA. Managed teams of professional consultants engaged in local area and campus networking projects for clients such as Martin Marietta Energy Systems (Oak Ridge National Laboratories), and the International Finance Corporation.

+ Developed proposals,

+ Managed project budgets of $50,000 to $150,000,
+ Supervised project teams of one to five members,
+ Interacted daily or weekly with senior managers of clients, and
+ Took several fixed price projects from start to finish, on-time and under budget.

7/85 – 9/88: **Consultant, Network Strategies, Inc.**, Fairfax, VA. Provided consulting expertise on network protocols and architectures to clients in industry and state and local government.

+ Taught regular in-house seminars for technical training,
+ Brought in leads that eventually resulted in engagements,
+ Developed in-house project management software system, and
+ Created and maintained company library of communications standards.

Summers 1983,84: **Software Developer**, NY. Developed small and large-scale software systems to support electrical engineers at Underwriters Laboratories, Melville, NY, and medical researchers at the Institute of Chronobiology, Cornell Medical Center, White Plains, NY.

(software projects include: automated meter calibration, test, and diagnosis; large meter statistics database; data communications protocol for reliable control of remote device over noisy serial line; modular automated graphing tools to control large plotter; synchronization and control of I/O buffers and registers; design and implementation of protocols for data transfer between automated assay machine and a PDP/11; Fortran to C conversion of research software)

PROFESSIONAL ACTIVITIES

Academic

Editorial Board, *Evolutionary Computation* journal, MIT Press, 2007-present.
Program Committee, *Genetic and Evolutionary Computation Conference* (GECCO 09), 2009.
Program Committee, *Parallel Problem Solving From Nature* (PPSN X), 2008.
Program Committee, *International Conference on Evolutionary Computation* (ICEC/IJCCI 2009).
Foundations of Genetic Algorithms (FOGA X), 2008.
Program Committee, *Genetic and Evolutionary Computation Conference* (GECCO 07), 2007.
Program Committee, *IEEE Symposium Series on Computational Intelligence (SSCI), Foundations of Computational Intelligence (FOCI) Symposium*, 2007.
Program Committee, *Genetic and Evolutionary Computation Conference (GECCO 06)*, 2006.
Program Committee, *IEEE International Conference on Evolutionary Computation* (ICEC), 2006.
Workshop Committee, Undergraduate Workshop at GECCO, 2005.
Program Committee, *Parallel Problem Solving From Nature* (PPSN VIII), 2004.
Program Committee, *Genetic and Evolutionary Computation Conference* (GECCO 04), 2004.
Member of Review Panel, National Science Foundation SBIR/STTR Grant Program, 2002, 2003.
Program Committee, *Second International Conference on Evolutionary Multi-criterion Optimization* (EMO 03), 2003.
Program Committee, *Genetic and Evolutionary Computation Conference* (GECCO 03), 2003.
External Member, Computational Science and Engineering Committee, Michigan Technological University, 1998–present.

Program Committee, *Parallel Problem Solving From Nature* (PPSN VII), 2002.
Program Committee, *Foundations of Genetic Algorithms* (FOGA 7), 2002.
Program Committee, *Genetic and Evolutionary Computation Conference* (GECCO 02), 2002.
Executive Program Committee, *First International Conference on Evolutionary Multi-criterion Optimization* (EMO 01), 2000.
MS Thesis Committee (for candidate Mark Erickson), Michigan Technological University, Department of Environmental Sciences, 2000.
Ph.D.Thesis Committee member (for candidate Samar Dejani-Brown), Michigan Technological University, Department of Computer Science, 2000.
Program Committee, *Parallel Problem Solving From Nature* (PPSN VI), 2000.
Review Board, *Applied Intelligence* journal, 1995–2000.
Program Committee, *IEEE International Conference on Evolutionary Computation* (ICEC 99), 1999.
Program Committee, *Genetic and Evolutionary Computation Conference* (GECCO 99), 1999.
Program Committee, *Parallel Problem Solving from Nature* (PPSN V), 1998.
Program Committee, *Symposium on Genetic Algorithms* (SGA–98), 1998.
Program Committee, *Classifier Systems at Genetic Programming* (GP–98), 1998.
Program Committee, *Foundations of Genetic Algorithms* (FOGA 5), 1998.
Session Chair, Third Annual Genetic Programming Conference (GP 98), 1998.
Program Committee, *Genetic Programming* (GP 97). 1997.
Program Committee, *Seventh International Conference on Genetic Algorithms* (ICGA 7), 1997.
Program Committee, *IEEE International Conference on Evolutionary Computation* (ICEC 4), 1997.
Program Committee, *Genetic Programming* (GP 96), 1996.
Program Committee, *Foundations of Genetic Algorithms* (FOGA 4), 1996.
Program Committee, *Sixth International Conference on Genetic Algorithms* (ICGA 6), 1995.

