Ben Goertzel, Ph.D.

Cross-disciplinary scientist, mathematician, engineer, entrepreneur, project leader, writer, speaker

Ben Goertzel
Aidyia Limited
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Hong Kong SAR, China
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Educational Qualification:

Ph.D. in Mathematics, 1989
Temple University, Philadelphia
Dissertation title: "A Multilevel Approach to Global Optimization."

B.A. in Mathematics, 1985
Simon's Rock College, Great Barrington MA

Scientific Record:

- 15 authored books in AI, cognitive science, related areas
- 10 edited books, 2 edited journal Special Issues
- > 100 scientific papers in refereed journals and conferences
- Dozens of journalistic articles and public talks on science and technology topics
- Founded and steers the Artificial General Intelligence conference series
- Organizer of multiple workshops on AI, future technology, linguistics, bioinformatics, etc.
- Leader of the OpenCog open-source project for AI, NLP and cognitive robotics
- Numerous AI research grants in US, Hong Kong, China
- ***See curriculum vita (at the end of this document) for details***

Core Competencies:

- *Expertise in multiple scientific areas* including but not limited to (in alphabetical order): **artificial intelligence, bioinformatics, cognitive and perceptual psychology, cognitive robotics, computational finance, data mining, natural language processing, pure and applied mathematics, simulation modeling, systems biology, text mining**
- Expertise in many aspects of *computer graphics and game development*, including "serious games" for training purposes
- *Teaching*, in multiple subjects (mathematics, computer science, psychology, business) at levels from remedial to graduate
- *Software design*, including object-oriented and generic design patterns, and design for digital and parallel architectures

- *Robotics hardware design*, focused on humanoid robotics but also including factory robots and other devices
- *Managing and leading software teams* carrying out both research and product development, mainly using an agile development methodology
- *Upper management experience*: CTO experience managing 80+ technical people; and CEO experience in small software businesses
- *Programming*, mainly on Unix platforms: C++, C, Java, python, Haskell, Ruby.   (Note that while I still like to code, it has been many years since I've done serious programming-intensive work on a daily basis; I've been doing much more of designing software, managing programmers and writing prototype code here and there.)
- *Excellent writing skills* – both technical and scientific writing, and extensive journalistic writing
- *Sales* – experience selling software services and enterprise software to government agencies, corporations and universities
- *Event planning* – have organized two international conferences and a number of workshops
- *Public speaking* – dozens of speeches, in front of large and diverse audiences

Work Experience:

Chairman and Chief Scientist
Aidyia Holdings

- Leadership of the scientific research aspect of a hedge fund applying advanced AI tools to the financial markets
- Management of a team of scientists and programmers, interfacing with the business and software development sides of the company

Chairman and Chief Scientific Advisor, 2011 - present
CEO and Chief Scientist, 2001-2011
Novamente LLC, Rockville MD

- Overall business management
- Led a team including 15 programmers and scientists, plus 2 sales/marketing staff
- Developed multiple novel algorithms for machine learning, probabilistic reasoning, and natural language processing
- Created the Novamente PetBrain software for controlling virtual pets in games and virtual worlds, to be launched in an online children's game in April 2010
- Created two cognitive architectures: the Novamente Cognition Engine and the open-source OpenCog engine
- Launched the OpenCog open-source AI project (http://opencog.org)
- Created the (now open-source) RelEx system for English language parsing, semantic analysis and generation
- Secured 20+ AI software consulting contracts for corporate and government customers, on projects including:

- o StockMood.com, a website for analyzing the sentiment of financial news, which won the Thomson Reuters award at TechCrunch 2008
- o Intelligent virtual dogs in virtual worlds for Electric Sheep Company
- o Interactive natural language search and knowledge entry tools for US Army Intelligence, via a subcontract to Object Sciences Corp.
- o Language processing tools underlying smart.fm's language learning website
- o Datamining software for multiple customers in the medical, marketing, financial and other sectors
- o News-based and quantitative prediction systems for stocks and futures
- o Automated scientific discovery from biomedical text, for the NIH Clinical Center
- o Spatiotemporal reasoning architecture for IARPA
- o Metalearning project for IARPA (subcontract to Dartmouth College)
- o ICARUS brain simulation project for IARPA (subcontract to Lockheed Martin)
- o Partnership on game AI with Hong Kong Polytechnic University

