

Keynote Speaker 1:

Professor (Dr.) Ajith Abraham

Education

- Monash University, Melbourne, Australia
Ph.D. in Computer Science, (2001)
Thesis topic: *Hybrid Soft Computing: Architecture Optimization and Applications*
- Nanyang Technological University, Singapore
Master of Science in Control and Automation (1998)
Thesis topic: *Reliability Modeling and Optimization of Electronic Systems*
- University of Calicut, Kerala, India 673 635
Bachelor of Technology in Electrical and Electronic Engineering (1990)
Grade of Passing: First class (Honors). *First in the class of 50 students.*

Professional Experience Summary

Academic: 15 years

Industrial experience: 7.5 years

My Research Interests

My primary research is on developing machine intelligence using natural computation techniques. Hybridization of different natural computation techniques is an innovative approach to construct computationally intelligent systems consisting of function approximation (connectionist learning), approximate reasoning (fuzzy systems, rough set) and derivative free optimization methods (population based meta-heuristics). I am also interested in network security, dynamics of networks, information assurance, Web services, Web intelligence, bioinformatics, financial modeling, decision support systems, data mining applications etc.

Contributed Research Publications

Table 1: Summary of research publications

Authored books	5
Journal papers	235
Book chapters	78
Edited books	37
Edited conference proceedings	108
Conference papers	388
Invited articles etc.	36
Total	887

Citations of Publications

Table 2: Google scholar citations data as of April 22, 2013

Total Citations	10,727
H-index	52
i10-index - Papers with 10 or more citations	247

Table 3: Web of Science citations data as of April 22, 2013

Total Citations	2,130
H-index	23
Average number of citations / article	6

Academic Teaching and Research

July 2008 -

Director

Machine Intelligence Research Labs (MIR Labs) P.O. Box 2259, Auburn, Washington
98071-2259
USA

June 2009 -

Research Professor,

Faculty of Electrical Engineering and Computer science
VSB-Technical University of Ostrava
17 listopadu 15/2172
708 33 Ostrava-Poruba, Czech Republic

January 2007 - December 2010

Research Professor,

Norwegian Centre of Excellence, Norwegian University of Science and Technology,
O.S. Bragstads plass 2E, N-7491, Trondheim, Norway

August 2004 - December 2006

Institute of Information Technology Advancement Program

Distinguished Visiting Professor,

School of Computer Science and Engineering, Chung-Ang University, Seoul, Korea
School of Computer Science, Yonsei University, Seoul, South Korea

August 2002 - July 2004

Assistant Professor,

Department of Computer Science, Oklahoma State University, USA

February 2002 - July 2002

Research Fellow,

Faculty of Information Technology, Monash University (Clayton Campus), Australia

March 1999 - January 2002

Lecturer,

Faculty of Information Technology, Monash University, Australia

Honorary/Adjunct Appointments

June 2013 - May 2016

External Assessor,

Universiti Putra Malaysia, Malaysia

January 2008 -

Research Advisor,

Addis Ababa University, Ethiopia

June 2012 -

Research Advisor,

Sudan University of Science and Technology, Khartoum, Sudan

January 2011 - December 2015

Research Advisor,

Southern Illinois University, Carbondale, USA

November 2011 - November 2013

Adjunct Professor,

University Technical Malaysia, Melaka

January 2008 - December 2012

Research Advisor,

Universiti Teknologi Malaysia, Malaysia

May 2012 - June 2012

Visiting Professor,

Kazakh-British Technical University, Almaty, Kazakhstan

June 2011

Visiting Professor,

University of Pisa, Italy

May 2011

Visiting Professor,

Wroclaw University of Technology, Wroclaw, Poland

September 2010 - October 2010

Visiting Professor,

AGH University of Science and Technology, Krakow, Poland

June 2010 - June 2011

Adjunct Professor,

Hungarian Academy of Sciences, Hungary

January 2008 - December 2008

Adjunct Professor,

Open University of Catalunya, Barcelona, Spain

July 2008 - October 2009

Adjunct Professor,

National Institute of Applied Sciences, INSA-Lyon, France

May 2005 - April 2006

Adjunct Professor,

Rovira i Virgili University, Spain

January 2005 -

Adjunct Professor,

Department of Computer Science and Engineering, Jinan University, China

January 2005 -

Adjunct Professor,

Department of Computer Science and Engineering, Dalian Maritime University, China

Industrial Experience

Research and Development

January 1996 - February 1999

Project Engineer,

Keppel Engineering Ltd., 19, Kian Teck Road, Singapore 628772.

