Works related to the development of SmartData

- Arthur, W. B. (1993). Why do things become more complex? Scientific American, May, pp. 144.
- Arvandi, M., Wu, S., & Sadeghian, A. (2008) On the use of recurrent neural networks to design symmetric ciphers. IEEE Computational Magazine, May 2008:42-53.
- Astor, J.C. & Adami, C. (2000) A developmental model for the evolution of artificial neural networks. Artificial Life, 6:189-218.
- Barandiaran, X. & Moreno, A. (2006) On what makes certain dynamical systems cognitive: A minimally cognitive organization program. Adaptive Behaviour, 14(2):171-185.
- Barham, J. (1996) A dynamical model of the meaning of information. BioSystems, 38:235-241.
- Beer, R. (2004) Autopoiesis and cognition in the game of life. Artificial Life, 10:309-326.
- Beer, R.D. (2003). The Dynamics of Active Categorical Perception in an Evolved Model Agent. *Adaptive Behavior*, 11, pp. 209-243.
- Beer, R.D. (1995). A dynamical systems perspective on agent-environment interaction. Artificial Intelligence, 72, pp. 173-215.
- Bell, L. et al. (2007) Who's on third in Second Life? Online Magazine, 31(4):14-18.
- Bennett, C.H. (1985) Information, Dissipation, and the Definition of Organization. In: *Emerging Syntheses in Science*, D. Pines ed., Addison-Wesley (Reading, Massachusetts 1987) pp. 297-313.
- Bills, T. & Samal, A. (1994) Two dimensional chromosomes and their application to computer vision. In: *Neural and Stochastic Methods in Image and Signal Processing III*, volume SPIE-2304:65–75.
- Bongard, J. & Pfeifer, R. (2001) Evolving complete agents using artificial ontogeny. In: Morpho-functional Machines: The New Species (Designing Embodied Intelligence) (2003), pp. 237-258.

Borrett, D. & Kwan, H. (2008) Understanding understanding: An evolutionary autonomous agent approach. *Review of General Psychology*, 12(2):137-146.

- Borrett, D. et al. (2006) Evolutionary autonomous agents and the naturalization of the phenomenology. *Phenom Cogn Sci*, 5:351-363.
- Borrett, D., Kelly S., and Kwan, H. (2000) Bridging embodied cognition and brain function. *Philosophical Psychology*, 13, 2, pp. 261-266.
- Borstrom, N. (2003) Are you living in a computer simulation? *Philosophical Quarterly*, 53(211):243-255.

Breuker, C., Debat, V., & Klingenberg, C.P. (2006) Functional evo-devo. TRENDS in Ecology and Evolution, 21(9):488-492.

- Brézillon, P. (1999) Context in Human-Machine Problem Solving: A Survey. Knowledge Engineering Review, 14, pp. 1–37.
- Brooks, R.A (1991) Intelligence Without Representation. Artificial Intelligence, 47, 1-3, pp. 139-159
- Buason, G., Bergfeldt, N. & Ziemke, T. (2005) Brains, bodies and beyond: Competitive co-evolution of robot controllers, morphologies and environments. *Genetic Programming and Evolvable Machines*, 6:25-51.
- Cangelosi, A., et al. (2010) Integration of action and language knowledge: a roadmap for developmental robotics. *IEEE Transacations on Autonomous Mental Development*, 2, 3, 167-195.

Cantwell Smith, B. (1997) One hundred billion lines of C++. Cog Sci News, LeHigh University.

Cariani, P. (2002) Extradimensional bypass. BioSystems, 64:47-53.

