## Bibliography

The following abbreviations are used for frequently cited conferences and journals:

AAAI Proceedings of the AAAI Conference on Artificial Intelligence

AAMAS Proceedings of the International Conference on Autonomous Agents and Multi-agent Systems

ACL Proceedings of the Annual Meeting of the Association for Computational Linguistics

AIJ Artificial Intelligence (Journal)

AIMag

AIPS Proceedings of the International Conference on AI Planning Systems

Proceedings of the International Conference on Artificial Intelligence and Statistics

BBS Behavioral and Brain Sciences

CACM Communications of the Association for Computing Machinery
COGSCI Proceedings of the Annual Conference of the Cognitive Science Society

COLING Proceedings of the International Conference on Computational Linguistics
COLT Proceedings of the Annual ACM Workshop on Computational Learning Theory

CP Proceedings of the International Conference on Principles and Practice of Constraint Programming
 CVPR Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition

EC Proceedings of the ACM Conference on Electronic Commerce
ECAI Proceedings of the European Conference on Artificial Intelligence
ECCV Proceedings of the European Conference on Computer Vision
ECML Proceedings of the The European Conference on Machine Learning

ECP Proceedings of the European Conference on Planning
EMNLP Proceedings of the Conference on Empirical Methods in Natural Language Processing
FGCS Proceedings of the International Conference on Fifth Generation Computer Systems
FOCS Proceedings of the Annual Symposium on Foundations of Computer Science

FOCS Proceedings of the Annual Symposium on Foundations of Computer Scien
GECCO Proceedings of the Genetics and Evolutionary Computing Conference
HRI Proceedings of the International Conference on Human-Robot Interaction

ICASS Proceedings of the International Conference on Automated Planning and Scheduling ICASSP Proceedings of the International Conference on Acoustics, Speech, and Signal Processing

ICCV Proceedings of the International Conference on Computer Vision
ICLP Proceedings of the International Conference on Logic Programming
ICLR Proceedings of the International Conference on Learning Representations
ICML Proceedings of the International Conference on Machine Learning
ICPR Proceedings of the International Conference on Pattern Recognition

ICRA Proceedings of the IEEE International Conference on Robotics and Automation ICSLP Proceedings of the International Conference on Speech and Language Processing

IJAR International Journal of Approximate Reasoning

IJCAI Proceedings of the International Joint Conference on Artificial Intelligence
IJCNN Proceedings of the International Joint Conference on Neural Networks

IJCV International Journal of Computer Vision

ILP Proceedings of the International Workshop on Inductive Logic Programming
 IROS Proceedings of the International Conference on Intelligent Robots and Systems
 ISMIS Proceedings of the International Symposium on Methodologies for Intelligent Systems
 ISRR Proceedings of the International Symposium on Robotics Research

JACM Journal of the Association for Computing Machinery

JAIR Journal of Artificial Intelligence Research

JAR Journal of Automated Reasoning

JASA Journal of the American Statistical Association
JMLR Journal of Machine Learning Research

JSL Journal of Symbolic Logic

**KDD** Proceedings of the International Conference on Knowledge Discovery and Data Mining

KR Proceedings of the International Conference on Principles of Knowledge Representation and Reasoning

LICS Proceedings of the IEEE Symposium on Logic in Computer Science

**NeurIPS** Advances in Neural Information Processing Systems

PAMI IEEE Transactions on Pattern Analysis and Machine Intelligence

PNAS Proceedings of the National Academy of Sciences of the United States of America
PODS Proceedings of the ACM International Symposium on Principles of Database Systems

RSS Proceedings of the Conference on Robotics: Science and Systems SIGIR Proceedings of the Special Interest Group on Information Retrieval

SIGMOD Proceedings of the ACM SIGMOD International Conference on Management of Data
SODA Proceedings of the Annual ACM-SIAM Symposium on Discrete Algorithms
STOC Proceedings of the Annual ACM Symposium on Theory of Computing

TARK Proceedings of the Conference on Theoretical Aspects of Reasoning about Knowledge

**UAI** Proceedings of the Conference on Uncertainty in Artificial Intelligence

Aaronson, S. (2014). My conversation with "Eugene Goostman," the chatbot that's all over the news for allegedly passing the Turing test. Shtetl-Optimized, www.scottaaronson.com/blog/?p=1858.

Aarts, E. and Lenstra, J. K. (2003). *Local Search in Combinatorial Optimization*. Princeton University Press.

Aarup, M., Arentoft, M. M., Parrod, Y., Stader, J., and Stokes, I. (1994). OPTIMUM-AIV: A knowledge-based planning and scheduling system for spacecraft AIV. In Fox, M. and Zweben, M. (Eds.), *Knowledge Based Scheduling*. Morgan Kaufmann.

**Abbas**, A. (2018). *Foundations of Multiattribute Utility*. Cambridge University Press.

**Abbeel**, P. and Ng, A. Y. (2004). Apprenticeship learning via inverse reinforcement learning. In *ICML-04*.

**Abney**, S., McAllester, D. A., and Pereira, F. (1999). Relating probabilistic grammars and automata. In *ACL-99*.

**Abramson**, B. (1987). *The expected-outcome model of two-player games*. Ph.D. thesis, Columbia University.

**Abramson**, B. (1990). Expected-outcome: A general model of static evaluation. *PAMI*, *12*, 182–193.

**Abreu**, D. and Rubinstein, A. (1988). The structure of Nash equilibrium in repeated games with finite automata. *Econometrica*, 56, 1259–1281.

Achlioptas, D. (2009). Random satisfiability. In Biere, A., Heule, M., van Maaren, H., and Walsh, T. (Eds.), *Handbook of Satisfiability*. IOS Press.

**Ackerman**, E. and Guizzo, E. (2016). The next generation of Boston Dynamics' Atlas robot is quiet, robust, and tether free. *IEEE Spectrum*, 24, 2016.

Ackerman, N., Freer, C., and Roy, D. (2013). On the computability of conditional probability. arXiv 1005.3014.

Ackley, D. H. and Littman, M. L. (1991). Interactions between learning and evolution. In Langton, C., Taylor, C., Farmer, J. D., and Rasmussen, S. (Eds.), *Artificial Life II*. Addison-Wesley.

**Adida**, B. and Birbeck, M. (2008). RDFa primer. Tech. rep., W3C.

**Adolph**, K. E., Kretch, K. S., and LoBue, V. (2014). Fear of heights in infants? *Current Directions in Psychological Science*, 23, 60–66.

**Agerbeck**, C. and Hansen, M. O. (2008). A multiagent approach to solving *NP*-complete problems. Master's thesis, Technical Univ. of Denmark.

**Aggarwal**, G., Goel, A., and Motwani, R. (2006). Truthful auctions for pricing search keywords. In *EC-06* 

**Agha**, G. (1986). *ACTORS: A Model of Concurrent Computation in Distributed Systems*. MIT Press.

**Agichtein**, E. and Gravano, L. (2003). Querying text databases for efficient information extraction. In *Proc. IEEE Conference on Data Engineering*.

**Agmon**, S. (1954). The relaxation method for linear inequalities. *Canadian Journal of Mathematics*, 6, 382–392.

**Agostinelli**, F., McAleer, S., Shmakov, A., and Baldi, P. (2019). Solving the Rubik's Cube with deep reinforcement learning and search. *Nature Machine Intelligence*, 1, 356–363.

**Agrawal**, P., Nair, A. V., Abbeel, P., Malik, J., and Levine, S. (2017). Learning to poke by poking: Experiential learning of intuitive physics. In *NeurIPS* 29.

**Agre**, P. E. and Chapman, D. (1987). Pengi: an implementation of a theory of activity. In *IJCAI-87*.

Aizerman, M., Braverman, E., and Rozonoer, L. (1964). Theoretical foundations of the potential function method in pattern recognition learning. *Automation and Remote Control*, 25, 821–837.

Akametalu, A. K., Fisac, J. F., Gillula, J. H., Kaynama, S., Zeilinger, M. N., and Tomlin, C. J. (2014). Reachability-based safe learning with Gaussian processes. In 53rd IEEE Conference on Decision and Control.

**Akgun**, B., Cakmak, M., Jiang, K., and Thomaz, A. (2012). Keyframe-based learning from demonstration. *International Journal of Social Robotics*, *4*, 343–355.

**Aldous**, D. and Vazirani, U. (1994). "Go with the winners" algorithms. In *FOCS-94*.

**Alemi**, A. A., Chollet, F., Een, N., Irving, G., Szegedy, C., and Urban, J. (2017). DeepMath - Deep sequence models for premise selection. In *NeurIPS* 29.

**Allais**, M. (1953). Le comportment de l'homme rationnel devant la risque: critique des postulats et axiomes de l'école Américaine. *Econometrica*, 21, 503–546.

Allan, J., Harman, D., Kanoulas, E., Li, D., Van Gysel, C., and Vorhees, E. (2017). Trec 2017 common core track overview. In *Proc. TREC*.

