

# Robert J. Marks II

## Curriculum Vitae

### Abbreviated

(Amplified CV also available)

June 15, 2019

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## 1 Education

- ◇ Ph.D., Electrical Engineering, Texas Tech University, 1977
- ◇ M.S., Electrical Engineering, Rose-Hulman Institute of Technology, 1973
- ◇ B.S., Engineering, Rose-Hulman Institute of Technology, 1972

## 2 Contact Information

- ◇ Email: Robert\_Marks@Baylor.edu
- ◇ Web Page: RobertMarks.org
- ◇ Office: Baylor Campus, Rogers Bldg. 305C
- ◇ Office Phone: (254) 710-7302
- ◇ Mailing Address: One Bear Place #97356, Waco, TX 76798-7356

## 3 Employment History

- ◇ 2003-present: Distinguished Professor of Electrical and Computer Science, Baylor University.
  - 2003-2005: Graduate Program Director, Departments of Mechanical and Electrical & Computer Engineering, Baylor University.
  - 2004-2008: Baylor Christian Graduate Student/Faculty Fellowship, Faculty Advisor.
  - 2004-2007: University Tenure Committee, Chair (2006-2007), Member (2004-2006).
  - 2008-2014: Faculty Search Committee, Chair.
  - 2008-2009: ECE Lecturer Search Committee, Chair.
  - 2008-2011: ECE Tenure Policy Committee, Chair.
  - 2008-2017: IEEE Baylor Student Branch, Faculty Advisor.
  - 2009-2011: Baylor Compensation, Benefits, and Personnel Committee, Member.
  - 2017-2018: University Faculty Dismissal Committee, Member
  - 2014- : ECE Graduate Studies Committee, Member
  - 2016- : American Scientific Affiliation (ASA) Baylor Student Group, Faculty co-advisor
  - 2017- : Oso Logos (Christian apologetics)Baylor Student Group, Faculty co-advisor

- 2017- : Department Awards Committee, Chair
- ◇ 1987-2003: Professor of Electrical Engineering, University of Seattle, Washington.
- ◇ 1982-1987: Associate Professor of Electrical Engineering, University of Seattle, Washington.
- ◇ 1978-1982: Assistant Professor of Electrical Engineering, University of Seattle, Washington.
- ◇ 1975-1977: Research Assistant, Texas Tech University, Lubbock, Texas.
- ◇ 1974-1975: Reliability Engineer, Crane Naval Weapons Depot, Crane, Indiana.
- ◇ 1972-1973: Graduate Student Teaching Assistant, Rose-Hulman Institute of Technology, Terre Haute, Indiana.
- ◇ 1970-1975: Disc Jockey, WPFR, Terre Haute, Indiana.
- ◇ 1968-1972: Student, Rose-Hulman Institute of Technology, Terre Haute, Indiana.

## 4 Recognition

### 4.1 Honors & Awards

- ◇ Fellow of the Optical Society of America (OSA)<sup>1</sup>
- ◇ Fellow of the Institute of Electrical & Electronic Engineers (IEEE)<sup>2</sup>
- ◇ Honorary Inductee: Junior Membership in the Ohio Academy of Science (at the age of eighteen)
- ◇ IEEE Distinguished Lecturer
- ◇ Honorary Member: Puget Sound Section of the Optical Society of America
- ◇ IEEE Centennial Medal and Certificate
- ◇ IEEE Outstanding Branch Counselor/Advisor Award
- ◇ Charter President of the IEEE Neural Networks Council
- ◇ Rose-Hulman Institute of Technology Outstanding Young Alumni Award
- ◇ Texas Tech Electrical Engineering Academy
- ◇ IEEE Neural Networks Council Meritorious Service Award

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<sup>1</sup>“For contributions to image recovery and synthesis, optical processing, and eletro-optical neural networks.”

<sup>2</sup>“For leadership and contributions to the field of neural networks.”

- ◇ IEEE CASS (Circuits and Systems Society) Golden Jubilee Medal
- ◇ Judith Stitt Award, American Brachytherapy Society 23rd Annual Meeting (2001)
- ◇ NASA Tech Brief Award (2004)
- ◇ Pioneer in Neural Network Award (IJCNN) (2006)
- ◇ IEEE Dallas Section Volunteer of the Year Award (2007)
- ◇ DARPA<sup>3</sup>

## 4.2 Listings

- ◇ *Access Research Network* top award for the “Top 10 Darwin and Design Science Stories” for 2009.<sup>4</sup>
- ◇ CollegeCrunch.org. “The 20 Most Brilliant Christian Professors,” April 4, 2010.<sup>5</sup>
- ◇ SuperScholar.org. “The 20 Most Influential Christian Scholars,” 2010.<sup>6</sup>

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<sup>3</sup> DARPA Radar/Communications Co-Design Challenge (2015) Arlington, VA 22203-2114. “The SSPARC [Shared Spectrum Access for Radar and Communications] program office will bring together a few [four] of the most senior, idea-driven, thoughtful researchers that have spanned both the radar and communications disciplines through their careers and challenge them to offer a vision of how to tackle the joint radar and communications co-design problem.”

<sup>4</sup> “*Access Research Network* has just released its annual ‘Top 10 Darwin and Design Science Stories’ for 2009. Gaining top honors on the list was a peer-reviewed article by intelligent design theorists William Dembski and Robert Marks II in the September 2009 journal *IEEE Transactions on Systems, Man and Cybernetics*. The authors used computer simulations and information theory to challenge the ability of neo-Darwinian processes to create new functional genetic information.”

<sup>5</sup> “The professors listed here are all ‘brilliant’ in the original sense of the word they shine brightly among their peers as towering figures in the academic world. In addition, they are all Christians who do not hide their Christianity and see it as significantly impacting their intellectual work.” “Robert J. Marks II, Distinguished Professor of Electrical and Computer Engineering at Baylor University. A founder of the field of computational intelligence (comprising fuzzy sets, neural networks, and evolutionary computing), Marks has published hundreds of articles on an very wide range of problems (everything from optimal detection of non-Gaussian noise to proper placement of radioactive inserts to treat prostate cancer). His work has enormous practical implications that are felt every day all major North American utilities deliver energy using his work on neural networks. An Christian intent on understanding teleology in nature, Marks founded the Evolutionary Informatics Lab, which publishes peer-reviewed scientific papers supporting the controversial theory of intelligent design.”