Scientific Advisor, 2011 - present
Chief Technology Officer, 2010-2011
Genescient Corp, Irvine, CA

- Leadership of effort applying machine learning technology to analyze genomic data regarding long-lived fruit flies, incorporating mouse and human data as appropriate
- Development of novel techniques for discovering drug targets and drugs based on genomic data
- Development of biopharma-oriented business models and strategies based on the results of statistical and machine learning analysis of genomic data

Chairman and Chief Scientific Advisor, 2011-present
CEO and Chief Scientist, 2002 -2011
Biomind LLC, Rockville MD

- Overall business management
- Led a team including 7 programmers and biologists, plus 1 sales staff
- Developed multiple novel algorithms for analyzing microarray and SNP data
- Applied these methods to make multiple important discoveries, e.g.
    - o The genetic cause for Parkinson's Disease in heteroplasmic mitochondrial mutations
    - o The genetic basis of Chronic Fatigue Syndrome in mutations in genes coding for neurotransmitters
- Led the creation of the ArrayGenius product for microarray data analysis
- Sold ArrayGenius to customers including the NIH and CDC
- Led the creation of the analytics module of the the ImmPort web portal for NIH-NIAID
- Launched the OpenBiomind open-source toolkit for analyzing microarray, SNP and other biological data
- Raised >$400K in angel funding

Research Associate Professor, 2005-2006
Applied Research Lab for National and Homeland Security

Virginia Tech National Capitol Region

- Evaluated AI and language processing software products for use in the NSA
- Developed technology providing superior automated "entity extraction" from text
- Developed unique adaptive text search technology based on specific NSA requirements

Research Associate Professor of Computer Science, 2001-2002
University of New Mexico, Albuquerque NM

- Carried out research in AI and bioinformatics
- Taught artificial intelligence

Chief Technology Officer, 1997-2001
Webmind Inc. (initially named Intelligenesis Corp.), New York City

- Managed 80+ scientists and engineers
- Managed research projects in multiple AI areas including machine learning, natural language processing, reasoning, and artificial general intelligence
- Managed development of several products including
    o Webmind Market Predictor (a text-based trading system, now in use at Advanced Prediction Corp.)
    o Webmind Classification System (a system for classifying texts based on topic and sentiment)
    o Webmind Recommendation System, a fuzzy recommendation system for websites
- Helped raise $21M in angel and venture money
- Created and presented numerous business plans and customer presentations

Associate Professor, 1997-1998
College of Staten Island, City University of New York

- Carried out AI research
- Taught software development, AI and analysis of algorithms

Research Fellow in Cognitive Science, 1995-1996
University of Western Australia, Perth

- Carried out research in multiple areas including:
    o Artificial intelligence and mathematical psychology
    o Nonlinear modeling of human vision and olfaction
    o Neural net modeling of insect cognition and olfaction
    o Ecological modeling
- Designed and taught interdisciplinary undergraduate courses in cognitive science and neural networks
- Co-founded an interdisciplinary degree program in cognitive science

Senior Lecturer in Computer Science, 1994
Waikato University, Hamilton, New Zealand

- Carried out research in multiple areas including:
    - Artificial intelligence and mathematical psychology
    - Fractal graphics
    - Algorithmic music composition
- Taught computer graphics and user interface programming
- Co-founded an interdisciplinary degree program in cognitive science

Assistant Professor of Mathematics, 1989-1993
University of Nevada, Las Vegas

- Carried out research in multiple areas including:
    - Artificial intelligence and mathematical psychology
    - Nonlinear dynamics
- Taught computer graphics and user interface programming
- Co-founded an interdisciplinary degree program in cognitive science

Curriculum Vita

Following is my academic "Curriculum Vita", consisting of a list of my books and papers and related accomplishments.