<http://www.keppelcorporation.com>

April 1993 - October 1995

Design Engineer,

Hyundai Engineering Ltd., Seoul, Korea.

<http://www.hyundai.com>

March 1991 - February 1993

Engineer (Projects),

Ashok Leyland Ltd., Madras, India 600 057.

<http://www.ashokleyland.com>

Research Grants Awarded as Principal Investigator

Funding agency: Generalitat de Catalunya, Spain

Topic: Evolving Artificial Intelligence Paradigms on Computational Grid for Knowledge Mining **Funding period:** January - December 2008.

Funding agency: Ministry of Education, Spain

Topic: Evolutionary Neural Network Optimization **Funding period:** 2005-2006.

Funding agency: Presidential Challenge Grant, Oklahoma State University

Topic: Web Based Distributed Data Mining Using Hybrid Intelligent Systems **Funding period:** 2003 - 2005.

Funding agency: Center of Excellence in Information Technology and Telecommunications, State of Oklahoma, USA

Topic: Startup fund as Domain Leader

Funding period: January - December 2004.

Research Grants Awarded as Co-Investigator

Funding agency: Malaysian Government Grant, Higher Learning Ministry, Malaysia

Topic: Tree structural based method for feature selection

Funding period: 2010-2012

Funding agency: National Science Foundation of China (NSFC), Grant number: 60873054

Topic: Research on Hidden Chinese Cognition Model Based on Swarm Intelligence

Funding period: 2009-2011

Funding agency: MOSTI Science Fund, Malaysia

Topic: Development of An Integrated Adaptive Web Caching and Prefetching **Funding period:** 2008-2010

Funding agency: Malaysia

Topic: A Novel Swarm Optimized Rough Apriori Model for Mining Significant Resistant Single Nucleotide Polymorphism Subset in Obesity Gene Variants Diagnosis

Funding period: 2013-2014

Funding agency: Malaysia

Topic: The Augmented Social Network (ASN) Benchmark for Web Pre-caching on Solving Trust, Accuracy and Expectation Problems

Funding period: 2012-2014

Funding agency: European Social Fund and Czech Republic State Funds

Topic: BIO-inspired Methods: research, education and knowledge transfer (CZ.1.07/2.3.00/20.0073)
Funding period: 2011-2014

Funding agency: European Social Fund and Czech Republic State Funds
Topic: IT4Innovations, Center of Excellence
Funding period: 2011-2016

IEEE Technical Committee Chair

(November 2008 -), **Co-Chair of the Technical Committee on Soft Computing**, IEEE Systems Man and Cybernetics Society, IEEE, USA.

IEEE Computer Society - Distinguished Visitors Program

(July 2011 - July 2013), **Distinguished Visitors Program - Representing Europe**, IEEE Computer Society, USA.

Invited Talks

Keynote and Plenary Talks During International Conferences – 46 Conferences
Tutorials During International Conferences – 14 Conferences
Invited Seminars – over 53 Universities in 20 Countries

Teaching

Subjects Taught

My teaching portfolio concentrates on past ten years during which I taught 14 subjects at graduate and under-graduate levels (Please see Table 2).