- Carroll, S. (2008) Evo-Devo and an expanding evolutionary synthesis: A genetic theory of morphological evolution. *Cell*, 134:25-36.
- Carroll, S. B. (2001). Chance and necessity: The evolution of morphological complexity and diversity. Nature, 409, 1102–1109
- Castrodeza, C. (1978). Evolution, complexity, and fitness. Journal of Theoretical Biology, 71, 469-471
- Cavoukian, A. (2009) Privacy by Design: The 7 Foundational Principles. Available online at: www.ipc.on.ca/images/Resources/7foundationalprinciples.pdf
- Cleland, C. (2001) Recipes, algorithms, and programs. Minds and Machines, 11:219-237.
- Colombetti, G. & Thompson, E. (2007) The feeling body: Towards an enactive approach to emotion. In: *Developmental Perspectives on Embodiment and Consciousness*. W.F. Overton, U. Müller, & J. Newman (Eds), Erlbaum.
- Conant, R. (1970) Every good regulator of a system must be a model of that system. Int. J. Systems Sci, 1(2):89-97.
- Conrad, M. (1982) Natural selection and the evolution of neutralism. *BioSystems*, 15:83-85.
- Conrad, M. (1990) The geometry of evolution. BioSystems, 24:61-81.
- Cox, M.T. (2005) Metacognition in Computation: A selected research review. Artificial Intelligence, 169, 2, pp.104-141.
- de Garis, H. & Korkin, M. (2002) The CAM-Brain Machine (CBM): an FPGA-based hardware tool that evolves a 1000 neuralnet circuit module in seconds and updates a 75-million neuron artificial brain for real-time robot control. *Neurocomputing*, 42:35-68.
- Dennett, D.C. (1995). Darwin's Dangerous Idea. Allen Lane The Penguin Press, London, UK.
- Dilley, R. (1999) The Problem of Context. In R. Dilley (ed.), The Problem of Context. New York: Berghahn Books, pp. 1–46.
- DiStefano, B. and Lawniczak, A. (2009) Cognitive Agents: Functionality & Performance Requirements and a Proposed Software Architecture. In: *Proceedings of 2009 IEEE Toronto International Conference – Science and Technology for Humanity*, pp. 509-514.
- Dreyfus, H. L. (2007) Why Heideggerian AI failed and how fixing it would require making it more Heideggerian. *Philosophical Psychology*, 20, 2, pp. 247 268.
- Dreyfus, H. (1992) What Computers Still Can't Do. MII Press, Cambridge, MA.
- Dreyfus, S.E. (2004) Totally Model-free Learned Skillful Coping. Bulletin of Science, Technolgy & Society, 24, 3, 182-187.
- Eckmann, J.-P., and Ruelle, D. (1985) Ergodic theory of chaos and strange attractors. Rev. Mod. Phys., 57, pp. 617-656.
- Edelman, G. (1987) Neural Darwinism: The Theory of Neuronal Group Selection. Basic Books, New York.
- Edmonds, B. (forthcoming). What is Complexity?: the philosophy of Complexity per se with application to some examples in evolution. In: *The Evolution of Complexity*, F. Heylighen & D. Aerts (eds.), Kluwer, Dordrecht.
- Elman, J. L. (1993). Learning and development in neural networks: The importance of starting small. Cognition, 48, 71–99.
- Erwin, D. & Davidson, E. (2009) The evolution of hierarchical gene regulatory networks. Nature Reviews: Genetics, 10:141-148.
- EU Tender Specification (2009) "The cloud: understanding the security, privacy and trust challenges." Available online at: http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.FP7DetailsCallPage&call_id=219
- Fontana, W. (2005) The Topology of the Possible. In: *Understanding Change: Models, Methodologies and Metaphors*, A.Wimmer and R.Kössler (Eds), Palgrave Macmillan (2005).
- Freeman, W. (1994) Neural networks and chaos. J. Theoretical Biology, 171:13-18.