**Allen**, J. F. (1983). Maintaining knowledge about temporal intervals. *CACM*, 26, 832–843.

**Allen**, J. F. (1984). Towards a general theory of action and time. *AIJ*, 23, 123–154.

**Allen**, J. F. (1991). Time and time again: The many ways to represent time. *Int. J. Intelligent Systems*, 6, 341–355

**Allen**, J. F., Hendler, J., and Tate, A. (Eds.). (1990). *Readings in Planning*. Morgan Kaufmann.

**Allen**, P. and Greaves, M. (2011). The singularity isn't near. *Technology review*, 12, 7–8.

**Allen-Zhu**, Z., Li, Y., and Song, Z. (2018). A convergence theory for deep learning via overparameterization. arXiv:1811.03962.

**Alterman**, R. (1988). Adaptive planning. *Cognitive Science*, 12, 393–422.

Amarel, S. (1967). An approach to heuristic problemsolving and theorem proving in the propositional calculus. In Hart, J. and Takasu, S. (Eds.), *Systems and Computer Science*. University of Toronto Press.

Amarel, S. (1968). On representations of problems of reasoning about actions. In Michie, D. (Ed.), *Machine Intelligence 3*, Vol. 3. Elsevier.

**Amir**, E. and Russell, S. J. (2003). Logical filtering. In *IJCAI-03*.

Amit, Y. and Geman, D. (1997). Shape quantization and recognition with randomized trees. *Neural Computation*, 9, 1545–1588.

Amodei, D. and Hernandez, D. (2018). AI and compute. OpenAI blog, blog.openai.com/ai-and-compute/.

**Amodei**, D., Olah, C., Steinhardt, J., Christiano, P., Schulman, J., and Mané, D. (2016). Concrete problems in AI safety. arXiv:1606.06565.

Andersen, S. K., Olesen, K. G., Jensen, F. V., and Jensen, F. (1989). HUGIN—A shell for building Bayesian belief universes for expert systems. In *IJCAI*-80

**Anderson**, J. R. (1980). *Cognitive Psychology and Its Implications*. W. H. Freeman.

**Anderson**, J. R. (1983). *The Architecture of Cognition*. Harvard University Press.

Anderson, K., Sturtevant, N. R., Holte, R. C., and Schaeffer, J. (2008). Coarse-to-fine search techniques. Tech. rep., University of Alberta.

**Andoni**, A. and Indyk, P. (2006). Near-optimal hashing algorithms for approximate nearest neighbor in high dimensions. In *FOCS-06*.

Andor, D., Alberti, C., Weiss, D., Severyn, A., Presta, A., Ganchey, K., Petrov, S., and Collins, M. (2016). Globally normalized transition-based neural networks. arXiv:1603.06042.

**Andre**, D., Friedman, N., and Parr, R. (1998). Generalized prioritized sweeping. In *NeurIPS 10*.

**Andre**, D. and Russell, S. J. (2002). State abstraction for programmable reinforcement learning agents. In *AAAI-02*.

Andreae, P. (1985). Justified Generalisation: Learning Procedures from Examples. Ph.D. thesis, MIT.

**Andrieu**, C., Doucet, A., and Holenstein, R. (2010). Particle Markov chain Monte Carlo methods. *J. Royal Statistical Society*, 72, 269–342.

Andrychowicz, M., Baker, B., Chociej, M., Jozefowicz, R., McGrew, B., Pachocki, J., Petron, A., Plappert, M., Powell, G., Ray, A., et al. (2018a). Learning dexterous in-hand manipulation. arXiv:1808.00177.

Andrychowicz, M., Wolski, F., Ray, A., Schneider, J., Fong, R., Welinder, P., McGrew, B., Tobin, J., Abbeel, P., and Zaremba, W. (2018b). Hindsight experience replay. In *NeurIPS* 30.

**Aneja**, J., Deshpande, A., and Schwing, A. (2018). Convolutional image captioning. In *CVPR-18*.

Aoki, M. (1965). Optimal control of partially observable Markov systems. *J. Franklin Institute*, 280, 367–386

**Appel**, K. and Haken, W. (1977). Every planar map is four colorable: Part I: Discharging. *Illinois J. Math.*, 21, 429–490.

**Appelt**, D. (1999). Introduction to information extraction. *AI Communications*, 12, 161–172.

**Apt**, K. R. (1999). The essence of constraint propagation. *Theoretical Computer Science*, 221, 179–210.

Apt, K. R. (2003). *Principles of Constraint Programming*. Cambridge University Press.

**Apté**, C., Damerau, F., and Weiss, S. (1994). Automated learning of decision rules for text categorization. *ACM Transactions on Information Systems*, 12, 233–251.

**Arbuthnot**, J. (1692). *Of the Laws of Chance*. Motte, London. Translation into English, with additions, of Huygens (1657).

**Archibald**, C., Altman, A., and Shoham, Y. (2009). Analysis of a winning computational billiards player. In *IJCAI-09*.

**Arfaee**, S. J., Zilles, S., and Holte, R. C. (2010). Bootstrap learning of heuristic functions. In *Third Annual Symposium on Combinatorial Search*.

Argall, B. D., Chernova, S., Veloso, M., and Browning, B. (2009). A survey of robot learning from demonstration. Robotics and autonomous systems, 57, 469–483

**Ariely**, D. (2009). *Predictably Irrational* (Revised edition). Harper.

**Arkin**, R. (1998). *Behavior-Based Robotics*. MIT Press.

**Arkin**, R. (2015). The case for banning killer robots: Counterpoint. *CACM*, 58.

Armando, A., Carbone, R., Compagna, L., Cuellar, J., and Tobarra, L. (2008). Formal analysis of SAML-2.0 web browser single sign-on: Breaking the SAML-based single sign-on for Google apps. In *Proc. 6th ACM Workshop on Formal Methods in Security Engineering.* 

**Armstrong**, S. and Levinstein, B. (2017). Low impact artificial intelligences. arXiv:1705.10720.

**Arnauld**, A. (1662). *La logique*, *ou l'art de penser*. Chez Charles Savreux, Paris.

**Arora**, N. S., Russell, S. J., and Sudderth, E. (2013). NET-VISA: Network processing vertically integrated seismic analysis. *Bull. Seism. Soc. Amer.*, 103, 709–729

**Arora**, S. (1998). Polynomial time approximation schemes for Euclidean traveling salesman and other geometric problems. *JACM*, 45, 753–782.

Arpit, D., Jastrzebski, S., Ballas, N., Krueger, D., Bengio, E., Kanwal, M. S., Maharaj, T., Fischer, A., Courville, A., Bengio, Y., and Lacoste-Julien, S. (2017). A closer look at memorization in deep networks. arXiv:1706.05394.

**Arrow**, K. J. (1951). Social Choice and Individual Values. Wiley.

**Arulampalam**, M. S., Maskell, S., Gordon, N., and Clapp, T. (2002). A tutorial on particle filters for online nonlinear/non-Gaussian Bayesian tracking. *IEEE Transactions on Signal Processing*, 50, 174–188.

**Arulkumaran**, K., Deisenroth, M. P., Brundage, M., and Bharath, A. A. (2017). Deep reinforcement learning: A brief survey. *IEEE Signal Processing Magazine*, 34, 26–38.

**Arunachalam**, R. and Sadeh, N. M. (2005). The supply chain trading agent competition. *Electronic Commerce Research and Applications*, *Spring*, 66–84.

**Ashby**, W. R. (1940). Adaptiveness and equilibrium. *J. Mental Science*, 86, 478–483.

**Ashby**, W. R. (1948). Design for a brain. *Electronic Engineering*, *December*, 379–383.

Ashby, W. R. (1952). Design for a Brain. Wiley.

**Asimov**, I. (1942). Runaround. *Astounding Science Fiction, March*.

Asimov, I. (1950). I, Robot. Doubleday.

Asimov, I. (1958). The feeling of power. If: Worlds of Science Fiction, February.

**Astrom**, K. J. (1965). Optimal control of Markov decision processes with incomplete state estimation. *J. Math. Anal. Applic.*, 10, 174–205.

**Atkeson**, C. G., Moore, A. W., and Schaal, S. (1997). Locally weighted learning for control. In *Lazy learning*. Springer.

Audi, R. (Ed.). (1999). The Cambridge Dictionary of Philosophy. Cambridge University Press.

**Auer**, P., Cesa-Bianchi, N., and Fischer, P. (2002). Finite-time analysis of the multiarmed bandit problem. *Machine Learning*, 47, 235–256.

**Aumann**, R. and Brandenburger, A. (1995). Epistemic conditions for nash equilibrium. *Econometrica*, 67, 1161–1180.

**Axelrod**, R. (1985). *The Evolution of Cooperation*. Basic Books.

Ba, J. L., Kiros, J. R., and Hinton, G. E. (2016). Layer normalization. arXiv:1607.06450.

**Baader**, F., Calvanese, D., McGuinness, D., Nardi, D., and Patel-Schneider, P. (2007). *The Description Logic Handbook* (2nd edition). Cambridge University Press.

**Baader**, F. and Snyder, W. (2001). Unification theory. In Robinson, J. and Voronkov, A. (Eds.), *Handbook of Automated Reasoning*. Elsevier.