Table 4: Summary of Teaching Experience

Subjects Taught	Level	Responsibility
Computational Intelligence	Graduate	Instructor
Digital Logic Theory	Under graduate	Instructor
Fuzzy Sets, Fuzzy Logic and Fuzzy Inference	Graduate	Instructor
<u>Systems: Theory and Applications</u>		
Operating Systems	Graduate	Instructor
Intelligent Data Mining	Graduate	Instructor Instructor
Computer Science Migration	Graduate	Instructor Instructor
E-commerce	Under graduate	Instructor Instructor
Computer Architecture	Under graduate	Instructor
Artificial Intelligence I	Under graduate	Tutor Tutor
Artificial Intelligence II	Graduate	
Evolutionary and Neural Computing	Graduate	Tutor
Computer Models for Business Decisions	Graduate	
Project Management	Graduate & under graduate	
General Operations Management	Graduate & under <u>graduate</u>	

Ph.D. School

1. *Computational Intelligence* PhD course at Addis Ababa University, Ethiopia (2013).
2. *Advanced Information Systems* Graduate course at British Technical University, Kazakhstan (2012).
3. *Intrusion Detection and Prevention Systems* Graduate course during September - October, 2007 held at Norwegian University of Science and Technology, Trondheim, Norway (2008).
4. *Intrusion Detection Systems during the European Future Generation Internet (EuroFGI)*, PhD course on Information and Communication Technologies Security Course, Norway (2007).
5. *Hybrid Intelligent Systems* PhD course at University of Pisa, Italy (2011).
6. *Hybrid Intelligent Systems* PhD course at AGH University of Technology, Krakow, Poland (2011).
7. *Hybrid Computational Intelligence* PhD course at Wroclaw University of Technology, Wroclaw, Poland (2011).

Academic Advising - Completed Research Students

Completed Research Students

Ph.D.

1. Tibebe Tesema (2013), Addis Ababa University, Ethiopia
2. Salha Al-Sahrani (2012), UTM, Malaysia
3. Sarina Sulaiman (2012), UTM, Malaysia
4. Cong Tran (2005), University of South Australia, Australia

M.S.

1. Saulat Farooq (2005), University of South Australia, Australia
2. Tibebe Tesema (2004), Addis Ababa University, Ethiopia
3. Brent Doeksen (2003), Oklahoma State University, USA
4. Srilatha Chebrolu (2003), Oklahoma State University, USA
5. Sandhya Peddabachigari (2003), Oklahoma State University, USA

Awards and Honors

Outstanding Faculty Award

Was awarded the outstanding faculty award (Research) by the Department of Computer Science, Oklahoma State University, USA in 2003.

Best Paper Awards and Nominations

1. Best technical paper award of ICIC 2000, Second International conference on Computers in Industry, Bahrain, November 13-15, 2000. The best paper was selected from a total of 45 papers (52 % acceptance). The award includes US\$1000 and a certificate of merit. **Paper details:** Ajith Abraham , *A Soft Computing Approach for Fault Prediction of Electronic Systems, Published by The Bahrain Society of Engineers, Majeed A Karim et al. (Eds.), Bahrain, pp. 83-91, 2000.*
2. Best technical paper of the Biological Simulation Track, 15th European Simulation Conference, Prague, Czech Republic, 06-09 June 2001. **Paper details:** Ajith Abraham , *Ninan Sajith and Babu Joseph, Will We Have a Wet Summer? Long-term Rain Forecasting Using Soft Computing Models, Modelling and Simulation 2001, Publication of the Society for Computer Simulation International, Prague, Czech Republic, Kerckhofs E.J.H. and Snorek M. (Eds.), ISBN 1565552253, pp. 1044-1048, 2001.*
3. Best technical paper of CASYS 2001, Fifth International Conference on Computing Anticipatory Systems, Liege, Belgium, 13-18 August 2001. **Paper details:** *Sonja Petrovic-Lazarevic, Ken Coghill and Ajith Abraham , Neuro-Fuzzy Support of Knowledge Management in Social Regulation, Computing Anticipatory Systems, Dubois D.M.(Ed.), American Institute of Physics, New York, ISBN 0735400814, pp. 387-400, 2002.*
4. Best paper award nomination of IEA/AIE'04, 17th International Conference on Industrial