- Freeman, W. (2000) Emotion is essential to all intentional behaviours. In: *Emotion, Development and Self-Organization Systems Approaches to Emotional Development,* Marc D. Lewis & Isabel Granic (Eds).Cambridge U.K.: Cambridge University Press, 2000, pp. 209-235.
- French, R. M. & Anselme, P. (1999) Interactively converging on context-sensitive representations: A solution to the frame problem. *Revue Internationale de Philosophie*, 3:365-385.
- Friston, K., Kilner, J., and Harrison, L. (2006) A Free Eergy Principle for the brain. *Journal of Physiology (Paris)*, 100, 1-3, pp. 70-87.
- Gallagher, S. (2005). How the body shapes the mind. Oxford University Press, New York.
- Godfrey-Smith, P. (2002) On the evolution of representational and interpretive capacities. The Monist, 85(1):50-69.
- Goertzel, B., et al. (2008). An integrative methodology for teaching embodied non-linguistic agents, applied to virtual animals in Second Life. In: *Artificial General Intelligence*, pages 161–175, Amsterdam. IOS Press.
- Griffiths, P. (2001) Evo-Devo meets the mind: Towards a developmental evolutionary psychology. In: *Integrating Evolution and Development*, R. Brandon & R. Sansom (Eds).
- Hammarström, A. (Undated) I, Sim An exploration of the Simulation Argument. Master's Thesis, UMEÅ Universitet, Institutionen för filosofi och lingvistik.
- Harms, W. F. (2004) Information and meaning in evolutionary processes. Cambridge University Press, New York.
- Harnad, S. (1990). The Symbol Grounding Problem. Physica D, 42, pp. 335-346.
- Harvey, I., et al.(2005) Evolutionary robotics: A new scientific tool for studying cognition. Artificial Life, 11:79-98.
- Harvey, I. (1996): Untimed and misrepresented: connectionism and the computer metaphor. AISB Quarterly, 96, pp. 20-27.
- Hilborn, R. (2000) Chaos and Nonlinear Dynamics: An Introduction for Scientists and Engineers. Oxford University Press, Cambridge, MA.
- Holland J. H. (1975) Adaptation in natural and artificial systems: An introductory analysis with applications to biology, control, and artificial intelligence. University of Michigan Press, Ann Arbor, MI.
- Huneman, P. & Humphreys, P. (2008) Dynamical emergence and computation: An introduction. *Minds and Machines*, 18:425-430.
- Indiveri, G., Chicca, E., and Douglas, R. (2009) Artificial Cognitive Systems: From VLSI Networks of Spiking Neurons to Neuromorphic Cognition. *Cognitive Computation*, 1(2):119-127
- Juarrero, A. (1998) Causality as Constraint. In Van de Vijver, G., Salthe, S.N., and Delpos, M (eds) *Evolutionary Systems*. pp. 233 243.
- Kasabov, N. (2008) Evolving Intelligence in Humans and Machines: Integrative Evolving Connectionist Systems Approach. *IEEE Computational Intelligence Magazine*, August 2008, pp. 23-37.
- Kelso, J.S. (1995) Dynamic Patterns: The Self-Organization of Brain and Behavior. MIT Press, Cambridge MA.
- Klyubin, A.S., Polani, D., and Nehaniv, C.L.. (2005) All Else Being Equal Be Empowered. In Advances in Artificial Life: Proceedings of the 8th European Conference on Artificial Life, M. S. Capcarrère, A. A. Freitas, P. J. Bentley, C. G. Johnson, and J. Timmis (Eds), volume 3630 of Lecture Notes in Artificial Intelligence, pages 744-753. Springer, Sep 2005.
- Klyubin, A.S., Polani, D. & Nehaniv, C.L. (2005). Empowerment: a universal agent-centric measure of control. *The 2005 IEEE Congress on Evolutionary Computation*, 1(5):128 135.

Koentges, G. (2008) Evolution of anatomy and gene control. *Nature*, 451:658-663.

- Lakoff, G. & Johnson, M. (1999). Philosophy in the flesh: The embodied mind and its challenge to western thought. Basic Books, New York.
- Lenski, R. et al. (2003) The evolutionary origin of complex features. *Nature*, 423:139-144.

Levenson, J & Sweatt, J.D. (2005) Epigenetic mechanisms in memory formation. Nature Reviews, 6:108-118.