**Bacchus**, F. (1990). Representing and Reasoning with Probabilistic Knowledge. MIT Press.

**Bacchus**, F. and Grove, A. (1995). Graphical models for preference and utility. In *UAI-95*.

**Bacchus**, F. and Grove, A. (1996). Utility independence in a qualitative decision theory. In *KR-96*.

**Bacchus**, F., Grove, A., Halpern, J. Y., and Koller, D. (1992). From statistics to beliefs. In *AAAI-92*.

**Bacchus**, F. and van Beek, P. (1998). On the conversion between non-binary and binary constraint satisfaction problems. In *AAAI-98*.

**Bacchus**, F. and van Run, P. (1995). Dynamic variable ordering in CSPs. In *CP-95*.

**Bacchus**, F., Dalmao, S., and Pitassi, T. (2003). Value elimination: Bayesian inference via backtracking search. In *UAI-03*.

**Bachmann**, P. G. H. (1894). *Die analytische Zahlentheorie*. B. G. Teubner, Leipzig.

**Backus**, J. W. (1959). The syntax and semantics of the proposed international algebraic language of the Zurich ACM-GAMM conference. *Proc. Int'l Conf. on Information Processing*.

**Bacon**, F. (1609). *Wisdom of the Ancients*. Cassell and Company.

**Baeza-Yates**, R. and Ribeiro-Neto, B. (2011). *Modern Information Retrieval* (2nd edition). Addison-Wesley.

**Bagdasaryan**, E., Veit, A., Hua, Y., Estrin, D., and Shmatikov, V. (2018). How to backdoor federated learning. arXiv:1807.00459.

**Bagnell**, J. A. and Schneider, J. (2001). Autonomous helicopter control using reinforcement learning policy search methods. In *ICRA-01*.

**Bahdana**u, D., Cho, K., and Bengio, Y. (2015). Neural machine translation by jointly learning to align and translate. In *ICLR-15*.

**Bahubalendruni**, M. R. and Biswal, B. B. (2016). A review on assembly sequence generation and its automation. *Proc. Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 230, 824–838.

**Bai**, A. and Russell, S. J. (2017). Efficient reinforcement learning with hierarchies of machines by leveraging internal transitions. In *IJCAI-17*.

**Bai**, H., Cai, S., Ye, N., Hsu, D., and Lee, W. S. (2015). Intention-aware online POMDP planning for autonomous driving in a crowd. In *ICRA-15*.

**Bajcsy**, A., Losey, D. P., O'Malley, M. K., and Dragan, A. D. (2017). Learning robot objectives from physical human interaction. *Proceedings of Machine Learning Research*, 78, 217–226.

**Baker**, C. L., Saxe, R., and Tenenbaum, J. B. (2009). Action understanding as inverse planning. *Cognition*, 113, 329–349.

**Baker**, J. (1975). The Dragon system—An overview. *IEEE Transactions on Acoustics, Speech, and Signal Processing*, 23, 24–29.

**Baker**, J. (1979). Trainable grammars for speech recognition. In *Speech Communication Papers for the 97th Meeting of the Acoustical Society of America*.

**Baldi**, P., Chauvin, Y., Hunkapiller, T., and McClure, M. (1994). Hidden Markov models of biological primary sequence information. *PNAS*, *91*, 1059–1063.

**Baldwin**, J. M. (1896). A new factor in evolution. *American Naturalist*, *30*, 441–451. Continued on pages 536–553.

**Ballard**, B. W. (1983). The \*-minimax search procedure for trees containing chance nodes. *AIJ*, 21, 327–250.

**Baluja**, S. (1997). Genetic algorithms and explicit search statistics. In *NeurIPS 9*.

**Bancilhon**, F., Maier, D., Sagiv, Y., and Ullman, J. D. (1986). Magic sets and other strange ways to implement logic programs. In *PODS-86*.

**Banko**, M. and Brill, E. (2001). Scaling to very very large corpora for natural language disambiguation. In *ACL-01*.

Banko, M., Brill, E., Dumais, S. T., and Lin, J. (2002). AskMSR: Question answering using the worldwide web. In *Proc. AAAI Spring Symposium on Mining An*swers from Texts and Knowledge Bases.

Banko, M., Cafarella, M. J., Soderland, S., Broadhead, M., and Etzioni, O. (2007). Open information extraction from the web. In *IJCAI-07*.

**Banko**, M. and Etzioni, O. (2008). The tradeoffs between open and traditional relation extraction. In *ACL-08*.

Bansal, K., Loos, S., Rabe, M. N., Szegedy, C., and Wilcox, S. (2019). HOList: An environment for machine learning of higher-order theorem proving (extended version). arXiv:1904.03241.

**Bar-Hillel**, Y. (1954). Indexical expressions. *Mind*, 63, 359–379.

**Bar-Shalom**, Y. (Ed.). (1992). *Multitarget-Multisensor Tracking: Advanced Applications*. Artech House.

Bar-Shalom, Y. and Fortmann, T. E. (1988). *Tracking and Data Association*. Academic Press.

**Bar-Shalom**, Y., Li, X.-R., and Kirubarajan, T. (2001). *Estimation, Tracking and Navigation: Theory, Algorithms and Software*. Wiley.

**Barber**, D. (2012). *Bayesian Reasoning and Machine Learning*. Cambridge University Press.

**Barr**, A. and Feigenbaum, E. A. (Eds.). (1981). *The Handbook of Artificial Intelligence*, Vol. 1. HeurisTech Press and William Kaufmann.

Barreiro, J., Boyce, M., Do, M., Frank, J., Iatauro, M., Kichkaylo, T., Morris, P., Ong, J., Remolina, E., Smith, T., et al. (2012). EUROPA: A platform for AI planning, scheduling, constraint programming, and optimization. 4th International Competition on Knowledge Engineering for Planning and Scheduling (ICKEPS).

**Barreno**, M., Nelson, B., Joseph, A. D., and Tygar, J. D. (2010). The security of machine learning. *Machine Learning*, 81, 121–148.

**Barrett**, S. and Stone, P. (2015). Cooperating with unknown teammates in complex domains: A robot soccer case study of ad hoc teamwork. In *AAAI-15*.

**Barták**, R., Salido, M. A., and Rossi, F. (2010). New trends in constraint satisfaction, planning, and scheduling: A survey. *The Knowledge Engineering Review*, 25, 249–279.

**Bartholdi**, J. J., Tovey, C. A., and Trick, M. A. (1989). The computational difficulty of manipulating an election. *Social Choice and Welfare*, 6, 227–241.

**Barto**, A. G., Bradtke, S. J., and Singh, S. (1995). Learning to act using real-time dynamic programming. *AIJ*, *73*, 81–138.

**Barto**, A. G., Sutton, R. S., and Brouwer, P. S. (1981). Associative search network: A reinforcement learning associative memory. *Biological Cybernetics*, 40, 201–211.

**Barwise**, J. and Etchemendy, J. (2002). *Language*, *Proof and Logic*. CSLI Press.

**Baum**, E., Boneh, D., and Garrett, C. (1995). On genetic algorithms. In *COLT-95*.

**Baum**, E. and Smith, W. D. (1997). A Bayesian approach to relevance in game playing. *AIJ*, 97, 195–242

Baum, L. E. and Petrie, T. (1966). Statistical inference for probabilistic functions of finite state Markov chains. Annals of Mathematical Statistics, 41, 1554–1563.

**Baxter**, J. and Bartlett, P. (2000). Reinforcement learning in POMDPs via direct gradient ascent. In *ICML-00*.

**Bayardo**, R. J. and Agrawal, R. (2005). Data privacy through optimal k-anonymization. In *Proc. 21st Int'l Conf. on Data Engineering*.

**Bayardo**, R. J. and Miranker, D. P. (1994). An optimal backtrack algorithm for tree-structured constraint satisfaction problems. *AIJ*, 71, 159–181.

**Bayardo**, R. J. and Schrag, R. C. (1997). Using CSP look-back techniques to solve real-world SAT instances. In *AAAI-97*.

**Bayes**, T. (1763). An essay towards solving a problem in the doctrine of chances. *Phil. Trans. Roy. Soc.*, *53*, 370–418.