<sup>6</sup> “Super Scholars 20 most influential Christian scholars have profoundly influenced the world by advancing Christian belief, by reconceptualizing it, or even by fundamentally challenging it. In any case, each of the thinkers below has deeply impacted Western cultures self-understanding.” “Robert J. Marks II (b. 1950), Baylor Universitys leading research professor, has emerged as the public face of intelligent design. As the movements premier scientist, he has been dubbed the Charles Darwin of intelligent design. At one point, his research on intelligent design was removed by Baylor officials from the universitys website. Since then he has published seminal work on such themes as whether computers have minds and whether Darwinian processes can generate biological information. He is widely quoted as saying, Computers are no more able to create information than iPods are capable of creating music. His Law of Conservation of Information purports to demonstrate inherent limitations on natural selection, suggesting that the intricate information needed for life requires an intelligent source.”

- ◇ TheBestSchools.org. “The 50 Smartest People of Faith.” 2012.<sup>7</sup>
- ◇ L. A.Yahaya, “PERSONAL CHARACTERISTICS OF REPUTABLE SCHOLARS” 2013.<sup>8</sup>
- ◇ TheBestSchools.org. “The 50 Most Influential Scientists in the World Today.” 2014.<sup>9</sup>

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<sup>7</sup> The qualifications for inclusion on our list are twofold

1. Intellectual brilliance, evidenced by a very high level of achievement, whether in the natural sciences, the social sciences, the humanities, literature, the fine arts, or public service; and
2. Religious faith, evidenced either through explicit personal witness or through publicly professed respect for religion.

By religious faith, we mean religion in the monotheistic, or Abrahamic, tradition which we happen to know best. We do not doubt that a similar list of brilliant and devout Hindus, Buddhists, Daoists, Confucianists, Shintoists, and others could easily be drawn up, and we hope it will be, by those qualified to do so.

It is presented in alphabetical order.

⋮

**Robert J. Marks II (b. 1950).** Marks was born in West Virginia. He was educated at the Rose-Hulman Institute of Technology (BS, Engineering, 1972; MS, Electrical Engineering, 1973) and Texas Tech (PhD, Electrical Engineering, 1977). He taught for many years at the University of Washington, in Seattle. He is currently Distinguished Professor of Electrical and Computer Engineering at Baylor University, in Waco, Texas. Marks, who is Protestant, has made a number of contributions to cutting-edge technology at the interface between electrical engineering and computer science. For example, in 1991 he was the first to apply artificial neural networks to the problem of forecasting power demands by electrical utility companies a practice that is widespread today. More recently, Marks and colleagues developed an algorithm for the real-time tracking of the placement of radioactive seeds in prostate cancer therapy. In addition, his team developed the first closed-form solution for the Neyman-Pearson optimal detection of signals in non-Gaussian noise. In 2007, Marks inaugurated his *Evolutionary Informatics Lab*, a web site dedicated to simulating evolutionary processes. The Lab which has demonstrated severe constraints on the creative potential of Darwinian-style algorithms was afterwards shut down by the Baylor University administration, and Marks has since moved it to a private server. Books: *Fuzzy Logic Technology and Applications*, editor (IEEE, 1994); *Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks*, co-author (MIT Press/Bradford Books, 1999); *Handbook of Fourier Analysis and Its Applications*, (Oxford UP, 2009)

<sup>8</sup> “Academic profession like other essential professions has its demands. For anyone to succeed in the profession, he/she needs to possess some personal characteristics. The focus of this presentation is to sensitize academic staff, particularly the young academics on the personal characteristics that are required to succeed in academic career. Some notable scholars who possessed the appropriate personality characteristics and that have excelled in academic endeavour include: Fransisco Ayala, Abdulhamid Bin Badis, Ali Jabar, Abdul Qader Arnaoot, Peter L. Berger, Benjamin Carson, Hassan Hathont, Francis Collins, Omar Khalidi, Robert J. Marks. Others are...

<sup>9</sup> From biotechnology and digital media to sustainable energy and cloud computing, almost everything today is somehow affected and sometimes entirely reshaped by scientific and technological advances.

By science in this article we mean the natural and engineering sciences (we thus exclude pure mathematics as well as the social sciences). Thus, in this article, we focus on scientists in the biological, medical, and physical sciences as well as those concerned with technology and especially computers.

As a society, we have come to take the fruits of science for granted, such as our use of computers, our access to running water and electricity, and our dependence on various forms of transportation and communication. But all such benefits follow from the discoveries and inventions of scientists as they pursue deep insights into the workings of nature and its materials.

This article focuses on the 50 most influential scientists alive today and their profound contributions to science. These are scientists who have invented the Internet and fiber optics, challenged AIDS and cancer, developed new drugs, and in general made crucial advances in medicine, genetics, astronomy, ecology, physics,

### 4.3 Honorary Conference Positions

- ◇ International Advisory Chair. The RNNS [Russian Neural Network Society] IEEE Symposium on Neuroinformatics and Neurocomputing Rostov-on-Don , Russia , October 7-10, 1992,
- ◇ International Advisory Co-Chair. International Joint Conference on Neural Networks (IJCNN), Beijing, China. November 1992

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and computer programming.

In referring to the scientists on this list as “influential,” this article attempts to gauge their influence on science as such. In other words, the scientists listed here are influential because of the groundbreaking scientific work they have done and its impact on the world.

Some scientists are enormously influential as popularizers or culture critics or public intellectuals. In this respect, figures like Richard Dawkins and Lawrence Krauss, or Carl Sagan and Stephen Jay Gould a generation back, come to mind. The scientists on this list, however, are here because of their preeminence as scientists doing science.

The scientists described here are all creative and brilliant. Many of them are also unusual and interesting colorful personalities that it would be a pleasure to know!

As you feast on the names and biographies of the scientists on this list, also check out our article The Worlds 50 Smartest Teenagers. Some of the most influential scientists in the future will be drawn from this list.

⋮

#### 28. Robert J. Marks II

Robert J. Marks II is the Distinguished Professor of Electrical and Computer Engineering at Baylor University in Waco, Texas. Previously, he was on the faculty of the University of Washington for 25 years. He is a pioneer in the field of computational intelligence (which includes neural networks, fuzzy sets, and evolutionary computing), and was the first president of the Institute of Electrical and Electronics Engineers (IEEE) Neural Networks Council.

Marks received his PhD in electrical engineering from Texas Tech University. He has over 300 peer-reviewed journal publications. He is also a proponent of intelligent design, holding that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection.