- Lloyd, S. (1995) Learning How to Control Complex Systems. Bulletin of the Santa Fe Institute, 10, 1
- Loren, L. A. and Dietrich, E. (1997) Merleau-Ponty, Embodied Cognition and the Problem of Intentionality. *Cybernetics and Systems*, 28, 5, pp. 345 358.
- Lyon, P. (2006) The biogenic approach to cognition. Cogn Process, 7:11-29.
- Mabee, P. (2006) Integrating evolution and development: The need for bioinformatics in evo-devo. Bioscience, 56(4):301-309.
- Margaliot, M. (2008) Biomimicry and Fuzzy Modeling: A Match Made in Heaven. *IEEE Computational Intelligence Magazine*, August 2008, pp. 38-48.
- McCarthy, J. & Hayes, P.J. (1969), Some Philosophical Problems from the Standpoint of Artificial Intelligence. In Michie, D. and B.Meltzer, B. (eds) *Machine Intelligence 4*. Edinburgh University Press, pp. 463–502.
- Melby, P. et al. (2000) Adaptation to the edge of chaos in the self-adjusting logistic map. *Physical Review Letters*, 84(26):5991-5993.
- Miconi, T. (2008) Evolution and complexity: The double-edged sword. Artificial Life, 14:325-344.
- Miconi, T. (2009). Why Coevolution Doesn't "Work": Superiority and Progress in Coevolution. In *Proceedings of the 12th European Conference on Genetic Programming (EuroGP 2009)*, L. Vanneschi et al. (Eds.).
- Minsky, M. (1986) The Society of Mind. Simon & Schuster Inc. New York, NY.
- Nolfi, S., and Floreano, D. (2000) Evolutionary Robotics: The Biology, Intelligence, and Technology of Self-Organizing Machines. MIT Press, Cambridge, MA.
- Nolfi, S. & Parisi, D. (1993). Auto-teaching: networks that develop their own teaching input. In: Proceedings of the Second European Conference on Artificial Life, J.L. Deneubourg, H. Bersini, S. Goss, G. Nicolis & R. Dagonnier (Eds). Brussels.
- Nolfi, S. & Tani, J. (1997) Self-organization of modules and their hierarchy in robot learning problems: A dynamical systems approach. Technical Report SCSL-TR-97-008, Institute of Psychology, National Research Council, Rome, Italy.
- Ofria, C., Huang, W., & Torng, E. (2008) On the gradual evolution of complexity and the sudden emergence of complex features. *Artificial Life*, 14:255-263.
- Ou, C-M. (2008) Design of block ciphers by simple chaotic functions. *IEEE Computational Intelligence Magazine*, May 2008:54-59.
- Oudeyer, P-Y. & Kaplan, F. (2007) Language evolution as a Darwinian process: computational studies. Cogn Process, 8:21-35.
- Perez, C., Moffat, D., & Ziemke, T. (2006) Emotions as a bridge to the environment: On the role of body in organisms and robots. In: S. Nolfi et al. (Eds.): SAB 2006, LNAI 4095, pp. 3 – 16, 2006.
- Perruchet, P. & Vinter, A. (2002) The self-organizing consciousness. Behavioural and Brain Sciences, 25:297-388.
- Peschl, M. & Riegler, A. (1999) Does representation need reality? Rethinking epistemological issues in the light of recent developments and concepts in cognitive science. In: *Understanding Representation in the Cognitive Sciences*, A. Riegler, M. Peschl, and A. von Stein (Eds) Kluwer Academic/Plenum Publishers, New York, pp. 9-17.

- Pfeifer, R. (1999). Dynamics, Morphology, and Materials in the Emergence of Cognition. In Proc. KI-99, Lecture Notes in Computer Science, pp. 27-44.
- Plotkin, H. (1994) Darwin Machines and the Nature of Knowledge. Harvard University Press, Cambridge, MA.
- Psujek, S. and Beer, R. (2008) Developmental bias in evolution: evolutionary accessibility of phenotypes in a model evo-devo system. *Evolution and Development*, 10(3):375-390.
- Riegler, A. (2006). The goose, the fly, and the submarine navigator: The case for interdisciplinarity in artificial cognition research. In Loula, A., Gudwin, R., & Queiroz, J. (Eds.), *Artificial cognition systems*, pp. 1–26. Idea Group Publishing, Hershey, PA.
- Ruttor, A. et al. (2006) Genetic attack on neural cryptography. *Physical Review*, 73: 036121.
- Seth, A. K., Edelman, G. M. (2004). Environment and Behavior Influence the Complexity of Evolved Neural Networks. *Adaptive Behavior*, 12(1): 5–20.
- Simon, H. A. (1969). The architecture of complexity. In H. A. Simon, *The sciences of the artificial*, pp. 192–229, MIT Press, Cambridge MA.
- Smalz, R. & Conrad, M. (1994) Combining evolution with credit apportionment: A new learning algorithm for neural nets. *Neural Networks*, 7(2):341-351.
- Sober, E. (1984). The nature of selection. MIT Press, Cambridge, MA.
- Sugita, Y. & Tani, J. (2005) Learning semantic combinatoriality from the interaction between linguistic and behavioural processes. *Adaptive Behaviour*, 13(1):33-52.
- Stanley, K. & Miikkulainen, R, (2002) Efficient reinforcement learning through evolving neural network topologies. In: *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO-2002).*
- Stanley, K., Bryant, B., & Miikkulainen, R. (2005) Evolving neural network agents in the NERO video game. In: Proceedings of the IEEE 2005 Symposium on Computational Intelligence and Games (CIG'05).
- Stanley, K., Bryant, B., & Miikkulainen, R. (2005) Real-time neuroevolution in the NERO video game. *IEEE Transactions on Evolutionary Computation*, 9(6):653-668.
- Stanley, K., D'Ambrosio, D., & Gauci, J. (2009) A hypercube-based encoding for evolving large-scale neural networks. Artificial Life, 15:185-212.
- Takens, F. (1981) Detecting strange attractors in turbulence. in: *Proc. Dynamical Systems and Turbulence*, Warwick, 1980, Lecture Notes in Mathematics 898.
- Tani, J., & Ito, M. (2003) Self-organization of behavioral primitives as multiple attractor dynamics: A robot experiment. IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans, 33(4):481 – 488.
- Tani, J. (1996) Does Dynamics Solve the Symbol Grounding Problem of Robots? An Experiment in Navigation Learning. Learning in Robots and Animals. Working Notes. AISB'96 workshop, Brighton, UK.
- Tapscott, D., and Williams, A. (2006) Wikinomics: How Mass Collaboration Changes Everything. Portfolio, New York, NY.
- Thompson, E. (2007), Mind in Life: Biology, Phenomenology, and the Sciences of Mind. Harvard University Press, Cambridge, MA.
- Thompson, E. (1997) Symbol grounding: A bridge from artificial life to artificial intelligence. Brain and Cognition, 34:48-71.
- Tomko, G.J., Borrett, D.S., Kwan, H.C. and Steffan, G. (2010) Make the Data "Think" for Itself Data Protection in the 21st Century. *Identity in the Information Society*, 3, 2, pp. 343-362.