- Patent
- Conference Leadership
- Research Grants and Government Contracts
- Public Speaking
- Publications: Books
- Publications: Journal and Conference Papers
- Journalistic Articles

PATENT

United States Patent 6532449: "Method of numerical time series prediction based on non-numerical time series," was granted to myself and Lisa Pazer in 2001. The target application for this patent was the prediction of financial markets based on patterns observed in online news.

CONFERENCE LEADERSHIP

2014
- **AGI-14 (**Seventh Conference on Artificial General Intelligence), *Chairman:* August 2014, Laval University, Quebec City
- **ICRA Workshop on Generally Intelligent Humanoid Robotics**, *Chairman:* June 2014, workshop @ IEEE ICRA Robotics conference, Hong Kong

2013
- **AGI-13** (Sixth Conference on Artificial General Intelligence), *Organizing Committee*: August 2013, Peking University, Beijing
- **Special Session on General Intelligence in Embodied Agents, in IEEE Symposium on Human-Level AI**, *Chairma*n: April 2013, Singapore

2012
- **AGI-12** (Fifth Conference on Artificial General Intelligence), *Chairman*: August 2012, Oxford University, UK

2011
- **AGI-11** (Fourth Conference on Artificial General Intelligence), *Organizing Committee*: August 2011, Google campus, Mountain View CA
- **Humanity+ Hong Kong**, *Conference Co-chair*: November 2011, Hong Kong Polytechnic University

2010
- **Humanity+ @ CalTech**, *Conference Co-chair*: Pasadena, California, December 2010
- **AGI-10** (Third Conference on Artificial General Intelligence), *Organizing Committee*: March 2010, Lugano
- **AGI-10 Workshop on the Future of AGI and Roadmaps to AGI**, *Organizer*
- **ICAI 2010** (International Conference on Advanced Intelligence), *Program Committee Co-Chair***,** August 2010. Beijing

- **BICA-10** (First Conference on Biologically Inspired Computing Architectures), *Organizing Committee*, November 2010, Washington DC

2009
- **AGI-09** (Second Conference on Artificial General Intelligence), *Conference Chair*: March 2009, Washington DC
- **First AGI Summer School**, Xiamen University, Xiamen, China, June-July 2009
- **Machine Consciousness Workshop** (post-conference workshop to Toward a Science of Consciousness 2009), June 2009, Hong Kong

2008
- **AGI-08** (First Conference on Artificial General Intelligence; agi-08.org), *Program Committee Co-chair, Organizing Committee Member*: March 2008, Memphis Tennessee
- **WCCI 2008, Special Session on Human-Level AI**, *Co-chair*: June 2008, Hong Kong

2006
- **AGI-06** (Workshop on Artificial General Intelligence), *Conference Chair*: March 2006, Bethesda Maryland
- **ACL (Association for Computational Linguistics), Bio-NLP Workshop**, *Co-chair*: July 2006, New York

RESEARCH GRANTS AND GOVERNMENT CONTRACTS

(Note: most of my work in the period 2001- has been commercially rather than research grant or government funded.)