Marks has made important technical contributions across widely diverse areas, such as the spacing of radium inserts to treat prostate cancer, signal display, remote sensing, optical image sampling, optical computers, and the use of fuzzy logic to control the electrical grid (how electricity is delivered today depends crucially on the work of Marks). He has served as a consultant to companies such as Microsoft and Boeing corporation.

Marks has authored several books including, the Handbook of Fourier Analysis and Its Applications, Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks, and Applications of Neural Networks to Power Systems, among others.

Marks has received numerous awards, including the IEEE Distinguished Lecturer twice, once from the IEEE Neural Networks Council in 1991/92, and again from the IEEE Neural Networks Society in 2002/03, as well as the Golden Jubilee Medal in 1999 from the IEEE Circuits and Systems Society. He is a fellow of the IEEE.

In 2007, Marks founded the Evolutionary Informatics Lab at Baylor to study the information-theoretic underpinnings of intelligent design. The research of that lab has produced a steady stream of peer-reviewed engineering publications that are influencing many in the engineering community to accept intelligent design, controversial though it remains, as a legitimate scientific theory.

- ◇ International Advisory Committee Member. International Joint Conference on Neural Networks (IJCNN), Nagoya, Japan, October 25-29, 1993.
- ◇ International Conference on Neural Information Processing (ICONIP '95), October 30 - November 3, 1995, Beijing China. International Advisory Committee, Member.
- ◇ 1993 IEEE/Tsukuba International Workshop on Advanced Robotics, November 8-9, 1993, AIST Tsukuba, Japan - Advisory Committee
- ◇ Honorary Program Committee Member. IEEE/IAFE [International Association of Financial Engineers] Computational Intelligence in Financial Engineering, (CIFER).
  - Nashville, TN, March 30-April 2, 2009,
  - Paris, France, April 11-15, 2011.
- ◇ International Symposium on Neural Networks (ISNN) Advisory Committee.
  - 3rd International Symposium on Neural Networks (ISNN 2006) Chengdu, China, May 28 - June 1, 2006
  - 4th International Symposium on Neural Networks (ISNN 2007) Nanjing, China June 3-7, 2007
  - 5th International Symposium on Neural Networks (ISNN 2008) Beijing, China, September 24-28, 2008
  - 6th International Symposium on Neural Networks (ISNN 2009) Wuhan, China, May 26-29, 2009
  - 7th International Symposium on Neural Networks (ISNN 2010) Shanghai, China, June 6-9, 2010
  - 7th International Symposium on Neural Networks (ISNN 2011) Guilin, China May 29 June 1, 2011

## 5 Professional Societies

### 5.1 Publication Administration

- ◇ IEEE
  - IEEE Transactions on Neural Networks, Editor-in-Chief (1992-1997)
  - IEEE Transactions on Fuzzy Systems, Associate Editor (1993-1999)
  - IEEE Transactions on Systems, Man & Cybernetics, Associate Editor (2011-2014)
- ◇ Optical Society of America
  - Topical Editor, Journal of the Optical Society of America A: Optics and Image Science in Optical Signal Processing and Image Science (1990-92).



## ◇ Other

- International Journal of Computer Vision & Signal Processing (2011-present)
- Bio-Complexity, Editorial Board Member (2010-2014), Editor-in-Chief (2015-present) [<http://bio-complexity.org/>]
- International Journal of Neurocomputing, Editorial Board Member (1989-1992).
- Australian Journal of Intelligent Information Processing Systems, Editorial Board Member (1994-2007).
- Journal of Advanced Computational Intelligence, (ACI), Fuji Press Co., Tokyo, Editorial Board Member (1996-present).
- Association for Computing Machinery, The ACM SIGART Magazine of Intelligent Machinery, Editorial Board, (1996-2000).
- JOURNAL OF SAMPLING THEORY IN SIGNAL AND IMAGE PROCESSING- An International Journal, Editorial Board Member (2000-2014).
- JOURNAL OF ENGINEERING RESEARCH, International Advisory Editorial Board (2002-2004).
- International Journal of Soft and Intelligent Computing and Mathematics, Editorial Board Member (2008-2009).
- International Journal of Artificial Life Research, Editorial Board Member (2009-2011).

**5.2 Administrative**

## ◇ IEEE Technical Activities Board

- Technical Activities Board, Member (1990-91).
- IEEE Technical Activities Board New Technology Directions Committee (1991 - Member).
- IEEE TAB Meetings Council (1992 -member).
- Division X Director Nominating Committee (1992 - Chair).
- TAB Periodicals Council ad hoc Subcommittee on Budgetary Needs (1993 - Member).
- TAB Transactions Committee (1996 - member).

## ◇ IEEE Computer Society

- Task Force on Virtual Intelligence

## ◇ IEEE LEOS

- Representative to the IEEE Neural Networks Council (1994-96).

## ◇ IEEE Power Engineering Society

- Representative to the IEEE Neural Networks Council (2002-04).
- ◇ IEEE Circuits and Systems Society
  - Fellows Committee (2004)
  - Vice-President of Administration (2003-04)
  - Chair, Administrative Activities Committee (2004).
  - Board of Governors (1994-99, 2000-02)
  - Restructuring and Best Practices Committee (Chair 2002).
  - Society Parliamentarian (2001-04)
  - CASS Policies and Procedures Formation Committee, Chair (2003, 2004).
  - Budget Committee, Chair (2003, 2004).
  - Technical Society on Neural Systems and Applications in the IEEE Circuits and Systems Society
    - † Co-Founder (1987)
    - † First Chair (1987-89)
  - Darlington Award Committee (1996)-member
  - CAS Publications Steering Committee (1996-97) member
  - Constitution & Bylaws Committee ( 2000 member; 2002-03 Chair).
  - Restructuring Committee (2001-02) member
  - Representative to the IEEE Neural Networks Council (1996-98).
  - Representative to the IEEE Neural Networks Committee (1987-88).
- ◇ IEEE Nanotechnology Council
  - AdCom Member (2004-06)
- ◇ IEEE Computational Intelligence Society
  - Awards Chair (2004-05)
  - AdCom Member (2004-07)
  - Fellows Committee (Member, 2004-05 ; Chair 2006)
  - Representative to the IEEE Nanotechnology Council (2004-06)
  - Technical Committee of Neural Networks Member (2004-06)
  - Founder and First Chair, CIS Chapter of the Dallas IEEE Section (2006-07).
- ◇ IEEE Neural Networks Society
  - AdCom Member (2002-4).
  - Technical Activities Committee (Member 2002)