- Tomko, N. (2008) SmartData: Adaptable, Autonomous Agents to Protect Digital Data. Masters of Engineering project. University of Toronto.
- Tsuda, I. (2001) Toward an interpretation of dynamic neural activity in terms of chaotic dynamical systems. *Behavioural and Brain Sciences*, 24:793-847.
- van Geert, P. (2008) The dynamic systems approach in the study of L1 and L2 acquisition: An introduction. *The Modern Language Journal*, 92:179-199.
- van Gelder, T. (1998) The dynamical hypothesis in cognitive science. Behavioural and Brain Sciences, 21:615-665.
- van Gelder, T (1999). Defending the Dynamic Hypothesis. In: *Dynamics, Synergetics, Autonomous Agents: Nonlinear Systems Approaches to Cognitive Psychology and Cognitive Science,* Wolfgang Tschacher & J-P Dauwalder (eds.). Singapore: World Scientific.
- Wahman, J. (2008) Sharing meanings about embodied meaning. Journal of Speculative Philosophy, 22(3):170-182.
- Webb, B. (2001) Can robots make good models of biological behaviour? Behavioral and Brain Sciences, 24, pp. 1033–1050.
- Weng, J. and Hwang, W. (2006) From Neural Networks to the Brain: Autonomous Mental Development. IEEE Computational Intelligence Magazine, August 2006, pp. 15-31.
- Wheeler, M. (2008). Cognition in Context: Phenomenology, Situated Robotics, and the Frame Problem. International Journal of Philosophical Studies, 16, 3, pp. 323–349.
- Wheeler, M. (2005). Reconstructing the Cognitive World: The Next Step. MIT Press, Cambridge, MA.
- Whitley, D. (1994) A genetic algorithm tutorial. Statistics and Computing, 4:65-85.
- Whitley, D. (1995) Genetic Algorithms and Neural Networks. In: Genetic Algorithms in Engineering and Computer Science. Winter, Periaux, Galan and Cuesta, eds. pp: 203-216, John Wiley.
- Yong, C. et al. (2006) Incorporating advice into neuroevolution of adaptive agents. In: *Proceedings of the Artificial Intelligence* and Interactive Digital Entertainment Conference (AIIDE 2006).
- Yudashkin, A. (2008) A continuous model of the dynamical systems capable to memorise multiple shapes. Communications in Nonlinear Science and Numerical Simulation, 13:1508-1517.
- Zadeh, L. (2008) Toward Human Level Machine Intelligence Is It Achievable? The Need for a Paradigm Shift. *IEEE Computational Intelligence Magazine*, August 2008, pp. 11-22.
- Zagal, J.C., Lipson, H. (2009) Self-Reflection in Evolutionary Robotics: Resilient Adaptation with a Minimum of Physical Exploration. In: Proceedings of the Genetic and Evolutionary Computation Conference, Late Breaking Papers, GECCO 2009.
- Zlatev, J. (2001) The epigenesis of meaning in human beings, and possibly in robots. Minds and Machines, 11:155-195.