- **2014-2015**: Hong Kong Innovation in Technology Foundation (ITF) grant for "Media Minds: A Software Toolkit for Creating Intelligent Virtual Agents for Guiding Media Consumption and Browsing", a collaborative grant between Hong Kong Polytechnic University and my companies Novamente LLC and Practical Visionaries Limited, funding 7 programmers to work on the OpenCog AI system with an orientation toward natural language dialogue. Prof. Gino Yu was PI of the grant, I was lead corporate sponsor and very hands-on in helping direct the R&D.
- **2013-2014**: Hong Kong Innovation in Technology Foundation (ITF) grant for "Software Enabling Toy Robots to Learn, Communicate, Emotionally Bond and Display Individual Personalities", a collaborative grant between Hong Kong Polytechnic University and my companies Novamente LLC and Practical Visionaries Limited, alongside other firms such as Hanson Robotics, funding 6 programmers to work on the OpenCog AI system with an orientation toward robotics and other embodied systems. Prof. Gino Yu was PI of the grant, I was lead corporate sponsor and very hands-on in helping direct the R&D.
- **2011-2012**. DARPA DCAPS program (involving using machine learning to predict suicidal behavior among military personnel). I am a consultant on the project; the prime is Poulin Holdings.
- **2010-2014**: IARPA Icarus (Integrated Cognitive-Neuroscience Architectures for Understanding Sensemaking). My company Novamente LLC is a subcontractor to Lockheed Martin on this grant.
- **2010-2011**. IARPA grant for Metalearning; I am a consultant on the "Dartmouth Metalearning Working Group" grant, a one-year grant funded under IARPA's open BAA
- **2010-2012:** Hong Kong Innovation in Technology Foundation (ITF) grant for "A Software Toolkit for Artificial General Intelligence in Video Games," a collaborative grant between Hong Kong Polytechnic University and my company Novamente LLC, funding 7 programmers to create video game characters controlled by the OpenCog AI system. Prof. Gino Yu was PI of the grant, I was lead corporate sponsor and very hands-on in helping direct the R&D.
- **2009-2012:** Chinese NSF Grant for "Imitation and Reinforcement Learning in a Humanoid Robot", for work at Xiamen University, in the Artificial Brain Lab of which I am co-supervisor

- **2008**: IARPA contract for "Change Detection"; work exploring the application of spatial, temporal and contextual inference for detecting patterns and resolving queries related to large, heterogeneous knowledge stores
- **2008**: US Air Force (AFOSR/AOARD) grant for research involving the use of AI agents in a 3D simulation world to engage in game-playing behavior with humans of different cultures, with a purpose of studying cross-cultural behavior patterns
- **2008-2010**: Research grant for AGI R&D, from Enhanced Education
- **2005-2009**: Contracts and purchase orders from the *National Institutes of Health (NIAID)*, under the BISTI program, for software and services related to the ImmPort portal for analysis of immunological microarray and SNP data
- **2005**: Contract from NIH Clinical Center for the creation of a prototype software system carrying out information extraction from biomedical research abstracts
- **2003-2004:** Contracts and purchase orders from the *Centers for Disease Control and Prevention*, for analysis of microarray, SNP and clinical data regarding Chronic Fatigue Syndrome
- **2003-2004**: Contracts for natural language processing software development, from Object Sciences Corporation, largely via a contract vehicle funded through INSCOM (US Army intelligence)
- **2001**: *$100K* grant from *Jeffrey Epstein Foundation*, for artificial general intelligence research
- **1996-99**: Together with Dr. Steve Lewandowsky and Michael Kalish I raised significant funding for computer equipment and computer support personnel for the UWA Cognitive Science Programme, from the *University of Western Australia Initiatives Fund*,.
- **1993-96**: I obtained several small research grants from *University of Nevad*a, *Waikato University* and the *Australian Research Council*

PUBLIC SPEAKING

I have given many dozens of conference and other talks since 2005, and a couple dozen during my earlier career before that; I have not kept careful track and collated a list.   Videos of many of my talks can be found on YouTube; a (not up to date) list of these is available on the Videos page of my website, http://wp.goertzel.org/videos/

In addition to academic conferences, in the period since 2005 I have given roughly 5 invited talks per year at various commercial and nonprofit conferences, including but not limited to:

- futurist conferences such as Singularity Summit, Transvision, Convergence, Accelerating Change, World Future Society, Humanity+, etc.
- international fora such as the World Knowledge Forum (Seoul)
- biomedical conferences such as those organized by the Cambridge Healthtech Institute
- government-funded science and technology workshops such as those organized at MITRE, NR, etc.

I have also done some invited speaking for private government or corporate audiences, generally on future-of-technology themes.