- **Beal**, J. and Winston, P. H. (2009). The new frontier of human-level artificial intelligence. *IEEE Intelligent Systems*, 24, 21–23.
- **Beardon**, A. F., Candeal, J. C., Herden, G., Induráin, E., and Mehta, G. B. (2002). The non-existence of a utility function and the structure of non-representable preference relations. *Journal of Mathematical Economics*, 37, 17 38.
- Beattie, C., Leibo, J. Z., Teplyashin, D., Ward, T., Wainwright, M., Küttler, H., Lefrancq, A., Green, S., Valdés, V., Sadik, A., Schrittwieser, J., Anderson, K., York, S., Cant, M., Cain, A., Bolton, A., Gaffney, S., King, H., Hassabis, D., Legg, S., and Petersen, S. (2016). DeepMind lab. arXiv:1612.03801.
- Bechhofer, R. (1954). A single-sample multiple decision procedure for ranking means of normal populations with known variances. *Annals of Mathematical Statistics*, 25, 16–39.
- **Beck**, J. C., Feng, T. K., and Watson, J.-P. (2011). Combining constraint programming and local search for job-shop scheduling. *INFORMS Journal on Computing*, 23, 1–14.
- **Beckert**, B. and Posegga, J. (1995). Leantap: Lean, tableau-based deduction. *JAR*, *15*, 339–358.
- **Beeri**, C., Fagin, R., Maier, D., and Yannakakis, M. (1983). On the desirability of acyclic database schemes. *JACM*, *30*, 479–513.
- **Bekey**, G. (2008). *Robotics: State Of The Art And Future Challenges*. Imperial College Press.
- **Belkin**, M., Hsu, D., Ma, S., and Mandal, S. (2019). Reconciling modern machine-learning practice and the classical bias–variance trade-off. *PNAS*, 116, 15849–15854
- **Bell**, C. and Tate, A. (1985). Using temporal constraints to restrict search in a planner. In *Proc. Third Alvey IKBS SIG Workshop*.
- Bell, J. L. and Machover, M. (1977). A Course in Mathematical Logic. Elsevier.
- **Bellamy**, E. (2003). *Looking Backward: 2000-1887*. Broadview Press.
- Bellamy, R. K. E., Dey, K., Hind, M., Hoffman, S. C., Houde, S., Kannan, K., Lohia, P., Martino, J., Mehta, S., Mojsilovic, A., Nagar, S., Ramamurthy, K. N., Richards, J. T., Saha, D., Sattigeri, P., Singh, M., Varshney, K. R., and Zhang, Y. (2018). Al fairness 360: An extensible toolkit for detecting, understanding, and mitigating unwanted algorithmic bias. arXiv:1810.01943.
- **Bellemare**, M. G., Naddaf, Y., Veness, J., and Bowling, M. (2013). The arcade learning environment: An evaluation platform for general agents. *JAIR*, 47, 253–279.
- **Bellman**, R. E. (1952). On the theory of dynamic programming. *PNAS*, 38, 716–719.
- **Bellman**, R. E. (1958). On a routing problem. *Quarterly of Applied Mathematics*, 16.
- Bellman, R. E. (1961). Adaptive Control Processes: A Guided Tour. Princeton University Press.
- **Bellman**, R. E. (1965). On the application of dynamic programming to the determination of optimal play in chess and checkers. *PNAS*, 53, 244–246.
- Bellman, R. E. (1984). Eye of the Hurricane. World
- **Bellman**, R. E. and Dreyfus, S. E. (1962). *Applied Dynamic Programming*. Princeton University Press.
- **Bellman**, R. E. (1957). *Dynamic Programming*. Princeton University Press.
- Ben-Tal, A. and Nemirovski, A. (2001). Lectures on Modern Convex Optimization: Analysis, Algorithms, and Engineering Applications. SIAM (Society for Industrial and Applied Mathematics).

- Bengio, Y., Simard, P., and Frasconi, P. (1994). Learning long-term dependencies with gradient descent is difficult. *IEEE Transactions on Neural Networks*, 5, 157–166.
- **Bengio**, Y. and Bengio, S. (2001). Modeling high-dimensional discrete data with multi-layer neural networks. In *NeurIPS 13*.
- **Bengio**, Y., Ducharme, R., Vincent, P., and Jauvin, C. (2003). A neural probabilistic language model. *JMLR*, *3*, 1137–1155.
- Bengio, Y. and LeCun, Y. (2007). Scaling learning algorithms towards AI. In Bottou, L., Chapelle, O., DeCoste, D., and Weston, J. (Eds.), *Large-Scale Kernel Machines*. MIT Press.
- Benjamin, M. (2013). Drone Warfare: Killing by Remote Control. Verso Books.
- **Bentham**, J. (1823). *Principles of Morals and Legislation*. Oxford University Press, Oxford. Original work published in 1789.
- **Benzmüller**, C. and Paleo, B. W. (2013). Formalization, mechanization and automation of Gödel's proof of God's existence. arXiv:1308.4526.
- Beresniak, A., Medina-Lara, A., Auray, J. P., De Wever, A., Praet, J.-C., Tarricone, R., Torbica, A., Dupont, D., Lamure, M., and Duru, G. (2015). Validation of the underlying assumptions of the quality-adjusted life-years outcome: Results from the ECHOUTCOME European project. *PharmacoEconomics*, 33, 61–69.
- Berger, J. O. (1985). Statistical Decision Theory and Bayesian Analysis. Springer Verlag.
- **Bergstra**, J. and Bengio, Y. (2012). Random search for hyper-parameter optimization. *JMLR*, *13*, 281–305.
- **Berk**, R., Heidari, H., Jabbari, S., Kearns, M., and Roth, A. (2017). Fairness in criminal justice risk assessments: The state of the art. arXiv:1703.09207.
- **Berkson**, J. (1944). Application of the logistic function to bio-assay. *JASA*, *39*, 357–365.
- **Berleur**, J. and Brunnstein, K. (2001). *Ethics of Computing: Codes, Spaces for Discussion and Law*. Chapman and Hall.
- Berlin, K., Koren, S., Chin, C.-S., Drake, J. P., Landolin, J. M., and Phillippy, A. M. (2015). Assembling large genomes with single-molecule sequencing and locality-sensitive hashing. *Nature Biotechnology*, *33*, 623.
- **Berliner**, H. J. (1979). The B\* tree search algorithm: A best-first proof procedure. *AIJ*, *12*, 23–40.
- **Berliner**, H. J. (1980a). Backgammon computer program beats world champion. *AIJ*, 14, 205–220.
- Berliner, H. J. (1980b). Computer backgammon. *Scientific American*, 249, 64–72.
- **Bermúdez-Chacón**, R., Gonnet, G. H., and Smith, K. (2015). Automatic problem-specific hyperparameter optimization and model selection for supervised machine learning. Tech. rep., ETH Zurich.
- Bernardo, J. M. and Smith, A. (1994). Bayesian Theory. Wiley.
- **Berners-Lee**, T., Hendler, J., and Lassila, O. (2001). The semantic web. *Scientific American*, 284, 34–43.
- **Bernoulli**, D. (1738). Specimen theoriae novae de mensura sortis. *Proc. St. Petersburg Imperial Academy of Sciences*, 5, 175–192.
- Bernstein, P. L. (1996). Against the Gods: The Remarkable Story of Risk. Wiley.
- **Berrada**, L., Zisserman, A., and Kumar, M. P. (2019). Training neural networks for and by interpolation. arXiv:1906.05661.
- Berrou, C., Glavieux, A., and Thitimajshima, P. (1993). Near Shannon limit error control-correcting coding and decoding: Turbo-codes. 1. In *Proc. IEEE International Conference on Communications*.

- **Berry**, D. A. and Fristedt, B. (1985). *Bandit Problems: Sequential Allocation of Experiments*. Chapman and Hall.
- **Bertele**, U. and Brioschi, F. (1972). *Nonserial Dynamic Programming*. Academic Press.
- **Bertoli**, P., Cimatti, A., and Roveri, M. (2001a). Heuristic search + symbolic model checking = efficient conformant planning. In *IJCAI-01*.
- **Bertoli**, P., Cimatti, A., Roveri, M., and Traverso, P. (2001b). Planning in nondeterministic domains under partial observability via symbolic model checking. In *IJCAI-01*.
- **Bertot**, Y., Casteran, P., Huet, G., and Paulin-Mohring, C. (2004). *Interactive Theorem Proving and Program Development*. Springer.
- Bertsekas, D. (1987). Dynamic Programming: Deterministic and Stochastic Models. Prentice-Hall.
- **Bertsekas**, D. and Tsitsiklis, J. N. (1996). *Neuro-Dynamic Programming*. Athena Scientific.
- **Bertsekas**, D. and Tsitsiklis, J. N. (2008). *Introduction to Probability* (2nd edition). Athena Scientific.
- Bertsekas, D. and Shreve, S. E. (2007). Stochastic Optimal Control: The Discrete-Time Case. Athena Scientific
- **Bertsimas**, D., Delarue, A., and Martin, S. (2019). Optimizing schools' start time and bus routes. *PNAS*, *116 13*, 5943–5948.
- **Bertsimas**, D. and Dunn, J. (2017). Optimal classification trees. *Machine Learning*, *106*, 1039–1082.
- Bessen, J. (2015). Learning by Doing: The Real Connection between Innovation, Wages, and Wealth. Yale University Press.
- **Bessière**, C. (2006). Constraint propagation. In Rossi, F., van Beek, P., and Walsh, T. (Eds.), *Handbook of Constraint Programming*. Elsevier.
- **Beutel**, A., Chen, J., Doshi, T., Qian, H., Woodruff, A., Luu, C., Kreitmann, P., Bischof, J., and Chi, E. H. (2019). Putting fairness principles into practice: Challenges, metrics, and improvements. arXiv:1901.04562.
- **Bhar**, R. and Hamori, S. (2004). *Hidden Markov Models: Applications to Financial Economics*. Springer.
- Bibel, W. (1993). Deduction: Automated Logic. Academic Press.
- **Bien**, J., Tibshirani, R., et al. (2011). Prototype selection for interpretable classification. Annals of Applied Statistics, 5, 2403–2424.
- **Biere**, A., Heule, M., van Maaren, H., and Walsh, T. (Eds.). (2009). *Handbook of Satisfiability*. IOS Press.
- **Bies**, A., Mott, J., and Warner, C. (2015). English news text treebank: Penn treebank revised. Linguistic Data Consortium
- **Billings**, D., Burch, N., Davidson, A., Holte, R. C., Schaeffer, J., Schauenberg, T., and Szafron, D. (2003). Approximating game-theoretic optimal strategies for full-scale poker. In *IJCAI-03*.
- **Billingsley**, P. (2012). *Probability and Measure* (4th edition). Wiley.
- **Binder**, J., Koller, D., Russell, S. J., and Kanazawa, K. (1997a). Adaptive probabilistic networks with hidden variables. *Machine Learning*, 29, 213–244.
- **Binder**, J., Murphy, K., and Russell, S. J. (1997b). Space-efficient inference in dynamic probabilistic networks. In *IJCAI-97*.
- Bingham, E., Chen, J., Jankowiak, M., Obermeyer, F., Pradhan, N., Karaletsos, T., Singh, R., Szerlip, P., Horsfall, P., and Goodman, N. D. (2019). Pyro: Deep universal probabilistic programming. *JMLR*, 20, 1–26.
- **Binmore**, K. (1982). Essays on Foundations of Game Theory. Pitman.