- ◇ IEEE Neural Networks Council
  - (first) President, (1990-91)
  - Past President (1992-93)
  - Nomination Committee Chair (1992-93)
  - Constitution & Bylaws Committee Chair (1997)
  - Technical Committees (member)
    - † Neural Networks Technical Committee (1996-2004)
    - † Computational Finance Technical Committee (1995-2000)
    - † Awards Committee (member, 1997, 1999-2001)
    - † Fellows Evaluation Committee (member, 1997-2001)
    - † Publications Committee (member, 1999)
  - Projects initiated during this period.
    - † The International Conference of Fuzzy Systems (FUZZ-IEEE).
    - † The Neural Networks Newsletter (CoNNections).
    - † The Neural Networks Council Forum meeting series.
    - † Neural Network Council Book Series (IEEE Press).
    - † IEEE Neural Networks Council Pioneer Awards.
    - † The IEEE Transactions on Fuzzy Systems.
    - † The World Congress on Computational Intelligence
    - † IEEE Neural Networks Standards Committee.
    - † IEEE Neural Networks Distinguished Lecture Program.
- ◇ IEEE Neural Networks Committee
  - Chair (1989)
  - Chair pro tem (1988-89)
  - Secretary (1988).
  - Ad Hoc Committee for founding the IEEE Transactions on Neural Networks (Chair)
  - Projects initiated during Chairmanship
    - † The IEEE Transactions on Neural Networks.
    - † The first International Joint Conference of Neural Networks.
- ◇ IEEE
  - Faculty Advisor to UW Student Section (1978-81).
  - Faculty Advisor to Baylor Student Section (2008-present).
- ◇ Optical Society of America

- Puget Sound Section of the Optical Society of America
  - † Co-Founder (1987).
  - † First President (1987-88).
  - † (First) Honorary Member (1988).

### 5.3 Conferences

- ◊ IEEE Conference on Computational Intelligence for Financial Engineering & Economics (CIFEr)
  - New York, New York, April 9-11, 1995, Program Co-Chair
  - New York, New York, March 24-26, 1996, Co-Chair
  - New York, New York, April 9-11, 1997, Co-Chair
  - New York, New York, March 29-31, 1998, Co-Chair
  - Nashville, TN, March 30-April 2, 2009, Honorary Program Committee Member
  - Paris, France, April 11-15, 2011, Honorary Program Chair
- ◊ IEEE World Congress on Computational Intelligence
  - Orlando, FL, July 1994, Technical Program Director
  - Anchorage, AL, 1998, Tutorials Chair
- ◊ Information Processing by Neural Networks, (IP+NN '97), October 10-17, 1997, Ukraine, Crimea, Gurzuf Russian Academy of Science, Russian Neural Network Society, International Academy of Computer Science; Program Co-Chair.
- ◊ IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)
  - Yokohama, Japan, March 20 to March 24, 1995, International Program Committee
  - Seoul, Korea, August 22-25, 1999, International Organizing Committee Member
- ◊ IEEE Virtual Reality Annual International Symposium (VRAIS)
  - 1993 Seattle, (first) Organizing Chair
  - 1995 Research Triangle Park, NC, Organization Chair
- ◊ The RNNS [Russian Neural Network Society] IEEE Symposium on Neuroinformatics and Neurocomputing
  - Rostov-on-Don, Russia, October 7-10, 1992, International Advisory Chair
  - Rostov-on-Don, Russia, October 9-11, 1995, Program Co-Chair
- ◊ IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis, Victoria, BC; October 4-6, 1992, Organization Chair

- ◇ International Forum on Applications of Neural Networks to Power Systems. July 23-26, 1991, Seattle , WA.
  - Technical Program Chair
  - Tutorial Chair
  - Host Committee, Member
  - Potentials & Challenges of Neural Network Applications to Power, Systems, Panel Member
- ◇ International Workshop on Artificial Neural Networks (IWANN ' 93), June 9-11, 1993, Barcelona, Spain , (sic) Programme Committee Member
- ◇ International Conference on Neural Networks (ICNN)
  - 1988 San Diego ICNN, Program Committee Member
  - 1993 San Francisco ICNN, Program Committee Member
  - 1994 Perth ICNN, Technical Program Co-Chair
- ◇ International Joint Conference on Neural Networks (IJCNN)
  - 1989 Washington D.C. IJCNN, January 1989, Planning Committee Member
  - 1991 Singapore IJCNN, 18-21 Nov. 1991, Technical Program Committee Member
  - IEEE Neural Networks President' s Forum, Moderator, at the 1991 Seattle IJCNN (Tuesday, July 9, 1991) - Presidents of Chinese, European, Japanese and Russian neural network professional societies - (presentation and panel discussion).
  - 1992 Beijing IJCNN, November 1992, International Advisory Co-Chair.
  - 1993 Nagoya ( Japan ) IJCNN, October 25-29, 1993.
    - † Program Committee Co-Chair
    - † Advisory Committee Member
  - 2000 Como, Italy IJCNN, July 24-27, 2000 .
    - † Special Sessions Chair
- ◇ IEEE International Symposium on Circuits and Systems (ISCAS)
  - 1987 ISCAS, Philadelphia (May 6, 1987), Artificial Neural Systems and Applications, Session Organizer and Co-Chair
  - 1989 ISCAS, 9 May 1989, Portland., Neural Networks Session Chair
  - 1994 ISCAS, London, Program Committee Member
  - 1995 ISCAS, Seattle, General Chair
  - 1996 ISCAS, Atlanta, Steering Committee Member
- ◇ New Zealand International Two-Stream Conference on Artificial Neural Networks and Expert Systems (ANNES)

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- Programme Committee -member; (ANNES '93), November 24-26, 1993, Otago University , Dunedin , New Zealand.
- International Programme Committee -member; (ANNES '94), November 20-23, 1995, University of Otago , Dunedin , New Zealand.
- ◇ International Conference of Neural Information Processing (ICONIP),
  - ICONIP 1994, Seoul, Korea (International Advisory Committee)
  - ICONIP '95, Oct 30 – Nov 3, 1995, Beijing, China, International Advisory Committee, Member
- ◇ American Mathematical Society
  - 1051st AMS Meeting, Baylor University, October 16-18, 2009, Session Co-Organizer (with John Davis and Ian Gravagne): Dynamic Equations on Time Scales: Analysis and Applications.
- ◇ IEEE Symposium on Swarm Intelligence, Pasadena, March 2005 (Steering Committee Chair)
- ◇ National Faculty Leadership Conference (National CLM Meeting)
  - June 24-27, 2004, Washington, D.C., The Christian World View in Engineering and Technology, Program Committee Chair
- ◇ Sixth International Symposium on Neural Networks (ISNN 2009) Wuhan, China, May 26-29, 2009, Advisory Committee Member.
- ◇ International Symposium on Intelligent Decision Technologies,
  - IDT 2010, Baltimore, USA, 28-30 July 2010, International Programme Committee
- ◇ Texas Symposium on Wireless & Microwave Circuits & Systems, Baylor University, Waco, Texas
  - April 4–5, 2013, Organization Chair
  - March 26–27, 2014, Organization Chair
  - April 23–24, 2015, Organization Chair
  - March 31, April 1, 2016, Organization Chair
  - March 30-31, 2017, Conference Advisor
  - April 5-6, 2018, Conference Advisor
  - March 28-29, 2019, Conference Advisor
- ◇ 45th IEEE Southeastern Symposium on System Theory, March 10–12, 2013, Baylor University, Waco, Texas, Organization Chair.