(Regularly review books, book proposals, book chapters, conference submissions, and manuscripts for journals such as *Evolutionary Computation, IEEE Transactions on Evolutionary Computation, Informatica, Communications of the ACM, Computers and Geosciences, Water Resources Research.*)

Industry

Program Advisory Committee (industry advisor on networking), *Federal Office Systems Exposition '89* (FOSE '89). Designed the *Integration Through LANs* session track.
Session Chair, "Merging LANs and Minicomputers: Choosing the Best of Both Worlds," *FOSE '89.*
Session Chair, "GOSIP: Government OSI Protocols," *Communication Networks '89* (ComNet '89).
Session Chair, "Fiber Optic Solutions for Backbone Nets," *INTERFACE '88.*
Session Chair, "Beyond the PC LAN: Growth Options and Strategies," *FOSE '88.*

AWARDS

General Electric Teaching Incentive Grant, 1996.

National Aeronautics and Space Administration (NASA) Graduate Student Research Fellow, 1992–1995.
National Council of Teachers of English (NCTE) Achievement Award in Writing, 1981.

RESEARCH GRANTS

Mayer, A. S., & Horn, J. (1998–2002). *Genetic Algorithms for Multi-objective Groundwater Remediation.* EPA to MTU with NMU as subcontractor, $350,000.

Northern Michigan University researchers, (2000–present). *Internet 2* (contributed to the successful application for sponsored participant status for NMU, sponsored by MTU, on the next generation internet). (awarded)

Appleton, R., & Horn, J. (2000). Zentropix/Megatel Industry Funding for NMU robotics work with Megatel processors and Zentropix real-time Linux software, $6000 (cash, software and hardware products, and support services)

Horn, J. (1996–2000). General Electric Teaching Incentive Grant, $3000.

Horn, J. (1996–1997). Northern Michigan University Faculty Mini-Grant, $1500.

Horn, J., & Goldberg, D. E. (1992–1995). *Generalized deception and genetic algorithms.* NASA to the University of Illinois, $66,000.

Goldberg, D. E., Kargupta, H., & Horn, J. (1995–1996). *Rapid solutions to hard problems using messy genetic algorithms on IBM workstations.* IBM (Shared University Research grant) to the University of Illinois, 1000 cpu hours supercomputing time.

RESEARCH GOALS

Genetic Algorithms and the Evolution of Cooperation
The use of genetic algorithms/evolutionary computation to evolve cooperative organizations of individuals to solve hard problems. *Research Needs:* complete model of different levels of cooperation and competition in an evolving population; characterization of cooperation-competition tension and quantification of phase transition; proof of convergence to cooperative populations; effect of cooperative diversity on evolutionary search.

Machine Learning and Computational Intelligence
The application of cooperative artificial evolution to learn semi-decomposable concept descriptions (e.g., disjunctive normal form). The use of cooperative evolution in the discovery of new agents, in the formation and selection of cooperative and competing groups of intelligent agents, and in the teaming of specialists and generalists in collaborative systems. *Research Needs:* search-intensive concept induction; adaptive determination of optimal tradeoff among learning criteria (e.g., accuracy, coverage, and conciseness of concept description); distributed concept representations.

Engineering and Computer Science Problem Solving
The application of cooperative, coevolutionary algorithms to the probablistic solution of real-world engineering optimization and design problems (e.g., shape nesting) and to the PAC-like approximate solution of general, intractable problems in computer science (e.g., max-clique, map labeling, circle packing). *Research Needs:* robust, reliable, population-based evolutionary search of large multimodal solution spaces; simultaneous discovery of multiple, alternative solution components; enhanced reliability and success of search by maintenance of useful diversity; multiobjective problem solving using populations to sample and represent tradeoff surfaces.