- **Biran**, O. and Cotton, C. (2017). Explanation and justification in machine learning: A survey. In *Proc. IJCAI-17 Workshop on Explainable AI*.
- **Bishop**, C. M. (1995). *Neural Networks for Pattern Recognition*. Oxford University Press.
- **Bishop**, C. M. (2007). *Pattern Recognition and Machine Learning*. Springer-Verlag.
- **Bisson**, T. (1990). They're made out of meat. *Omni Magazine*.
- **Bistarelli**, S., Montanari, U., and Rossi, F. (1997). Semiring-based constraint satisfaction and optimization. *JACM*, 44, 201–236.
- **Bitner**, J. R. and Reingold, E. M. (1975). Backtrack programming techniques. *CACM*, *18*, 651–656.
- Bizer, C., Auer, S., Kobilarov, G., Lehmann, J., and Cyganiak, R. (2007). DBPedia querying Wikipedia like a database. In 16th International Conference on World Wide Web.
- Blazewicz, J., Ecker, K., Pesch, E., Schmidt, G., and Weglarz, J. (2007). *Handbook on Scheduling: Models and Methods for Advanced Planning*. Springer-Verlag.
- **Blei**, D. M., Ng, A. Y., and Jordan, M. I. (2002). Latent Dirichlet allocation. In *NeurIPS 14*.
- **Bliss**, C. I. (1934). The method of probits. *Science*, 79, 38–39.
- **Block**, H. D., Knight, B., and Rosenblatt, F. (1962). Analysis of a four-layer series-coupled perceptron. *Rev. Modern Physics*, *34*, 275–282.
- **Block**, N. (2009). Comparing the major theories of consciousness. In Gazzaniga, M. S. (Ed.), *The Cognitive Neurosciences*. MIT Press.
- **Blum**, A. L. and Furst, M. (1997). Fast planning through planning graph analysis. *AIJ*, 90, 281–300.
- **Blum**, A. L. (1996). On-line algorithms in machine learning. In *Proc. Workshop on On-Line Algorithms*, *Dagstuhl*.
- **Blum**, A. L., Hopcroft, J., and Kannan, R. (2020). *Foundations of Data Science*. Cambridge University Press.
- **Blum**, A. L. and Mitchell, T. M. (1998). Combining labeled and unlabeled data with co-training. In *COLT-*98
- **Blumer**, A., Ehrenfeucht, A., Haussler, D., and Warmuth, M. (1989). Learnability and the Vapnik-Chervonenkis dimension. *JACM*, *36*, 929–965.
- **Bobrow**, D. G. (1967). Natural language input for a computer problem solving system. In Minsky, M. L. (Ed.), *Semantic Information Processing*. MIT Press.
- **Bod**, R. (2008). The data-oriented parsing approach: Theory and application. In *Computational Intelligence: A Compendium*. Springer-Verlag.
- **Bod**, R., Scha, R., and Sima'an, K. (2003). *Data-Oriented Parsing*. CSLI Press.
- **Boddington**, P. (2017). *Towards a Code of Ethics for Artificial Intelligence*. Springer-Verlag.
- **Boden**, M. A. (Ed.). (1990). *The Philosophy of Artificial Intelligence*. Oxford University Press.
- **Bolognesi**, A. and Ciancarini, P. (2003). Computer programming of kriegspiel endings: The case of KR vs. K. In *Advances in Computer Games 10*.
- **Bolton**, R. J. and Hand, D. J. (2002). Statistical fraud detection: A review. *Statistical science*, 17, 235–249.
- Bonawitz, K., Ivanov, V., Kreuter, B., Marcedone, A., McMahan, H. B., Patel, S., Ramage, D., Segal, A., and Seth, K. (2017). Practical secure aggregation for privacy-preserving machine learning. In *Proc. ACM SIGSAC Conference on Computer and Communications Security*.
- **Bond**, A. H. and Gasser, L. (Eds.). (1988). *Readings in Distributed Artificial Intelligence*. Morgan Kaufmann.

- **Bonet**, B. (2002). An epsilon-optimal grid-based algorithm for partially observable Markov decision processes. In *ICML-02*.
- **Bonet**, B. and Geffner, H. (1999). Planning as heuristic search: New results. In *ECP-99*.
- **Bonet**, B. and Geffner, H. (2000). Planning with incomplete information as heuristic search in belief space. In *ICAPS-00*.
- **Bonet**, B. and Geffner, H. (2005). An algorithm better than  $AO^*$ ? In AAAI-05.
- Boole, G. (1847). The Mathematical Analysis of Logic: Being an Essay towards a Calculus of Deductive Reasoning. Macmillan, Barclay, and Macmillan.
- Booth, T. L. (1969). Probabilistic representation of formal languages. In *IEEE Conference Record of the 1969 Tenth Annual Symposium on Switching and Automata Theory*.
- Borel, E. (1921). La théorie du jeu et les équations intégrales à noyau symétrique. Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, 173. 1304–1308.
- **Borenstein**, J., Everett, B., and Feng, L. (1996). *Navigating Mobile Robots: Systems and Techniques*. A. K. Peters, Ltd.
- **Borenstein**, J. and Koren., Y. (1991). The vector field histogram—Fast obstacle avoidance for mobile robots. *IEEE Transactions on Robotics and Automation*, 7, 278–288.
- **Borgida**, A., Brachman, R. J., McGuinness, D., and Alperin Resnick, L. (1989). CLASSIC: A structural data model for objects. *SIGMOD Record*, *18*, 58–67.
- **Boroditsky**, L. (2003). Linguistic relativity. In Nadel, L. (Ed.), *Encyclopedia of Cognitive Science*. Macmillan.
- **Boser**, B., Guyon, I., and Vapnik, V. N. (1992). A training algorithm for optimal margin classifiers. In
- Bosse, M., Newman, P., Leonard, J., Soika, M., Feiten, W., and Teller, S. (2004). Simultaneous localization and map building in large-scale cyclic environments using the Atlas framework. *Int. J. Robotics Research*, 23, 1113–1139.
- **Bostrom**, N. (2005). A history of transhumanist thought. *Journal of Evolution and Technology*, 14, 1–25
- **Bostrom**, N. (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.
- **Bottou**, L. and Bousquet, O. (2008). The tradeoffs of large scale learning. In *NeurIPS 20*.
- **Bottou**, L., Curtis, F. E., and Nocedal, J. (2018). Optimization methods for large-scale machine learning. *SIAM Review*, *60*, 223–311.
- **Boué**, L. (2019). Real numbers, data science and chaos: How to fit any dataset with a single parameter. arXiv:1904.12320.
- Bousmalis, K., Irpan, A., Wohlhart, P., Bai, Y., Kelcey, M., Kalakrishnan, M., Downs, L., Ibarz, J., Pastor, P., Konolige, K., Levine, S., and Vanhoucke, V. (2017). Using simulation and domain adaptation to improve efficiency of deep robotic grasping. arXiv:1709.07857.
- **Boutilier**, C. (2002). A POMDP formulation of preference elicitation problems. In *AAAI-02*.
- **Boutilier**, C. and Brafman, R. I. (2001). Partial-order planning with concurrent interacting actions. *JAIR*, *14*, 105–136.
- **Boutilier**, C., Dearden, R., and Goldszmidt, M. (2000). Stochastic dynamic programming with factored representations. *AIJ*, *121*, 49–107.
- **Boutilier**, C., Reiter, R., and Price, B. (2001). Symbolic dynamic programming for first-order MDPs. In *IJCAI-01*.