## ◇ Other

- Workshop on the Future Directions for Optical Information Processing, Texas Tech University , Lubbock (May 1980), Panel Discussion leader for “Space-variant coherent optical processing”
- Limits of Passive Imaging Workshop, Mackinac Hotel, Mackinac Island, MI (May 24-26,1983), Chair of Processing Group
- Workshop on Optical Artificial Intelligence, Gold Lake , Colorado (3-5 August, 1987), Chair of Working Group on Perception.
- WVU Neural Network Symposium, West Virginia University , Morgantown , (15-16 June, 1989), Panel Discussion Member
- First Workshop in Neural Networks, Auburn University Hotel & Conference Center, 5-6 February, 1990, Panel Discussion Member, “Application of neural networks and the future“.
- Conference on Active Materials and Adaptive Structures , Washington D.C., (Nov. 6-8, 1991), Session Committee Member
- Annual IEEE Seattle Section Pizza Feed, February 20, 1991 , South Campus Center Auditorium, Master of ceremonies
- Pacific Gas & Electric R&D Electric Distribution Program External Advisory Goup Meeting, Silverado Country Club, Napa Valley , California , (August 22-23, 1991).
- Fuzzy Logic & Intelligent Systems Seminar, Boeing Computer Services, Red Lion Inn, Bellevue, WA, December 2, 1991, Panel Discussion: Moderator.
- International Workshop on Artificial Neural Networks, June 9-11, 1993 , Sitges (Barcelona), Spain , Program Committee -member.
- 1994 International Symposium on Speech, Image Processing & Neural Networks, (ISSIPNN’94) Hong Kong Convention & Exhibition Center April 14-16, 1994 (International Advisory Committee).
- 1995 Workshop on Sampling Theory & Applications, September 20-22, 1995 , Jurmala (Riga), Latvia , Program Committee -member
- 1996 IEEE International Workshop on Neural Networks for Identification, Control, Robotics and Signal/Image Processing (NICROSP), September 21-23, 1996, Venice, Italy, Program Committee -member
- 30th International Symposium on Automotive Technology and Automation, Dedicated Conference on Megatronics, Florence Italy , 16-19 June 1997, Programme Committee member.
- The Fourth International Conference on Neural Information Processing – The Annual Conference of the Asian Pacific Neural Network Assembly, jointly with The Fifth Australian and New Zealand International Conference on Intelligent Information Processing Systems, and The Third New Zealand International Conference on Artificial Neural Networks and Expert Systems 24-28 November, 1997, Dunedin/Queenstown, New Zealand; program committee member.

- The IEEE International Electric Machines and Drives Conference (IEEE-IEMDC), 9-12 May, 1999, Seattle, WA , Publicity Chair & Publications Chair.
- American Scientific Affiliation (ASA) 64th Annual Meeting, Baylor University (Sunday, August 2, 2009), Session Chair (Origins).
- ACM Genetic and Evolutionary Computation Conference (GECCO), Vancouver, Canada on July 12-16, 2014, ACO-SI track program committee member
- Alternatives to Methodological Naturalism, Online Meeting - April 16, 2016, Advisory Panel
- International Conference on Big Data and Data Analytics (ICBDDA-17), sponsored by India's Institute for Engineering Research and Publication (IFERP), April 4-5, 2017 at Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya(SCSVMV) Kanchipuram, International Advisory Committee Member
- Alternatives to Methodological Naturalism Conference, April 16, 2016 Conference Advisory Panel, Member

## 6 Publications

### 6.1 Books

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DOI: 10.1142/9789814508728, ISBN-10: 9814508713, ISBN-13: 978-9814508711
10. R.J. Marks II, W.A. Dembski, W. Ewert, *Introduction to Evolutionary Informatics*, (World Scientific, Singapore, 2017).

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28. Albert Yu, B.B. Thompson, M. Robinson, R.J. Marks II, "Inversion of Swarm Dynamics for Underwater Tactical Applications," ONR University/Laboratory Initiative in Undersea Weapons Technology at the Naval Undersea Warfare Center (NUWC), Newport, RI (June 2-4, 2009).
29. Robert J. Marks II and William A Dembski "Evolutionary Informatics: Measuring the Cost of Success," American Scientific Affiliation, 2009 Annual Meeting, 3 August 2009. [ppt Slides]

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31. Charles Baylis and R.J. Marks II, "Spectrum Issues in Amplifier Design," Fifth Annual Emerging Spectrum Technology (EST) Workshop on Advanced Radar Technologies to Improve Spectrum Use, Double Tree Hotel, Annapolis Maryland, September 13-14, 2010.
32. Charles Baylis and Robert J. Marks II, "Simultaneous Circuit & Waveform Optimization for Cognitive Radar," 2010 ONR S&T Naval Partnership Conference, November 8-10. Hyatt Regency Crystal City, Arlington, VA., November 8-10, 2010.

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37. Jon Roach, Robert J. Marks II, and Dr. Benjamin B. Thompson, "Tactical Task Allocation and Resource Management in Nonstationary Swarm," 2012 ONR University/Laboratory Initiative Program Review, University of Maryland University College, June 5-7, 2012
38. J. Martin, C. Baylis, R.J. Marks II, L. Cohen, and J. de Graaf "A Peak-Search Algorithm for Combined PAE and ACPR Load-Pull," Power Amplifier Symposium, San Diego, California, September 2012.
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41. Charles Baylis, Matthew Moldovan, Matthew Fellows, David Moon, Robert J. Marks II, Lawrence Cohen "Radar Waveform Optimization to Reduce Spectral Spreading

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59. Charles Baylis and Robert J. Marks II. “Adaptive Amplifier Design for Dynamic Spectrum Allocation in the Next-Generation Radar,” IEEE International Microwave Symposium, Hawaii Jun 9, 2017.