Immersive Computation for Evolving World Simulations
The use of 3D game engines for efficient, real-time, physical simulation of evolving agents, including simulated robots. *Research Needs:* algorithms for evolving densely cooperative sets of agents, leading to the emergence of complex, multi-cellular organisms; an object-oriented programming library for highly modular, portable simulation environments to support development, testing, and presentation of emergent, cooperative ecosystems; various immersive techniques and tools (e.g., head-tracking, head-mounted displays, virtual reality gloves, haptics) for in-world observation and intervention; taxonomy and class hierarchy for programming behaviors in evolving 3D worlds.

PUBLICATIONS

Theses

- Horn, J. (1997). The nature of niching: genetic algorithms and the evolution of optimal, cooperative populations. Ph.D. thesis, Department of Computer Science, University of Illinois at Urbana-Champaign, *UMI Dissertation Services, No. 9812622.*

- Horn, J. (1995). Genetic algorithms, problem difficulty, and the modality of fitness landscapes. Masters thesis, Department of Computer Science, University of Illinois at Urbana-Champaign. *Illinois Genetic Algorithms Laboratory (IlliGAL) Report Number 95004.*

Refereed Journals

- Erickson, M. S., Mayer, A. S., & Horn, J. (2001). Multi-objective optimal design of groundwater remediation systems: application of the Niched Pareto Genetic Algorithm. *Advances in Water Resources.*

- Deb, K., & Horn, J. (2000). Special issue on multi-criterion optimization, *Evolutionary Computation, 8*(2). (Guest co-editor).

- Horn, J., Goldberg, D.E., & Deb, K. (1994). Implicit niching in a learning classifier system: nature's way. *Evolutionary Computation, 2*(1), 37–66. (Early version distributed as *IlliGAL Report No. 94001.*)

- Deb, K., Horn, J., & Goldberg, D.E. (1993). Multimodal deceptive functions. *Complex Systems, 7*(2), 131–153. (Early version distributed as *IlliGAL Report No. 92003.*)

Refereed International Conferences

- Horn, J. (2008). Optimal nesting of species for exact cover of resources: many against many. In G. Rudolph, T. Jansen, S. Lucas, C.Poloni, & N. Beume (Ed.s), *Parallel*

Problem Solving From Nature X – PPSN X, Lecture Notes in Computer Science Volume (LNCS) 5199, 438–448. Springer-Verlag.

- Horn, J. (2007) Optimal nesting of species for exact cover of resources: two against many. In Proceedings of the 2007 Genetic and Evolutionary Computation Conference – GECCO 2007, 448–455. The Association for Computing Machinery.
- Horn, J. (2007) Optimal nesting of species for exact cover of resources: two against one. In Proceedings of the IEEE Symposium Series on Computational Intelligence (SSCI) 2007; FOCI Symposium (Foundations of Computational Intelligence), 322–330. IEEE Press, Piscataway, NJ.
- Horn, J. (2005). Coevolving species for shape nesting. In J. D. Schaeffer (Ed.), *The 2005 IEEE Congress on Evolutionary Computation – IEEE CEC 2005*, 1800–1807. IEEE Press, Piscataway, NJ.
- Horn, J. (2005). Shape nesting by coevolving species. In H.-G. Beyer, et. al.(Ed.s), *Genetic and Evolutionary Computation – GECCO 2005*, 557–558. The Association for Computing Machinery (ACM), New York, New York. ACM Order Number 910050.
- Horn, J., & Cattron, J. (2003). The paradox of the plankton: oscillations and chaos in multispecies evolution. In E. Cantú-Paz, et. al. (Ed.s), *Genetic and Evolutionary Computation – GECCO 2003*, 298–309. Springer-Verlag, Berlin.
- Horn, J. (2003). Niche distributions on the Pareto optimal front. In C. M. Fonseca, et. al. (Ed.s). *Evolutionary Multi-criterion Optimization: EMO 2003, Lecture Notes in Computer Science (LNCS) 2632*, 365–375. Springer, Berlin.
- Horn, J. (2002). Resource-based fitness sharing. In Guervós, J.J.M., Adamides, P., Beyer H-G., Fernández-Villacañas, J-L., & Schwefel, H-P. (Ed.s). *Parallel Problem Solving From Nature- PPSN VII, Lecture Notes in Computer Science 2439*, 381–390. Springer, Berlin.
- Erickson, M. S., Mayer, A. S., & Horn, J. (2001). The Niched Pareto Genetic Algorithm 2 applied to the remediation of groundwater systems. *Proceedings of the First International Conference on Multi-criterion Evolutionary Optimization, Lecture Notes in Computer Science (LNCS) 1993*, 681–695. Springer-Verlag.
- Mayer, A. S., Erickson, M. S., & Horn, J. (2001). Using multiobjective optimization to construct tradeoff curves for subsurface remediation. *Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical and Computational Issues in the Geosciences, Final Program and Abstracts.*
- Erickson, M. S., Mayer, A. S., & Horn, J. (1999). Implementation of a multi-objective optimization framework for groundwater remediation design using the Niched-Pareto Genetic Algorithm. *American Geophysical Union (published abstracts).*
- Horn, J. (1999). Controlling the cooperative-competitive boundary in niched genetic algorithms. *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO-99)*, 305–312. Morgan Kaufmann, San Francisoco, CA.
- Horn, J., & Goldberg, D. E. (1999). Toward a control map for niching. *Foundations of Genetic Algorithms 5 (FOGA 5)*, 287–310. Morgan Kaufmann, San Francisco, CA.