PUBLICATIONS: BOOKS

In Preparation

1. Goertzel, Ben. *Faster Than You Think: How Artificial General Intelligence Will Soon Change Everything*
2. Goertzel, Ben et al. *Introduction to Artificial General Intelligence.*
3. Goertzel, Ben and Michael Duncan. *Intelligent Genomics: Deriving Biological Meaning from Genomic Data Using Artificial Intelligence*

Authored Books

(books that are not mainly technical, but present more "humanities" oriented discussions of technical topics, are prepended with a * in the list)

1. * Goertzel, Ben (2014). *Ten Years to the Singularity If We Really Really Try, and Other Essays on AGI and Its Implications*, 2014, Humanity+ Press
2. * Goertzel, Ben (2014). *Between Ape and Artilect: Interviews with Pioneers of Artificial General Intelligence and Other Transformative Technologies*, 2013, Humanity+ Press
3. Goertzel, Ben, Cassio Pennachin and Nil Geisweiller (2014). *Engineering General Intelligence, Vol. 1*. Atlantis Press.
4. Goertzel, Ben, Cassio Pennachin and Nil Geisweiller (2014). *Engineering General Intelligence, Vol. 2*. Atlantis Press.
5. Goertzel, Ben, Cassio Pennachin, Lucio Coelho, Murilo Queiroz, Predrag Janicic, Nil Geisweiller (2012). *Real-World Reasoning: Spatial, Temporal and Spatiotemporal Logic,* Atlantis Press
6. * Goertzel, Ben (2010). *A Cosmist Manifesto: Practical Philosophy for the Posthuman Age*. Humanity+ Press.
7. Goertzel, Ben, Matthew Ikle', Izabela Freire Goertzel and Ari Heljakka (2008). *Probabilistic Logic Networks*. Springer Verlag
8. Goertzel, Ben (2006). *The Hidden Pattern: A Patternist Philosophy of Mind,* Brown-Walker Press
9. * Goertzel, Ben and Stephan Vladimir Bugaj (2006). *The Path to Posthumanity*. Academica Press
10. Goertzel, Ben (2002). *Creating Internet Intelligence*. Plenum Press
11. Goertzel, Ben (1997). *From Complexity to Creativity*. Plenum Press
12. Goertzel, Ben (1997). *Chaotic Logic.* Plenum Press
13. * Goertzel, Ted and Ben Goertzel (1995). *Linus Pauling: A Life in Science and Politics*. Basic Books
14. Goertzel, Ben (1993). *The Evolving Mind*. Plenum Press
15. Goertzel, Ben (1993). *The Structure of Intelligence*. Springer-Verlag

Edited Books

(books that are not mainly technical, but present more "humanities" oriented discussions of technical topics, are prepended with a * in the list)

1. Broderick, Damien and Ben Goertzel, Editors (2014). *The Evidence for Psi: Thirteen Empirical Research Reports.* McFarland
2. Orseau, Laurent, Javier Snaider and Ben Goertzel, Editors (2014). *Proceedings of the Seventh Conference on Artificial General Intelligence*, Springer
3. * Sirius, R.U. and Ben Goertzel, Editors (2013). *Best of H+ Magazine: 2008-2010.* Humanity+ Press
4. Wang, Pei and Ben Goertzel, Editors (2012). *Theoretical Foundations of Artificial General Intelligence*. Atlantis Press.
5. Samsonovich, Alexei, Kamilla Johanssdottir, Antonio Chella and Ben Goertzel, Editors (2010). *Proceedings of the First Conference on Biologically-Inspired Cognitive Architectures.* IOS Press.
6. Goertzel, Ben, Pascal Hitzler and Marcus Hutter, Editors (2009). *Proceedings of the Second Conference on Artificial General Intelligence*. Atlantis Press.
7. Wang, Pei, Ben Goertzel and Stan Franklin, Editors (2008). *Artificial General Intelligence 2008: Proceedings of the First AGI Conference*. IOS Press: Frontiers in Artificial Intelligence and Applications
8. Goertzel, Ben and Pei Wang, Editors (2007). *Advances in Artificial General Intelligence*. IOS Press.
9. Goertzel, Ben and Cassio Pennachin, Editors (2006). *Artificial General Intelligence*. Springer-Verlag.
10. Combs, Allan, Ben Goertzel and Mark Germine, Editors (2003). *Mind in Time..* Plenum Press

PUBLICATIONS: JOURNAL SPECIAL ISSUES

- Special Issue on Mind Uploading, *Journal of Machine Consciousness*, July 2012. Co-edited with Matthew Ikle
- Special Issue on Artificial Brains, *Neurocomputing*, December 2010. Co-edited with Hugo de Garis