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60. Austin S. Egbert, Casey Latham, Pedro Rodriguez-Garcia, Charles Baylis, Lawrence Cohen, Robert J. Marks. “MULTI-DIMENSIONAL COEXISTENCE: EXTENDING THE CONCEPT OF THE SPECTRAL MASK TO INCLUDE TRANSMITTER TRANSMISSION PATTERN FOR SPECTRUM SHARING,” USNC-URSI National Radio Science Meeting, January 2018, Boulder, Colorado.
61. Christopher D. Kappelmann, Lucilia Lamers, Zachary Hays, Sarvin Rezayat, Charles Baylis, Robert J. Marks, Ed Viveiros, Mohammad Abu Khater, Abbas Semnani, Dimitrios Peroulis “FREQUENCY-AGILE POWER AMPLIFIER MATCHING NETWORK RECONFIGURATION USING A HYBRID REAL-TIME SEARCH,” USNC-URSI National Radio Science Meeting, January 2018, Boulder, Colorado.
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64. Sarvin Rezayat, Charles Baylis, Ed Viverios, John Penn, Robert J. Marks II “REAL-TIME MULTI-VARIABLE AMPLIFIER OPTIMIZATION USING A NONLINEAR TUNABLE VARACTOR MATCHING NETWORK IN THE POWER SMITH TUBE,” USNC-URSI National Radio Science Meeting, January 2018, Boulder, Colorado.

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65. Austin Egbert, Kyle Gallagher, Charles Baylis, Anthony Martone, Ed Viveiros, Robert J. Marks II. "Effects of Time-Varying Transmit Amplifier Matching Networks in Cognitive Radar Applications," URSI National Radio Science Meeting, Boulder, Colorado, January 9-12, 2019.
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67. Angelique Dockendorf, Ellie Langley, Austin Egbert, Charles Baylis, Abbas Semnani, Dimitrios Peroulis, Anthony Martone, Ed Viveiros, Robert J. Marks II. "Frequency-Agile Reconfiguration for a High-Power Resonant Cavity Tuner Using Previous Search Results," URSI National Radio Science Meeting, Boulder, Colorado, January 9-12, 2019.
68. Austin S. Egbert, Kyle Gallagher, Charles Baylis, Anthony Martone, Ed Viveiros, Robert Marks, "EFFECTS OF TIME-VARYING TRANSMIT AMPLIFIER MATCHING NETWORKS IN COGNITIVE RADAR APPLICATIONS," 2019 USNC-URSI National Radio Science Meeting, University of Colorado at Boulder, January 9-12, 2019.
69. Gordon L. Ledford, Pedro Rodriguez-Garcia, Charles Baylis, Robert J. Marks "APPROACH FOR REAL-TIME SYNTHESIS OF SIMULTANEOUS RADAR AND SPATIALLY SECURE COMMUNICATIONS FROM A COMMON PHASED ARRAY," 2019 USNC-URSI National Radio Science Meeting, University of Colorado at Boulder, January 9-12, 2019.
70. Charles Baylis, Anthony Martone, Kyle Gallagher, Ed Viveiros, Abbas Semnani, Dimitrios Peroulis, Robert J. Marks II, "SOFTWARE DEFINED, SPECTRALLY SENSITIVE RADAR TRANSMISSION," 2019 USNC-URSI National Radio Science Meeting, University of Colorado at Boulder, January 9-12, 2019.
71. Jose A. Alcala-Medel, Caleb Calabrese, Charles Baylis, Anthony Martone, Kyle Gallagher, Ed Viveiros, Abbas Semnani, Dimitrios Peroulis, "FAST RECONFIGURATION OF SECOND-GENERATION TUNABLE EVANESCENT MODE CAVITY MATCHING NETWORK FOR FREQUENCY AGILITY IN S-BAND COGNITIVE RADAR APPLICATIONS," 2019 USNC-URSI National Radio Science Meeting, University of Colorado at Boulder, January 9-12, 2019.
72. Ellie Langley, Austin Egbert, Charles Baylis, Abbas Semnani, Dimitrios Peroulis, Anthony Martone, Ed Viveiros, Robert Marks II, Angelique Dockendorf, "FREQUENCY-AGILE RECONFIGURATION FOR A HIGH-POWER RESONANT CAVITY TUNER USING PREVIOUS SEARCH RESULTS," 2019 USNC-URSI National Radio Science Meeting, University of Colorado at Boulder, January 9-12, 2019.

73. Robert J. Marks & Jay Richards, "The Human Advantage: Will Artificial Intelligence Supersede Human Intelligence?" CHRIST CHURCH, 112 MEDINA ST. AUSTIN, TX, March 11, 2019.
74. "Real-Time Circuit Reconfiguration for Cognitive, Software-Defined Radar Transmission: A New Paradigm in Spectrum Sharing" 2019 IEEE International Symposium on Electromagnetic Compatibility, Signal & Power Integrity (EMC+SIPI), New Orleans, USA.

## 7 Research Grants & Contracts

1. "Lensless space-variant processing," Graduate School Research Fund (1978-79), \$5,824.
2. "Coherent optical extrapolation of two-dimensional bandlimited signals," National Science Foundation (1979-81), \$32,000.
3. "Coherent optical interpolation of continuously sampled images," Graduate School Research Fund (1982-83), \$6,596.
4. AT&T Research Equipment Grant (1985)...with L.E. Atlas, \$62,000. "Analysis and application of neural nets," Boeing High Technology Center (1986-88).with L.E. Atlas-\$110,000.
5. "Neural network computer architectures," The Washington Technology Center (1987-89) with L.E. Atlas.
6. "Increasing the accuracy of inexact processors," SDI/IST through ONR & the Optical Systems Lab at Texas Tech University and WTC (1988-1989), \$230,000.
7. "Power Systems Stability and Security Assessments Using Artificial Neural Networks" NSF (1988-1990), Project Coordinator, co P.I. with M.A. El-Sharkawi, M. Damborg & L.E. Atlas-\$337,500.
8. "Neurocomputers," The Washington Technology Center (1989-91) with L.E. Atlas, \$150,000.
9. "Electric load forecasting using artificial neural networks," Puget Sound Power and Light Company (1989-90) with M. El-Sharkawi, L.E. Atlas & M. Damborg-\$115,000.
10. "Advanced Time-Frequency Displays," Boeing Commercial Airplane Company, September 1, 1989 through October 30, 1990, co-P.I. with Les Atlas-\$128,000.
11. "Neural Network & Learning Systems," The Washington Technology Center (1991-92) with L.E. Atlas, \$150,000.
12. "Solution of Inverse Problems in Electromagnetic and Optical Propagation Using Artificial Neural Networks," National Science Foundation, February 15, 1991 to February 14, 1993, (with Jenq-Neng Hwang, Leung Tsang and Akira Ishimaru),-\$151,000.