Engineering Applications of Artificial Intelligence and Expert Systems, Canada, 2004. **Paper details:** *Marcin Paprzycki, Ajith Abraham and Ruiyuan Guo, Data Mining Approach for Analyzing Call Center Performance, Innovations in Applied Artificial Intelligence, Robert Orchard, Chunsheng Yang, Moonis Ali (Eds.), Lecture Notes in Computer Science 3029, Springer Verlag, Germany, pp. 1092-1101, 2004.*

5. Best technical paper of the Sixth International Conference on Intelligent Systems Design and Applications, ISDA'06, Jinan, China, 2006. Three best papers were selected by an award committee from a total of 490 accepted papers (27 % acceptance). **Paper details:** *Swagatam Das, Ajith Abraham and Amit Konar, Spatial Information based Image Segmentation Using a Modified Particle Swarm Optimization Algorithm, IEEE CS Press, ISBN 07695-2528-8, Volume II, pp. 438-444, 2006.*
6. Best technical paper of the Second IEEE International Conference on Digital Information Management, Lyon, France, ICDIM 2007. Best paper was selected by a panel/committee from a total of 83 accepted papers (37.9% acceptance rate). **Paper details:** *Crina Grosan and Ajith Abraham, Exploration of Multiple Roots for a Polynomial System, IEEE Press, USA, ISBN 1-4244-1476-8, pp. 133-137, 2007.*
7. Best technical paper of the 7th International Conference on Computer Information Systems and Industrial Management Applications (CISIM'08), Ostrava, Czech Republic. Best Paper was selected by a panel from a total of 60 accepted papers. **paper details:** *Divyata Dal, Siby Abraham, Ajith Abraham, Sugata Sanyal and Mukund Sanglikar, Evolution induced Secondary Immunity: An Artificial Immune System based Intrusion Detection System, IEEE Computer Society press, USA, ISBN 978-0-7695-3184-7, pp. 61-66, 2008.*

Academic Service Awards

Track Chair of Information and Assurance Track, IEEE International Conference on Information Technology: Coding and Computing (ITCC'04), USA.

Industrial Awards

Engineer of the Project Award, Hyundai Engineering and Construction Company Ltd, Seoul, Korea. The award citation reads '... for exemplary conduct and best performance demonstrated in his dutiful and faithful commitment to his job'.

Award Nominations and Others

1. Listed in the First edition of Who's Who of Emerging Leaders, Marquis Who's Who, USA, 2007.
2. Listed in the 61st Edition of Who's Who in America, Marquis Who's Who, USA, 2007.
3. Listed in the 23rd Edition of Who's Who in the World, Marquis Who's Who, USA, 2006, 2007, 2008, 2009, 2010.
4. Listed in the 7th Edition of Who's Who in Science and Engineering, Marquis Who's Who, USA, 2003.
5. Living Legends, International Biographical Centre, Cambridge CB2 3QP, England, UK, 2004.
6. The Worldwide Honours List, International Biographical Centre, Cambridge CB2 3QP, England, UK, 2003.
7. 2000 Outstanding Intellectuals of the 21st Century Order of Excellence, International Biographical Centre, Cambridge CB2 3QP, England, UK, 2003.
8. 2000 Outstanding Scientists of the 21st Century International Biographical Centre, Cambridge CB2 3QP, England, UK, 2003.
9. Honorary Member of Research Board of Advisors, The American Biographical Institute Inc., 2001.

Journal Editor

Editorial Board Memberships in International Journals - 53 Journals

Contributed Research Publications

Published Books

Authored Books

1. *Ajitb Abraham* and Yasuhiko Dote, **Engineering Hybrid Intelligent Systems: Architectures and Perspectives**, Studies in Fuzziness and Soft Computing, Springer Verlag, Germany, ISBN 3-540-25058-1, 2013.
 2. Crina Grosan and *Ajitb Abraham*, **Intelligent Systems: A Modern Approach** Intelligent Systems Reference Library Series, Springer Verlag, Germany, ISBN 978-3-642-21003-7, 450 pages, 2011.
 3. Huihui Bai, Anhong Wang, Yao Zhao, Jeng-Shyang Pan and *Ajitb Abraham*, **Distributed Multiple Description Coding: Principles Algorithms and Systems**, Springer Verlag, London, ISBN 978-1-4471-2247-0, 171 p. 108 illus., 2011.
 4. Yuehui Chen and *Ajitb Abraham*, **Tree-Structure based Hybrid Computational Intelligence: Theoretical Foundations and Applications**, Intelligent Systems Reference Library Series, Springer Verlag, Germany, ISBN: 978-3-642-04738-1, 2009.
 5. Swagatam Das, *Ajitb Abraham* and Amit Konar, **Metaheuristic Clustering**, Studies in Computational Intelligence, Springer Verlag, Germany, Volume 178, ISBN: 978-3-540-92172-1, 2009.
- Edited Books - 34Bbooks**