PUBLICATIONS: JOURNAL AND CONFERENCE PAPERS

- *Note that since I left academia in 1997, the vast majority of my research has been embodied in commercial or open source software and has not been published formally.*
- *Hyperlinks for more recent papers will be inserted in a revision of this CV as time permits*
- *Papers submitted for publication not listed*

2014

1. Goertzel, Ben (2014). GOLEM: Toward an AGI Meta-Architecture Enabling Both Goal Preservation and Radical Self-Improvement, Journal of Experimental & Theoretical Artificial Intelligence, Volume 26, Issue 3, 2014
2. Goertzel, Ben and Gino Yu (2014). A Cognitive API and its Application to AGI Intelligence Assessment, Proceedings of AGI-14, Springer
3. Harrigan, Cosmo, Ben Goertzel, Matthew Ikle and Amen Belayneh (2014). Guiding Probabilistic Logical Inference with Nonlinear Dynamical Attention Allocation, Proceedings of AGI-14, Springer
4. Goertzel, Ben (2014). Characterizing Human‑Like Consciousness: An Integrative Approach. Proceedings of BICA-14. Procedia Computer Science, Springer
5. Goertzel, Ben, David Hanson and Gino Yu (2014). A Software Architecture for Generally Intelligent Humanoid Robotics. Proceedings of BICA-14. Procedia Computer Science, Springer. Earlier version in proceedings of Workshop on General Intelligence for Humanoid Robotics, IEEE-ICRA 2014, Hong Kong.
6. Sadeghi, Keyvan and Ben Goertzel (2014). Uncertain Interval Algebra via Fuzzy/Probabilistic Modeling, FUZZ-IEEE 2014, Beijing, July 2014
7. Goertzel, Ben and Gino Yu (2014). From Here to AGI: A Roadmap to the Realization of Human-level Artificial General Intelligence. IJCNN, Beijing, July 2014
8. Jiang, Min, Yulong Ding, Goertzel Ben, Zhongqiang Huang and Fei Chao (2014). Improving Machine Vision via Incorporating Expectation-Maximization into Deep Spatio-Temporal Learning. IJCNN, Beijing, July 2014
9. Goertzel, Ben (2014). How Might the Brain Represent Complex Symbolic Knowledge? IJCNN, Beijing, July 2014

2013

1. Goertzel, Ben et al (2013). The CogPrime Architecture for Embodied Artificial General Intelligence. Proceedings of IEEE Symposium on Human-Level AI, Singapore
2. Goertzel, Ben et al (2013). A Mind-World Correspondence Principle. Proceedings of IEEE Symposium on Human-Level AI, Singapore
3. Goertzel, Ben (2013). Probability Theory Ensues from Assumptions of Approximate Consistency: A Simple Derivation and its Implications for AGI, Proceedings of AGI-13, Springer
4. Goertzel, Ben, Ted Sanders and Jade O'Neill (2013). Integrating Deep Learning Based Perception with Probabilistic Logic via Frequent Pattern Mining, Proceedings of AGI-13, Springer
5. Goertzel, Ben (2014). Lojban++: An Interlingua for Communication Between Humans and AGIs, Proceedings of AGI-13, Springer
6. Goertzel, Ben (2014). The Role of Specialized Intelligent Body-System Networks in Guiding General-Purpose Cognition, Proceedings of AGI-13, Springer