13. "Advanced Neural Network Paradigms and Applications," Boeing Computer Services, January 1, 1991 to December 31, 1993-\$90,000.
14. "Simulation Studies on Biomagnetic Detection of Bundle of His Signal and Its Application to the Cardiac Syncope Problem," General Electric, Schenectady NY, January 1, 1992 to May 31, 1992, co Principal Investigator (Lee Huntsman, Project Coordinator; with co PI's G.H. Bardy, C. Ramon, S.Oh)-\$40,000.
15. "Biomagnetic Imaging of Three-Dimensional Current Distribution," National Science Foundation, Stage 1: 6-1-92 to 5-31-95. (co PI with C. Ramon)-\$497,080.
16. Ibid. Stage 2: \$104,358, 6-1-94 to 2 29, 1996
17. "Detection of Short Turns in Turbo Alternators," Southern California Edison, August 1, 1992 to July 31, 1993, (co Principal Investigator M.A. El-Sharkawi)-\$93,765.
18. "S&P 500 Trading Using Spectrally Trained Neural Networks," Washington Technology Center, January 1993 to June 1993, \$25,000.
19. "Tune & Prune Adaptation of Fuzzy Inference Engines," Royalty Research Fund, University of Washington, June 15, 1993 to September 1994, \$14,000.
20. "Localization of Short Turns in Turbo Alternators," Southern California Edison, August 1, 1992 to July 31, 1993, (co Principal Investigator M.A. El-Sharkawi)-\$94,000.
21. "Financial Neural Networks," Washington Technology Center, August 1993 to March 1994, \$10,000.
22. "Detection of Short Turns in Operating Turbo Alternators," Southern California Edison, August 1, 1993 to August 31, 1994, (co Principal Investigator M.A. El-Sharkawi)-\$93,000.
23. "Advanced Neural Network Paradigms and Applications," Boeing Computer Services, January 1, 1994 to December 31, 1996-\$90,000.
24. "Wavelet Based Neural Networks," Washington Technology Center, January 1995 to June 1995, \$7,000.
25. "Genetic Algorithm Carbon Brake Analysis," Boeing Airplane Company, September 1994 to December 1994, \$23,000.
26. "Under-Load Evaluation of Breaker Contacts Condition," National Science Foundation, GOALI Grant No.ECS-9634600, September 1, 1996 to August 31, 1997, (Co-PI with Mohamed A. El-Sharkawi in collaboration with Isador Kerszenbaum, Southern California Edison), \$50,000.
27. "Intelligent Systems Applications for Transmissions and Distribution Systems," (Co-PI with Mohamed A. El-Sharkawi), Southern California Edison, 1996-97, \$79,530.

28. "Advanced Neural Network Paradigms and Applications," Boeing Computer Services, January 1, 1996 to December 31, 1997-\$23,000;
29. Ibid. 1997-98 \$23,000;
30. Ibid. 1998-99 \$23,000.
31. "UG Cable Replacement," Southern California Edison, 1997 - \$50,000 (Co-PI with Mohamed A. El-Sharkawi).
32. "Twin signal signature sensing: application to shorted winding monitoring, detection and localization," NSF/EPRI, 1995-1999, (co Principal Investigator M.A. El-Sharkawi), \$398,000.
33. "Environmentally Adaptive Sonar," Office of Naval Research/ Applied Physics Laboratory, September 1997 to September 1999 - \$90,000 (Co-PI with Mohamed A. El-Sharkawi).
34. "A New Paradigm for Designing Radiation Beams for Cancer Treatment," The Whitaker Foundation, January 1998 to December 2000 - \$210,000 (Co-PI with Paul Cho, Department of Radiation Oncology, UW School of Medicine.)
35. "Automatic Decision Aggregation," Boeing Defense, Nov 1997 through May 1998, \$26,000.
36. "Automatic Environmentally Adaptive Sonar Control," Office of Naval Research, 1998-2001, - \$333,000 (Co-PI with M.A. El-Sharkawi).
37. "Assessment of prostate seed implants NIH, October 1, 2001 to Dec 31, 2002 (Co-PI with Paul Cho, Department of Radiation Oncology, UW School of Medicine.), NIH, \$212,000.
38. "Sensor Coverage for Vehicle Health and Safety Systems," Boeing Defense, June 2001 to Dec. 2001 (PI \$25,000).
39. "Intelligent Sensor and Satellite Networks for Earth Science & Exploration," JPL & NASA Sept 1, 2000 to Dec 31, 2002 (co PI with M.A. El-Sharkawi, subcontract from JPL for \$250,900.)
40. "Model-Based Complex Data Set Correlation Boeing Airplane Company, Jan 16, 2001 to Jan 16, 2002, (PI \$42,099)
41. "Physiologic Development of Speech Production," NIH, Sept 1, 2001 to Sept 2006 ( PI. Christopher A. Moore, Speech & Hearing Sciences. R.J. Marks II is a co-investigator, Grant Total is \$2,861,174.).
42. "Reconstruction of Missing Sensor Readings on Jet Aircraft Engines," Boeing Phantom Works, September 2001 to May 2002 (\$32,000).