- Horn, J., & Goldberg, D. E. (1998). A timing analysis of convergence to fitness sharing equilibrium. *Problem Solving From Nature- PPSN V, Lecture Notes in Computer Science 1498*, 24–33. Springer, Berlin.
- Horn, J., & Goldberg, D. E. (1995). Genetic algorithm difficulty and the modality of fitness landscapes. In L. D. Whitley, & M. D. Vose (Ed.s), *Foundations of Genetic Algorithms, 3 (FOGA 3).* San Francisco, CA: Morgan Kaufmann, 243–269. (Early version distributed as *IlliGAL Report No. 94006.*)
- Horn, J., Goldberg, D.E., & Deb, K. (1994). Long path problems. In Y. Davidor, H.-P. Schwefel, & R. Männer (Ed.s), *Lecture Notes in Computer Science, Volume 866: Parallel Problem Solving from Nature-PPSN III.* Berlin: Springer-Verlag, 149–158. (Early version distributed as *IlliGAL Report No. 92011.*)
- Horn, J., Nafpliotis, N., & Goldberg, D.E. (1994). A niched Pareto genetic algorithm for multiobjective optimization. *Proceedings of the First IEEE Conference on Evolutionary Computation, IEEE World Congress on Computational Intelligence, Volume 1.* Piscataway, NJ: IEEE Service Center, 82–87. (Original, long version distributed as *IlliGAL Report No. 93005.*)
- Horn, J. (1993). Finite Markov chain analysis of genetic algorithms with niching. In S. Forrest (Ed.), *Proceedings of the Fifth International Conference on Genetic Algorithms.* San Mateo, CA: Morgan Kaufmann, 110–117. (Early version distributed as *IlliGAL Report No. 93002.*)
- Horn, J. (1992). Measuring the evolving complexity of stimulus-response organisms. In F. J. Varela, & P. Bourgine (Ed.s), *Toward a Practice of Autonomous Systems (Proceedings of the First European Conference on Artificial Life.* Cambridge, MA: The MIT Press (A Bradford Book), 365–374.
- Goldberg, D.E., Deb, K., & Horn, J. (1992). Massive multimodality, deception, and genetic algorithms. In R. Männer, & B. Manderick (Ed.s), *Parallel Problem Solving From Nature, 2.* Amsterdam, The Netherlands: North-Holland, 37–46. (Early version distributed as *IlliGAL Report No. 92005.*)