2012

1. Syntax-Semantic Mapping for General Intelligence: Language Comprehension as Hypergraph Homomorphism, Language Generation as Constraint Satisfaction. Ruiting Lian and Ben Goertzel, Hong Kong Polytechnic University and Xiamen University, China
2. Perception Processing for General Intelligence: Bridging the Symbolic/Subsymbolic Gap, Ben Goertzel, Novamente LLC, USA & Hong Kong
3. Pattern Mining for General Intelligence: The FISHGRAM Algorithm for Frequent and Interesting Subhypergraph Mining. Jade O'Neill and Ben Goertzel.   Hong Kong Polytechnic University.
4. Ben Goertzel: GOLEM: Toward an AGI Meta-Architecture Enabling Both Goal Preservation and Radical Self-Improvement
5. Goertzel, Ben (2012).   When Should Two Minds Be Considered Versions of One Another?, *Journal of Machine Consciousness*, July 2012
   http://goertzel.org/Goertzel_IJMC_Special_Issue.pdf
6. Sam Adams, Itmar Arel, Joscha Bach, Robert Coop, Rod Furlan, Ben Goertzel, J. Storrs Hall, Alexei Samsonovich, Matthias Scheutz, Matthew Schlesinger, Stuart C. Shapiro, John Sowa (2012). Mapping the Landscape of Human-Level Artificial General Intelligence. AI Magazine, Winter 2012.
   http://aaai.org/ojs/index.php/aimagazine/article/view/2322
7. Loosemore, R.P.W. & Goertzel, B. (2012c). Why an Intelligence Explosion is Probable. To appear in: Eden, A., Moor, J., Soraker, J., & Steinhart, E. (Eds.), The Singularity Hypothesis. Springer.
   http://richardloosemore.com/docs/2012c_IntelligenceExplosion_rpwl_bg.pdf
8. Goertzel, Ben (2012). Should Humanity Build a Global AI Nanny to Delay the Singularity Until It's Better Understood?, Journal of Consciousness Studies, 19(1-2)
   http://commonsenseatheism.com/wp-content/uploads/2012/03/Goertzel-Should-Humanity-Build-a-Global-AI-Nanny-to-Delay-the-Singularity-Until-its-Better-Understood.pdf
9. Goertzel, Ben and Joel Pitt (2012).   Nine Ways to Bias Open-Source AGI Toward Friendliness. Journal of Evolution and Technology 22-1
   http://jetpress.org/v22/goertzel-pitt.htm
10. Goertzel, Ben, Matt Ikle and Jared Wigmore (2012). The Architecture of Human-Like General Intelligence. In Theoretical Foundations of Artificial General Intelligence, Ed. Pei Wang & B. Goertzel, Atlantis Press
    http://goertzel.org/Goertzel_Foundations_AGI.pdf

2011

1. Cai, Zhenhua, Ben Goertzel, Changle Zhou, Yongfeng Zhang, Min JIan, Gino Yu (2011). Dynamics of a computational affective model inspired by Dörner's PSI theory. Cognitive Systems Research. doi:10.1016/j.cogsys.2011.11.002
   http://www.sciencedirect.com/science/article/pii/S1389041711000647

2. Fernando, Nirmal, Nisansa de Silva, Chamilka Wijeratne, Danaja Maldeniya , Shehan Perera, Ben Goertzel. SeMap – Mapping Dependency Relationships into Semantic Frame Relationships. ERU Research Symposium, University of Morutawa
   http://www.eru.mrt.ac.lk/symposium2011accepted.html

3. Goertzel, Ben (2011). Integrating a Compositional Spatiotemporal Deep Learning Network with Symbolic Representation/Reasoning within an Integrative Cognitive Architecture via an Intermediary Semantic Network. *Proceedings of AAAI Symposium on Cognitive Systems,* Arlington VA, http://goertzel.org/cognitive_systems_2011.pdf

4. Kogut, Paul, June Gordon, David Morgenthaler, John Hummel, Edward Monroe, Ben Goertzel, Ethan Trewhitt and Elizabeth Whitaker (2011). Recognizing Geospatial Patterns with Biologically-Inspired Relational Reasoning. Proceedings of BICA 2011, Arlington VA

5. Goertzel, Ben, Joel Pitt, Jared Wigmore, Nil Geisweiller, Zhenhua Cai, Ruiting Lian, Deheng Huang, Gino Yu (2011). Cognitive Synergy between Procedural and Declarative Learning in the Control of Animated and Robotic Agents Using the OpenCogPrime AGI Architecture. *Proceedings of AAAI-11*
[http://www.aaai.org/ocs/index.php/AAAI/AAAI11/paper/view/3562/4096 ,
http://goertzel.org/Goertzel_AAAI11.pdf]