- **Boutilier**, C., Brafman, R. I., Domshlak, C., Hoos, H. H., and Poole, D. (2004). CP-nets: A tool for representing and reasoning with conditional ceteris paribus preference statements. *JAIR*, *21*, 135–191.
- **Boutilier**, C., Friedman, N., Goldszmidt, M., and Koller, D. (1996). Context-specific independence in Bayesian networks. In *UAI-96*.
- **Bouzy**, B. and Cazenave, T. (2001). Computer Go: An AI oriented survey. *AIJ*, 132, 39–103.
- **Bowling**, M., Burch, N., Johanson, M., and Tammelin, O. (2015). Heads-up limit hold'em poker is solved. *Science*, 347, 145–149.
- **Bowling**, M., Johanson, M., Burch, N., and Szafron, D. (2008). Strategy evaluation in extensive games with importance sampling. In *ICML-08*.
- **Bowman**, S., Angeli, G., Potts, C., and Manning, C. (2015). A large annotated corpus for learning natural language inference. In *EMNLP-15*.
- **Box**, G. E. P. (1957). Evolutionary operation: A method of increasing industrial productivity. *Applied Statistics*, 6, 81–101.
- **Box**, G. E. P., Jenkins, G., Reinsel, G., and Ljung, G. M. (2016). *Time Series Analysis: Forecasting and Control* (5th edition). Wiley.
- **Box**, G. E. P. and Tiao, G. C. (1973). *Bayesian Inference in Statistical Analysis*. Addison-Wesley.
- **Boyan**, J. A. and Moore, A. W. (1998). Learning evaluation functions for global optimization and Boolean satisfiability. In *AAAI-98*.
- **Boyd**, S. and Vandenberghe, L. (2004). *Convex Optimization*. Cambridge University Press.
- **Boyen**, X., Friedman, N., and Koller, D. (1999). Discovering the hidden structure of complex dynamic systems. In *UAI-99*.
- **Boyer**, R. S. and Moore, J. S. (1979). *A Computational Logic*. Academic Press.
- **Boyer**, R. S. and Moore, J. S. (1984). Proof checking the RSA public key encryption algorithm. *American Mathematical Monthly*, *91*, 181–189.
- **Brachman**, R. J. (1979). On the epistemological status of semantic networks. In Findler, N. V. (Ed.), Associative Networks: Representation and Use of Knowledge by Computers. Academic Press.
- **Brachman**, R. J. and Levesque, H. J. (Eds.). (1985). *Readings in Knowledge Representation*. Morgan Kaufmann.
- **Bradt**, R. N., Johnson, S. M., and Karlin, S. (1956). On sequential designs for maximizing the sum of n observations. *Ann. Math. Statist.*, 27, 1060–1074.
- **Brafman**, O. and Brafman, R. (2009). Sway: The Irresistible Pull of Irrational Behavior. Broadway Business
- **Brafman**, R. I. and Domshlak, C. (2008). From one to many: Planning for loosely coupled multi-agent systems. In *ICAPS-08*.
- **Brafman**, R. I. and Tennenholtz, M. (2000). A near optimal polynomial time algorithm for learning in certain classes of stochastic games. *AIJ*, *121*, 31–47.
- **Braitenberg**, V. (1984). *Vehicles: Experiments in Synthetic Psychology*. MIT Press.
- **Brandt**, F., Conitzer, V., Endriss, U., Lang, J., and Procaccia, A. D. (Eds.). (2016). *Handbook of Computational Social Choice*. Cambridge University Press.
- **Brants**, T. (2000). TnT: A statistical part-of-speech tagger. In *Proc. Sixth Conference on Applied Natural Language Processing*.
- **Brants**, T., Popat, A. C., Xu, P., Och, F. J., and Dean, J. (2007). Large language models in machine translation. In *EMNLP-CoNLL-07*.
- **Bratko**, I. (2009). *Prolog Programming for Artificial Intelligence* (4th edition). Addison-Wesley.

- **Bratman**, M. E. (1987). *Intention, Plans, and Practical Reason*. Harvard University Press.
- Breck, E., Cai, S., Nielsen, E., Salib, M., and Sculley, D. (2016). What's your ML test score? A rubric for ML production systems. In *Proc. NIPS 2016 Workshop on Reliable Machine Learning in the Wild.*
- **Breese**, J. S. (1992). Construction of belief and decision networks. *Computational Intelligence*, 8, 624–647.
- **Breese**, J. S. and Heckerman, D. (1996). Decision-theoretic troubleshooting: A framework for repair and experiment. In *UAI-96*.
- **Breiman**, L., Friedman, J., Olshen, R. A., and Stone, C. J. (1984). *Classification and Regression Trees*. Wadsworth International Group.
- **Breiman**, L. (2001). Random forests. *Machine Learning*, 45(1), 5–32.
- **Brelaz**, D. (1979). New methods to color the vertices of a graph. *CACM*, 22, 251–256.
- **Brent**, R. P. (1973). Algorithms for Minimization without Derivatives. Prentice-Hall.
- **Bresnan**, J. (1982). The Mental Representation of Grammatical Relations. MIT Press.
- **Brewka**, G., Dix, J., and Konolige, K. (1997). *Nononotonic Reasoning: An Overview*. Center for the Study of Language and Information (CSLI).
- **Brickley**, D. and Guha, R. V. (2004). RDF vocabulary description language 1.0: RDF schema. Tech. rep., W3C.
- **Briggs**, R. (1985). Knowledge representation in Sanskrit and artificial intelligence. *AIMag*, *6*, 32–39.
- **Brill**, E. (1992). A simple rule-based part of speech tagger. In *Proc. Third Conference on Applied Natural Language Processing*.
- Brin, D. (1998). The Transparent Society. Perseus.
- **Brin**, S. and Page, L. (1998). The anatomy of a largescale hypertextual web search engine. In *Proc. Seventh World Wide Web Conference*.
- **Bringsjord**, S. (2008). If I were judge. In Epstein, R., Roberts, G., and Beber, G. (Eds.), *Parsing the Turing Test*. Springer.
- **Broadbent**, D. E. (1958). *Perception and Communication*. Pergamon.
- **Brockman**, G., Cheung, V., Pettersson, L., Schneider, J., Schulman, J., Tang, J., and Zaremba, W. (2016). OpenAI gym. arXiv:1606.01540.
- **Brooks**, R. A. (1986). A robust layered control system for a mobile robot. *IEEE J. of Robotics and Automation*, 2, 14–23.
- **Brooks**, R. A. (1989). Engineering approach to building complete, intelligent beings. *Proc. SPIE—the International Society for Optical Engineering*, 1002, 618–625.
- **Brooks**, R. A. (1991). Intelligence without representation. *AIJ*, *47*, 139–159.
- **Brooks**, R. A. and Lozano-Perez, T. (1985). A subdivision algorithm in configuration space for findpath with rotation. *IEEE Transactions on Systems, Man and Cybernetics*, 15, 224–233.
- **Brooks**, R. A. (2017). The seven deadly sins of AI predictions. *MIT Technology Review*, *Oct* 6.
- **Brooks**, S., Gelman, A., Jones, G., and Meng, X.-L. (2011). *Handbook of Markov Chain Monte Carlo*. Chapman & Hall/CRC.
- Brown, C., Finkelstein, L., and Purdom, P. (1988). Backtrack searching in the presence of symmetry. In Mora, T. (Ed.), Applied Algebra, Algebraic Algorithms and Error-Correcting Codes. Springer-Verlag.
- **Brown**, K. C. (1974). A note on the apparent bias of net revenue estimates. *J. Finance*, 29, 1215–1216.

- **Brown**, N. and Sandholm, T. (2017). Libratus: The superhuman AI for no-limit poker. In *IJCAI-17*.
- **Brown**, N. and Sandholm, T. (2019). Superhuman AI for multiplayer poker. *Science*, *365*, 885–890.
- **Brown**, P. F., Cocke, J., Della Pietra, S. A., Della Pietra, V. J., Jelinek, F., Mercer, R. L., and Roossin, P. (1988). A statistical approach to language translation. In *COLING-88*.
- **Brown**, P. F., Desouza, P. V., Mercer, R. L., Pietra, V. J. D., and Lai, J. C. (1992). Class-based n-gram models of natural language. *Computational linguistics*, 18(4).
- **Browne**, C., Powley, E. J., Whitehouse, D., Lucas, S. M., Cowling, P. I., Rohlfshagen, P., Tavener, S., Liebana, D. P., Samothrakis, S., and Colton, S. (2012). A survey of Monte Carlo tree search methods. *IEEE Transactions on Computational Intelligence and AI in Games* 4 1–43
- **Brownston**, L., Farrell, R., Kant, E., and Martin, N. (1985). *Programming Expert Systems in OPS5: An Introduction to Rule-Based Programming*. Addison-Wesley.
- **Bruce**, V., Green, P., and Georgeson, M. (2003). *Visual Perception: Physiology, Psychology and Ecology.* Routledge and Kegan Paul.
- **Brügmann**, B. (1993). Monte Carlo Go. Tech. rep., Department of Physics, Syracuse University.
- **Bryce**, D. and Kambhampati, S. (2007). A tutorial on planning graph-based reachability heuristics. *AIMag*, *Spring*, 47–83.
- **Bryce**, D., Kambhampati, S., and Smith, D. E. (2006). Planning graph heuristics for belief space search. *JAIR*, 26, 35, 99
- **Brynjolfsson**, E. and McAfee, A. (2011). *Rac Against the Machine*. Digital Frontier Press.
- **Brynjolfsson**, E. and McAfee, A. (2014). *The Second Machine Age*. W. W. Norton.
- **Brynjolfsson**, E., Rock, D., and Syverson, C. (2018). Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics. In Agrawal, A., Gans, J., and Goldfarb, A. (Eds.), *The Economics of Artificial Intelligence: An Agenda*. University of Chicago Press.
- Bryson, A. E. and Ho, Y.-C. (1969). Applied Optimal Control. Blaisdell.
- **Bryson**, A. E. (1962). A gradient method for optimizing multi-stage allocation processes. In *Proc. of a Harvard Symposium on Digital Computers and Their Applications*.
- **Bryson**, J. J. (2012). A role for consciousness in action selection. *International Journal of Machine Consciousness*, 4, 471–482.
- **Bryson**, J. J. and Winfield, A. (2017). Standardizing ethical design for artificial intelligence and autonomous systems. *Computer*, 50, 116–119.
- Buchanan, B. G., Mitchell, T. M., Smith, R. G., and Johnson, C. R. (1978). Models of learning systems. In Encyclopedia of Computer Science and Technology, Vol. 11. Dekker.
- Buchanan, B. G. and Shortliffe, E. H. (Eds.). (1984). Rule-Based Expert Systems: The MYCIN Experiments of the Stanford Heuristic Programming Project. Addison-Wesley.
- Buchanan, B. G., Sutherland, G. L., and Feigenbaum, E. A. (1969). Heuristic DENDRAL: A program for generating explanatory hypotheses in organic chemistry. In Meltzer, B., Michie, D., and Swann, M. (Eds.), *Machine Intelligence 4*. Edinburgh University Press.
- **Buck**, C., Heafield, K., and Van Ooyen, B. (2014). Ngram counts and language models from the common crawl. In *Proc. International Conference on Language Resources and Evaluation*.