Invited Contributions

- Horn, J. (2006). A Taxonomy and some analyses of coevolution algorithms (abstract). In *Dagstuhl Seminar Technical Report for Seminar No. 06061.* Presented at Schloss Dagstuhl, International Conference and Research Center for Computer Science, Saarbrücken, Germany, February 2006, *Dagstuhl-Seminar 06061: Theory of Evolutionary Algorithms.*
- Horn, J. (2004). Selection-only coevolution on NP-hard problems (abstract). In *Dagstuhl Seminar Technical Report for Seminar No. 04081.* pp. 9–10. Presented at Schloss Dagstuhl, International Conference and Research Center for Computer Science, Saarbrücken, Germany, February 2004, *Dagstuhl-Seminar 04081: Theory of Evolutionary Algorithms.*
- Horn, J. (2002). Fundamental limitations of multispecies artificial evolution (abstract). In *Dagstuhl Seminar Technical Report No. 330.* p. 9. Presented at Schloss Dagstuhl, International Conference and Research Center for Computer Science, Saarbrücken, Germany, January 2002, *Dagstuhl-Seminar 02031: Theory of Evolutionary Algorithms.*

- Horn, J. (2000). Speciation as computation (abstract). In *Dagstuhl Seminar Technical Report No. 265.* pp. 10–11. Presented at Schloss Dagstuhl, International Conference and Research Center for Computer Science, Saarbrücken, Germany, February 2000, *Dagstuhl-Seminar 00071: Theory of Evolutionary Algorithms.*
- Horn, J. (1998). Long path problems. *A Department of Computer Science Colloquium.* Michigan Technological University, Department of Computer Science, Houghton, MI, USA.
- Horn, J. (1997). Multiple criteria decision making. In Bäck, T., Fogel, D. (Ed.s), *The Handbook of Evolutionary Computation.* Oxford University Press, New York. F1.9:1-15
- Horn, J. (1997). Multi-objective genetic algorithms. *A Department of Computer Science Colloquium.* Michigan Technological University, Department of Computer Science, Houghton, MI, USA.
- Horn, J., & Goldberg, D. E. (1996). Natural niching for evolving cooperative classifiers. In J. R. Koza, D. E. Goldberg, D. B. Fogel, & R. L. Riolo (Ed.s), *Genetic Programming 1996.* Cambridge, MA: The MIT Press. 553–564.

Refereed International Workshops

- Horn, J. (1996). Genetic algorithms (with niching) in search, optimization, and machine learning. *The 4th International Workshop on Foundations of Genetic Algorithms.* University of San Diego, San Diego, CA, July, 1996. (presented full paper)
- Horn, J., & Nafpliotis, N. (1993). Niching along the Pareto optimal front: multiobjective optimization using genetic algorithms with sharing. *The Fifth International Conference on Genetic Algorithms, Workshop on Niching Methods*, University of Illinois at Urbana-Champaign, Urbana, IL, July, 1993. (presented abstract)
- Horn, J. (1992). Interactions among organisms. *Artificial Life III*, Sweeney Convention Center, Santa Fe, NM, June, 1992. (presented abstract)
- Goldberg, D.E., Horn, J., & Deb, K. (1992). What makes a problem hard for a classifier system? *The First International Workshop on Learning Classifier Systems*, Johnson Space Center, Houston, TX, October, 1992. (presented long abstract, now distributed as *IlliGAL Report No. 92007.*)

US PATENT

- Horn, Jeffrey. *System and Method to Solve Shape Nesting Problems*, U.S. Patent No. 7,181,702, awarded February 2007.

Additional Technical Reports (not yet published)

- Goldberg, D. E., Kargupta, H., Horn, J., & Cantu-Paz, E. (1995). Critical deme size for serial and parallel genetic algorithms. 13 pp. *IlliGAL Report No. 95002.*
- Horn, J., & Nafpliotis, N. (1993). Multiobjective optimization using the niched Pareto genetic algorithm. *IlliGAL Report No. 93005.* 32 pp. (Summary published as (Horn, Nafpliotis, & Goldberg, 1994) above.)