6. Goertzel, Ben (2011). Lifelong Forgetting: A Critical Ingredient of Lifelong Learning, and its Implementation in the OpenCog Integrative AI Framework. *Proceedings of AAAI-11 Workshop on Lifelong Learning*
[http://www.aaai.org/ocs/index.php/WS/AAAIW11/paper/viewPaper/3900]

7. Goertzel, Ben (2011). Imprecise Probability as a Linking Mechanism Between Deep Learning, Symbolic Cognition and Local Feature Detection in Vision Processing. *Proceedings of AGI-11*, Lecture Notes in AI, Springer Verlag
[http://goertzel.org/VisualAttention_AGI_11.pdf]

8. Ikle, Matthew and Ben Goertzel (2011). Nonlinear-Dynamical Attention Allocation via Information Geometry, *Proceedings of AGI-11*, Lecture Notes in AI, Springer Verlag
[http://goertzel.org/ECAN_v3.pdf]

9. Cai, Zhenhua, Ben Goertzel and Nil Geisweiller (2011). OpenPsi: Realizing Dorner's "Psi" Cognitive Model in the OpenCog Integrative AGI Architecture, *Proceedings of AGI-11*, Lecture Notes in AI, Springer Verlag
[http://goertzel.org/OpenPsi_agi_11.pdf]

10. Goertzel, Ben and Matthew Ikle (2011). Three Hypotheses About the Geometry of Mind, *Proceedings of AGI-11*, Lecture Notes in AI, Springer Verlag
[http://goertzel.org/MindGeometry_agi_11_v2.pdf]

11. Goertzel, Ben (2011). Self-Programming = Learning about Intelligence-Critical System Features, *Proceedings of Self-Programming Workshop at AGI-11*, Mountain View CA
[http://www.iiim.is/wp/wp-content/uploads/2011/05/goertzel-agisp-2011.pdf]

12. Goertzel, Ben, Joel Pitt, Zhenhua Cai, Jared Wigmore, Deheng Huang, Nil Geisweiller, Ruiting Lian, Gino Yu (2011). Integrative General Intelligence in a Minecraft-Type Environment. *Proceedings of BICA-2011*, Arlington VA, http://goertzel.org/goertzel_bica_11.pdf

13. Goertzel, Ben and Jared Wigmore (2011). Cognitive Synergy Is Tricky. *Chinese Journal of Mind and Computation*

2010

1. Ruiting Lian, Ben Goertzel, Rui Liu, Michael Ross,Murilo Queiroz, and Linas Vepstas. Sentence generation for artificial brains: a glocal similarity matching approach. *Neurocomputing*, Dec 2010
[http://www.sciencedirect.com/science/article/pii/S0925231210002717]

2. Goertzel, Ben and Allan Combs. Water Worlds, Naive Physics, Intelligent Life, and Alien Minds. *Journal of Cosmology* 5, 897-904.
[http://journalofcosmology.com/SearchForLife115.html]

3. Goertzel, Ben, Lucio Coelho, Mauricio Mudado and Cassio Pennachin. Classifier Ensemble Based Analysis of a Genome-Wide SNP Dataset Concerning Late-Onset Alzheimer Disease. *Journal of Cognitive Informatics,* to appear [http://www.irma-international.org/viewtitle/49132/]

4. Ikle', Matthew and Ben Goertzel. Grounding Possible Worlds Semantics in Experiential Semantics. *Proceedings of the Third Conference on Artificial General Intelligence*, Atlantis Press [http://agi-conf.org/2010/wp-content/uploads/2009/06/paper_55.pdf]

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JOURNALISTIC ARTICLES

During the period 1999-2002 I published roughly two dozen articles in the newspaper Frankfurter Allgemaine Zeitung. Most dealt with topics or individuals in computer science or science in general, or with "visionary futuristic" themes. English-language versions of most of the articles can be found at http://www.goertzel.org/benzine/

More recently, since 2006 I have published dozens of articles in various online futurist magazines including H+ Magazine, Kurzweilai.net and others.