- **Buehler**, M., Iagnemma, K., and Singh, S. (Eds.). (2006). *The 2005 DARPA Grand Challenge: The Great Robot Race*. Springer-Verlag.
- **Buffon**, G. (1777). Essai d'arithmetique morale. Supplement to Histoire naturelle, vol. IV.
- **Bunt**, H. C. (1985). The formal representation of (quasi-) continuous concepts. In Hobbs, J. R. and Moore, R. C. (Eds.), *Formal Theories of the Commonsense World*. Ablex.
- **Buolamwini**, J. and Gebru, T. (2018). Gender shades: Intersectional accuracy disparities in commercial gender classification. In *Conference on Fairness, Accountability and Transparency*.
- **Burgard**, W., Cremers, A. B., Fox, D., Hahnel, D., Lakemeyer, G., Schulz, D., Steiner, W., and Thrun, S. (1999). Experiences with an interactive museum tourguide robot. *AIJ*, *114*, 3–55.
- **Burkov**, A. (2019). The Hundred-Page Machine Learning Book. Burkov.
- **Burns**, E., Hatem, M., Leighton, M. J., and Ruml, W. (2012). Implementing fast heuristic search code. In *Symposium on Combinatorial Search*.
- **Buro**, M. (1995). ProbCut: An effective selective extension of the alpha-beta algorithm. *J. International Computer Chess Association*, 18, 71–76.
- **Buro**, M. (2002). Improving heuristic mini-max search by supervised learning. *AIJ*, 134, 85–99.
- **Burstein**, J., Leacock, C., and Swartz, R. (2001). Automated evaluation of essays and short answers. In *Fifth International Computer Assisted Assessment Conference*.
- Burton, R. (2009). On Being Certain: Believing You Are Right Even When You're Not. St. Martin's Griffin.
- **Buss**, D. M. (2005). *Handbook of Evolutionary Psychology*. Wiley.
- **Butler**, S. (1863). Darwin among the machines. *The Press (Christchurch, New Zealand), June 13*.
- **Bylander**, T. (1994). The computational complexity of propositional STRIPS planning. *AIJ*, *69*, 165–204.
- Byrd, R. H., Lu, P., Nocedal, J., and Zhu, C. (1995). A limited memory algorithm for bound constrained optimization. SIAM Journal on Scientific and Statistical Computing, 16, 1190–1208.
- **Cabeza**, R. and Nyberg, L. (2001). Imaging cognition II: An empirical review of 275 PET and fMRI studies. *J. Cognitive Neuroscience*, 12, 1–47.
- **Cafarella**, M. J., Halevy, A., Zhang, Y., Wang, D. Z., and Wu, E. (2008). Webtables: Exploring the power of tables on the web. In *VLDB-08*.
- **Calvanese**, D., Lenzerini, M., and Nardi, D. (1999). Unifying class-based representation formalisms. *JAIR*, *11*, 199–240.
- **Camacho**, R. and Michie, D. (1995). Behavioral cloning: A correction. *AIMag*, *16*, 92.
- Campbell, D. E. and Kelly, J. (2002). Impossibility theorems in the Arrovian framework. In Arrow, K. J., Sen, A. K., and Suzumura, K. (Eds.), *Handbook of Social Choice and Welfare Volume 1*. Elsevier Science.
- **Campbell**, M. S., Hoane, A. J., and Hsu, F.-H. (2002). Deep Blue. *AIJ*, *134*, 57–83.
- **Cannings**, C., Thompson, E., and Skolnick, M. H. (1978). Probability functions on complex pedigrees. *Advances in Applied Probability*, *10*, 26–61.
- Canny, J. and Reif, J. (1987). New lower bound techniques for robot motion planning problems. In *FOCS*-87
- **Canny**, J. (1986). A computational approach to edge detection. *PAMI*, 8, 679–698.
- **Canny**, J. (1988). *The Complexity of Robot Motion Planning*. MIT Press.

- Capen, E., Clapp, R., and Campbell, W. (1971). Competitive bidding in high-risk situations. *J. Petroleum Technology*, 23, 641–653.
- **Carbonell**, J. G. (1983). Derivational analogy and its role in problem solving. In *AAAI-83*.
- Carbonell, J. G., Knoblock, C. A., and Minton, S. (1989). PRODIGY: An integrated architecture for planning and learning. Technical report, Computer Science Department, Carnegie-Mellon University.
- **Carbonnel**, C. and Cooper, M. C. (2016). Tractability in constraint satisfaction problems: A survey. *Constraints*, 21(2), 115–144.
- Cardano, G. (1663). Liber de ludo aleae. Lyons
- Carlini, N., Athalye, A., Papernot, N., Brendel, W., Rauber, J., Tsipras, D., Goodfellow, I., Madry, A., and Kurakin, A. (2019). On evaluating adversarial robustness. arXiv:1902.06705.
- Carnap, R. (1928). Der logische Aufbau der Welt. Weltkreis-verlag. Translated into English as The Logical Structure of the World (Carnap, 1967).
- **Carnap**, R. (1948). On the application of inductive logic. *Philosophy and Phenomenological Research*, 8, 133–148.
- Carnap, R. (1950). Logical Foundations of Probability. University of Chicago Press.
- Carpenter, B., Gelman, A., Hoffman, M., Lee, D., Goodrich, B., Betancourt, M., Brubaker, M., Guo, J., Li, P., and Riddell, A. (2017). Stan: A probabilistic programming language. *Journal of Statistical Software*, 76, 1–32.
- Carroll, S. (2007). The Making of the Fittest: DNA and the Ultimate Forensic Record of Evolution. Norton
- Casati, R. and Varzi, A. (1999). Parts and Places: The Structures of Spatial Representation. MIT Press.
- **Cassandra**, A. R., Kaelbling, L. P., and Littman, M. L. (1994). Acting optimally in partially observable stochastic domains. In *AAAI-94*.
- Cassandras, C. G. and Lygeros, J. (2006). *Stochastic Hybrid Systems*. CRC Press.
- Castro, R., Coates, M., Liang, G., Nowak, R., and Yu, B. (2004). Network tomography: Recent developments. *Statistical Science*, *19*, 499–517.
- **Cauchy**, A. (1847). Méthode générale pour la résolution des systèmes d'équations simultanées. *Comp. Rend. Sci. Paris*, 25, 536–538.
- **Cesa-Bianchi**, N. and Lugosi, G. (2006). *Prediction, Learning, and Games*. Cambridge University Press.
- **Chajewska**, U., Koller, D., and Parr, R. (2000). Making rational decisions using adaptive utility elicitation. In *AAAI-00*.
- Chakrabarti, P. P., Ghose, S., Acharya, A., and de Sarkar, S. C. (1989). Heuristic search in restricted memory. *AIJ*, 41, 197–222.
- Chalkiadakis, G., Elkind, E., and Wooldridge, M. (2011). Computational Aspects of Cooperative Game Theory. Morgan Kaufmann.
- Chalmers, D. J. (1992). Subsymbolic computation and the Chinese room. In Dinsmore, J. (Ed.), *The symbolic and connectionist paradigms: Closing the gap.* Lawrence Erlbaum.
- **Chandola**, V., Banerjee, A., and Kumar, V. (2009). Anomaly detection: A survey. *ACM Computing Surveys*, 41.
- **Chandra**, A. K. and Harel, D. (1980). Computable queries for relational data bases. *J. Computer and System Sciences*, 21, 156–178.
- Chang, C.-L. and Lee, R. C.-T. (1973). Symbolic Logic and Mechanical Theorem Proving. Academic Press.