43. "Missing Sensor Data Restoration: Computationally Intelligent Discovery of Reading Dependencies," NSF, Sept 16, 2001 to Aug 31, 2004, (co-PI with M.A. El-Sharkawi, \$588,898).
44. Ibid. Undergraduate support addendum, \$12,000.
45. "Intraoperative Dose Optimization for Prostate Brachytherapy," ARO, co-PI with Paul Cho and Y. Kim. \$550,000, 2003-06 (3 years).
46. "Application of computationally intelligence techniques to long term multistatic sonar systems (ONR - EE/APL, 3 years, Marks Co-PI) \$960k total.
47. "Collective Behavior of Biological Swarms: System Modeling, Analysis, and Algorithmic for Distributed Dynamic Resource Allocation Problems," JPL Director's Research and Development Fund, Jet Propulsion Laboratory, Co-PIs are Payman Arabshahi (JPL), R.J. Marks II (UW), Michael Dickinson (Cal Tech) and Alcherio Martinoli (Cal Tech), 2003-04, \$200,000.
48. "Reconstruction of Missing Sensor Readings on Jet Aircraft Engines: Phase II," Boeing Phantom Works, April 2003 to July 2003, (\$32,000),
49. "Supplemental RA Support," Applied Physics Lab, University of Washington, Spring Quarter, 2003, (\$11,138).
50. "Real-Time Distributed Control Networks: Dynamic Bandwidth Allocation via Adaptive Sampling" (with Ian Gravagne and John Davis, Baylor University) NSF, 3 years, \$311k.
51. Ibid. Supplemental REU funds obtained for supporting summer undergraduate research (\$15,000).
52. "Mu-Dynamics on Time Scales: Adaptive Time Domains for Dynamical Systems," (with Ian Gravagne and John Davis, Baylor University) NSF, 3 years, \$143k.
53. "Multi-Agent System Based Intelligent Distributed Control System for Power Plants," (with Kwang Y. Lee, P.I. and Ian Gravagne), 2008–2011, \$132k.
54. "Inversion of Swarm Dynamics for Underwater Tactical Applications," Office of Naval Research, 2009–2011, \$270,000 (with Benjamin B, Thompson, ARL Penn State)
55. "Joint Optimization of Radar Power Amplifier and Waveforms for Reduced Spectral Spreading," ARL (Chales Baylis, P.I.) \$62,000.
56. "Tactical Task Allocation and Resource Management in Nonstationary Swarm Dynamics," Office of Naval Research, 2012–2013, \$270,000 (with Benjamin B, Thompson, ARL Penn State)
57. "Evaluation of Airport Wireless Interference Assessment and Comparison with University Campus Wireless Coexistence," TEM Consulting, (Charles Baylis, P.I., R.J. Marks co P.I.) \$2000, Sept 19, 2013 to Sept 20, 2014.

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58. “EARS: Joint Circuit and Waveform Optimization for Cognitive, Spectrally Confined Radar Transmission ,” National Science Foundation, (Charles Baylis, P.I., R.J. Marks co P.I.) \$400,000. October 1, 2013 to September 30, 2017.
  59. Ibid. Supplemental \$16,000 Research Experiences for Undergraduates (REU) awarded 2015. Supplemental \$16,000 Research REU awarded 2016.
  60. “Reconfigurable Power Amplifier and Filter Technology for Real-Time Adaptive Next Generation Radar,” Army Research Laboratory, (Charles Baylis, P.I., R.J. Marks co P.I.) \$855,453.19, May 11, 2016 to December 11, 2017
  61. Ibid. \$280K Continuance, 5/13/2018 to 5/17/2020
  62. “Investigation of Wideband Low-Noise Amplifier Linearity in Receiver Interference Scenarios,” Raytheon, January 1, 2016 August 31, 2016, (Charles Baylis, P.I., R.J. Marks co P.I.) \$9,972 (2016-2017).
  63. “Business Intelligence: Application to Influence Metrics,” Influence Networks, June 15, 2017 through July 31, 2017, \$16,115.
  64. “Testing Theories of Entrepreneurship: Agent and Swarm Based Models of Entrepreneurial Behavior and Outcomes.” June 2017 - December 2017 (with Steve Bradley) Bough Grant, \$3500.
  65. “Artificial and Natural Intelligence: Identifying & Applying the Difference,” Discovery Institute, 2018-2021, \$288,790.
  66. “Enabling Quantum Leap: Q-AMASE-i: Convergent Acceleration Discovery Foundaries for Quantum Materials,” \$12,984,527, Sept 1, 2019 to Aug 30, 2025, NSF, (Marlin Scully, Baylor University, PI)<sup>10</sup>-In Review.

## 8 Professional Activities

### 8.1 Organizations

- ◇ Financial Neural Networks, Chief Technology Officer, 1992-1994.
- ◇ Multidimensional Systems Corporation, President, 1997-2002.
- ◇ Arbor Ministries, Seattle, Washington, Board of Directors, Secretary (2002-2012).
- ◇ Center for Evolutionary Informatics, Board of Directors, President (2008-present).
- ◇ American Institute for Technology and Science Education (AITSE), Advisory Council, (2009-2013).
- ◇ Intelligent Education, Advisory Board, (2015-present)
- ◇ Walter Bradley Center for Natural and Artificial Intelligence, 2018-present

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<sup>10</sup>I am listed as a collaborator, compensation TBD on award.

## 8.2 Expert Witness

- ◇ Neuromedical Systems, Inc (Plaintiff) vs. Neopath (Defendant), United States District Court, Southern District of New York (1997-98) - Decision for the Defendant.
- ◇ Neopath (Plaintiff) vs Neuromedical Systems, Inc (Defendant) vs., United States District Court, Seattle (1997-98) - for the Plaintiff.
- ◇ Nestor, (Plaintiff) vs. Hecht-Nielsen Corporation Software (Defendant), filed Nov. 25, 1998, in U.S. District Court in Rhode Island.
- ◇ Hecht-Nielsen Corporation Software (Plaintiff) vs. Transaction Systems Architects Inc. and ACI Worldwide Inc. (Defendants), U.S. District Court in San Diego.
- ◇ Ysleta Del Sur Pueblo: Tigua Gaming Agency (Defendant)vs State of Texas (Plaintiff) -for the Defendant

## 8.3 Consulting

- ◇ Microsoft Corporation, Redmond, WA
- ◇ Boeing Computer Services
- ◇ Boeing Airplane Company
- ◇ Applied Physics Lab, University of Washington
- ◇ APPA Systems Inc., Bellevue, WA
- ◇ Technical Arts Mfg. Co. Inc., Redmond ,WA
- ◇ John Fluke Manufacturing Company Inc., Everett, WA
- ◇ Space Labs, Redmond, WA
- ◇ Lasentec, Bellevue, WA
- ◇ Flow Industries, Kent, WA.
- ◇ Philipp Technologies, Bellevue, WA
- ◇ Multidimensional Systems Corporation, Lynnwood, WA
- ◇ Pacific Gas & Electric
- ◇ American Pioneer Corporation, Ballard
- ◇ Decisions Systems Corporation, Atlanta, GA
- ◇ Inficom Corp, Redmond, WA
- ◇ DARPA, Crystal City, VA
- ◇ Lineage Media and Solutions, Inc. Bellevue, WA