Journal Publications

Peer Reviewed Articles Published (or in press) in International Journals - over 235 Papers

Book Chapters

Peer Reviewed Book Chapters Published (or in press) by International Publishers - 78 Books

Edited Volumes

Edited Conference Proceedings - 188 Conferences

Conference Publications

Peer Reviewed Articles Published (or in press) in International Conferences - 388 Articles

Other Publications

Invited/Non refereed papers/Short articles etc. Talks (Papers/Articles) – over 36 Talks

Book Reviews

Review of Books Published by ACM Computing Reviews

Available online from: <http://www.reviews.com>

1. *Ajitb Abraham*, (Book Review), Learning from data: Concepts, Theory, and Methods, by Cherkassky V., Mulier F., Wiley-IEEE Press, 2007 [Published on May 25, 2008].
2. *Ajitb Abraham*, (Book Review), Handbook of innovative computing: models, enabling technologies, and applications, by Albert Zomaya (Ed.), Springer-Verlag New York, Inc., Secaucus, NJ, 736 pages, 2005 [Published on October 05, 2006].
3. *Ajitb Abraham*, (Book Review) 'Handbook of Learning and Approximate Dynamic Programming' by Si J., Barto A., Powell W., Wunsch D., IEEE press series on computational intelligence, Wiley-IEEE Press, 2005 (Published on March 18, 2005).
4. *Ajitb Abraham*, (Book Review), 'Metacreation: Art and Artificial Life' by Whitelaw M., MIT Press, Cambridge, MA, 281 pages, 2004 (Published on July 02, 2004).
5. *Ajitb Abraham*, (Book Review), 'Evolutionary Algorithms and Agricultural Systems' by Mayer D., Kluwer Academic Publishers, Norwell, MA, 2001. 107 pages (Published on August 28, 2002).

Academic Services

International Conference Organization over 103 Conference
 International Conference Program Committee Participation (Not updated since 2009) over 154
 Organization of Over 23 Special Sessions/Workshop/Track - Not updated since 2009)
 Technical Reviews for over 36 International Journals

Faculty Promotion Committees Served

Faculty Services

1. Department of Computer Science, Oklahoma State University, Faculty Search Committee Member (2002 - 2003).
2. Department of Computer Science, Oklahoma State University, Faculty Graduate Committee Member (2002-2003).

Evaluator of Research Grant Applications

1. National Science Center, Poland
2. University of Leuven, Belgium.
3. King Fahd University of Petroleum and Minerals, Saudi Arabia. 4. Czech Academy of Sciences, Prague, Czech Republic. 5. Arab Open University, Kuwait.

Professional Memberships and Technical Society/Working Group Memberships

1. Senior Member, IEEE - Institution of Electrical Electronics Engineers Inc, USA
2. Senior Member, IEEE Computer Society, USA
3. Member, IEAust - Institution of Engineers, Australia
4. Member, IEE - Institution of Electrical Engineers, United Kingdom
5. Member, ACM - Association for Computing Machinery, USA
6. Member, WFSC - World Federation on Soft Computing
7. Member, EUSFLAT - European Society for Fuzzy Logic and Technology, (Working Group on Neuro-Fuzzy Systems)
8. Member, EvoNet, European Network for Excellence in Evolutionary Computing
9. Member, EU/ME, European Chapter on Metaheuristics, Working Group of the The Association of European Operational Research Societies, Europe