Industry and Trade Publications

- Horn, J. (1989). Peripherals assume role of multiuser servers. *Network World, 6*(11). 1,35,37–38,49. (feature article)
- Horn, J. (1988). GOSIP: the end of TCP/IP? *UNIX World, V*(11). 119–120. (guest column)
- Horn, J. (1988). Minicomputer makers spruce up LAN offerings. *Network World, 5*(39). 1,56-58,62,82. (feature article)
- Horn, J. (1988). Networking for the future of office automation. *INTERFACE '88 Papers Proceedings.* New York, NY: McGraw Hill, 192-196.
- Horn, J. (1988). The long, bumpy migration path to OSI. *Network World, 5*(35). 27. (opinion column)
- Horn, J. (1987). Get protocol-smart. *Network World, 4*(33). 26. (opinion column)
- Horn, J. (1987). The pillage of OSI. *Network World, 4*(9). 27,34. (opinion column)
- Chartoff, M. R., & Horn, J. (1988). Migration to an OSI-based FDDI multi-site network. *ENTERPRISE Conference Proceedings.* Dearborn, MI: Society of Manufacturing Engineers, 4-75–4-97.
- Passmore, L. D., & Horn, J. (1988). GOSIP to govern federal nets. *Network World, 5*(9). 1,35,38–40. (feature article)
- Chartoff, M. R., & Horn, J. (1987). Factory network architectures: collisions or token resistance? *Network World, 4*(46). 43–44,46–48. (feature article)
- Passmore, L. D., & Horn, J. (1987–1989). Monthly column in a Japanese Ministry of International Trade and Industry (MITI) newsletter, analyzing trends in US communications standards.

Industry Conference Presentations

- Horn, J. (1989). Wide area LANs. *Information Resources Management Conference, 1989* (IRMCO '89). Richmond, VA, September 5–8, 1989. (IRMCO's typical 300–400 attendees are senior federal managers, with average GS-15 grade level.)
- Horn, J. (1988). OSI migration tools: when to use them. *OSI Product Integration Conference*, McLean, VA, Nov. 29 – Dec. 2, 1988.
- Horn, J. (1988). LANs and LAN issues. *Information Resources Management Conference, 1988* (IRMCO '88). Richmond, VA, September 6–9, 1988.
- Horn, J. (1988). Migration to an ISO-based FDDI multi-site network. *Enterprise Networking Event 1988 International* (ENE '88i). Baltimore, MD, June 5–9, 1988.
- Horn, J. (1988). Overview of LANs and LAN issues. Tutorial presented at *The State of Maine Networking Conference.* Augusta, ME, May 17, 1988.
- Horn, J. (1988). Beyond the PC isLANd. *FOSE '88.* Washington, D.C., March 8–10, 1988.

- Horn, J. (1987). DECnet on Ethernet. *VAX Business Users Forum.* New York, NY, October 26–28, 1987.
- Horn, J. (1987). Internetwork bridging of 802 LANs. *National Networks Conference*, Washington, D.C., June, 1987.

Quotations

Quoted in trade periodicals such as *Computer World*, *Network World*, *Digital Review*, and *Communications*, and in industry newsletters such as *OPEN OSI Product & Equipment News*, and *SNA Communications Report.*

CONSULTING ACTIVITIES (selected examples)

Genetic algorithm patent application. (1994 – 1997). Client confidential.
Building backbone network and long term protocol integration strategy. (1989). Center for Naval Analysis.
Campus-wide data communications architecture. (1989). Letterkenney US Army Depot.
Minicomputer-PC-LAN office automation strategy. (1988). International Finance Corporation.
Oak Ridge internetworking backbone and protocol interoperability plan. (1988). US Department of Energy.
Sustainable base network architecture. (1988). US ARMY FEDSIM (Fort Belvoir, VA).
Long-range data communications plan for computer integrated manufacturing (CIM). (1988). Martin Marietta Energy Systems.
Electronic data interchange (EDI) migration plan. (1987). Uniform Code Council.
Operating procedures for implementing the national telecommunications service priority system. (1986). US National Communications System.
Analysis of dedicated data links to overseas embassies. (1986). US Department of State.
Integrated data and telecommunications operations and procedures. (1986). The World Bank.
Defense Data Network architectures and protocols seminar development. (1985). The US Defense Communications Agency.

PROFESSIONAL TRAINING

Introduction to Data Communications (three day seminar).
Local Area Networks (three day seminar).
Network Protocols and Standards (three day seminar).
The Defense Data Network (five day seminar).
Systems Network Architecture (three day seminar).
T1 Networking (three day seminar).
X.25 Wide Area Networks (three day seminar).
Network Design (three day seminar).
Network Management Systems (three day seminar).
Ernst & Whinney Professional Consultants Training Course (five day seminar).

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