- Chang, H. S., Fu, M. C., Hu, J., and Marcus, S. I. (2005). An adaptive sampling algorithm for solving Markov decision processes. *Operations Research*, *53*, 126–139
- **Chao**, W.-L., Hu, H., and Sha, F. (2018). Being negative but constructively: Lessons learnt from creating better visual question answering datasets. In *ACL-18*.
- **Chapman**, D. (1987). Planning for conjunctive goals. *AIJ*, *32*, 333–377.
- **Charniak**, E. (1993). *Statistical Language Learning*. MIT Press.
- Charniak, E. (1996). Tree-bank grammars. In AAAI-96.
- **Charniak**, E. (1997). Statistical parsing with a context-free grammar and word statistics. In *AAAI-97*.
- **Charniak**, E. and Goldman, R. (1992). A Bayesian model of plan recognition. *AIJ*, *64*, 53–79.
- Charniak, E., Riesbeck, C., McDermott, D., and Meehan, J. (1987). *Artificial Intelligence Programming* (2nd edition). Lawrence Erlbaum.
- **Charniak**, E. (1991). Bayesian networks without tears. *AIMag*, *12*, 50–63.
- Charniak, E. (2018). Introduction to Deep Learning. MIT Press.
- Chaslot, G., Bakkes, S., Szita, I., and Spronck, P. (2008). Monte-Carlo tree search: A new framework for game AI. In Proc. Fourth Artificial Intelligence and Interactive Digital Entertainment Conference.
- **Chater**, N. and Oaksford, M. (Eds.). (2008). *The Probabilistic Mind: Prospects for Bayesian Cognitive Science*. Oxford University Press.
- **Chatfield**, C. (1989). *The Analysis of Time Series: An Introduction* (4th edition). Chapman and Hall.
- **Chavira**, M. and Darwiche, A. (2008). On probabilistic inference by weighted model counting. *AIJ*, *172*, 772–799.
- **Chawla**, N. V., Bowyer, K. W., Hall, L. O., and Kegelmeyer, W. P. (2002). SMOTE: Synthetic minority over-sampling technique. *JAIR*, *16*, 321–357.
- **Cheeseman**, P. (1985). In defense of probability. In *IJCAI-85*.
- **Cheeseman**, P. (1988). An inquiry into computer understanding. *Computational Intelligence*, 4, 58–66.
- **Cheeseman**, P., Kanefsky, B., and Taylor, W. (1991). Where the really hard problems are. In *IJCAI-91*.
- **Cheeseman**, P., Self, M., Kelly, J., and Stutz, J. (1988). Bayesian classification. In *AAAI-88*.
- Cheeseman, P. and Stutz, J. (1996). Bayesian classification (AutoClass): Theory and results. In Fayyad, U., Piatesky-Shapiro, G., Smyth, P., and Uthurusamy, R. (Eds.), Advances in Knowledge Discovery and Data Mining, AAAI Press/MIT Press.
- Chen, D. and Manning, C. (2014). A fast and accurate dependency parser using neural networks. In *EMNLP-14*.
- Chen, J., Holte, R. C., Zilles, S., and Sturtevant, N. R. (2017). Front-to-end bidirectional heuristic search with near-optimal node expansions. *IJCAI-17*.
- Chen, M. X., Firat, O., Bapna, A., Johnson, M., Macherey, W., Foster, G., Jones, L., Parmar, N., Schuster, M., Chen, Z., Wu, Y., and Hughes, M. (2018). The best of both worlds: Combining recent advances in neural machine translation. In *ACL-18*.
- **Chen**, S. F. and Goodman, J. (1996). An empirical study of smoothing techniques for language modeling. In *ACL-96*.
- **Chen**, T. and Guestrin, C. (2016). XGBoost: A scalable tree boosting system. In *KDD-16*.

- Cheng, J. and Druzdzel, M. J. (2000). AIS-BN: An adaptive importance sampling algorithm for evidential reasoning in large Bayesian networks. *JAIR*, *13*, 155–188
- Cheng, J., Greiner, R., Kelly, J., Bell, D. A., and Liu, W. (2002). Learning Bayesian networks from data: An information-theory based approach. *AIJ*, *137*, 43–90.
- Chiu, C., Sainath, T., Wu, Y., Prabhavalkar, R., Nguyen, P., Chen, Z., Kannan, A., Weiss, R., Rao, K., Gonina, K., Jaitly, N., Li, B., Chorowski, J., and Bacchiani, M. (2017). State-of-the-art speech recognition with sequence-to-sequence models. arXiv:1712.01769.
- Chklovski, T. and Gil, Y. (2005). Improving the design of intelligent acquisition interfaces for collecting world knowledge from web contributors. In *Proc. Third International Conference on Knowledge Capture*
- **Chollet**, F. (2019). On the measure of intelligence. arXiv:1911.01547.
- **Chollet**, F. (2017). *Deep Learning with Python*. Manning
- Chomsky, N. (1956). Three models for the description of language. *IRE Transactions on Information Theory*, 2, 113–124.
- Chomsky, N. (1957). Syntactic Structures. Mouton.
- Choromanska, A., Henaff, M., Mathieu, M., Arous, G. B., and LeCun, Y. (2014). The loss surface of multilayer networks. arXiv:1412.0233.
- **Choset**, H. (1996). Sensor Based Motion Planning: The Hierarchical Generalized Voronoi Graph. Ph.D. thesis, California Institute of Technology.
- Choset, H., Hutchinson, S., Lynch, K., Kantor, G., Burgard, W., Kavraki, L., and Thrun, S. (2005). *Principles of Robot Motion: Theory, Algorithms, and Implementation*. MIT Press.
- **Chouldechova**, A. (2017). Fair prediction with disparate impact: A study of bias in recidivism prediction instruments. *Big Data*, *5*, 153–163.
- **Chouldechova**, A. and Roth, A. (2018). The frontiers of fairness in machine learning. arXiv:1810.08810.
- Christian, B. (2011). *The Most Human Human*. Doubleday.
- Christin, A., Rosenblat, A., and Boyd, D. (2015). Courts and predictive algorithms. *Data & Civil Rights*.
- **Chung**, K. L. (1979). *Elementary Probability Theory with Stochastic Processes* (3rd edition). Springer-Verlag.
- **Church**, A. (1936). A note on the Entscheidungsproblem. *JSL*, *1*, 40–41 and 101–102.
- **Church**, A. (1956). *Introduction to Mathematical Logic*. Princeton University Press.
- Church, K. (1988). A stochastic parts program and noun phrase parser for unrestricted texts. In *Proc. Second Conference on Applied Natural Language Processing*.
- **Church**, K. and Patil, R. (1982). Coping with syntactic ambiguity or how to put the block in the box on the table. *Computational Linguistics*, 8, 139–149.
- **Church**, K. (2004). Speech and language processing: Can we use the past to predict the future. In *Proc. Conference on Text, Speech, and Dialogue*.
- **Church**, K. and Gale, W. A. (1991). A comparison of the enhanced Good–Turing and deleted estimation methods for estimating probabilities of English bigrams. *Computer Speech and Language*, 5, 19–54.
- **Church**, K. and Hestness, J. (2019). A survey of 25 years of evaluation. *Natural Language Engineering*, 25, 753–767.
- **Churchland**, P. M. (2013). *Matter and Consciousness* (3rd edition). MIT Press.

- Ciancarini, P. and Favini, G. P. (2010). Monte Carlo tree search in Kriegspiel. *AIJ*, 174, 670–684.
- Ciancarini, P. and Wooldridge, M. (2001). Agent-Oriented Software Engineering. Springer-Verlag.
- **Cimatti**, A., Roveri, M., and Traverso, P. (1998). Automatic OBDD-based generation of universal plans in non-deterministic domains. In *AAAI-98*.
- Claret, G., Rajamani, S. K., Nori, A. V., Gordon, A. D., and Borgström, J. (2013). Bayesian inference using data flow analysis. In *Proc. 9th Joint Meeting on Foundations of Software Engineering*.
- Clark, A. (1998). Being There: Putting Brain, Body, and World Together Again. MIT Press.
- Clark, A. (2015). Surfing Uncertainty: Prediction, Action, and the Embodied Mind. Oxford University Press.
- Clark, K. L. (1978). Negation as failure. In Gallaire, H. and Minker, J. (Eds.), *Logic and Data Bases*. Plenum.
- Clark, P., Cowhey, I., Etzioni, O., Khot, T., Sabharwal, A., Schoenick, C., and Tafjord, O. (2018). Think you have solved question answering? Try ARC, the Al2 reasoning challenge. arXiv:1803.05457.
- Clark, P., Etzioni, O., Khot, T., Mishra, B. D., Richardson, K., et al. (2019). From 'F' to 'A' on the NY Regents science exams: An overview of the Aristo project. arXiv:1909.01958.
- Clark, S. and Curran, J. R. (2004). Parsing the WSJ using CCG and log-linear models. In ACL-04.
- Clarke, A. C. (1968). 2001: A Space Odyssey. Signet.
- Clarke, E. and Grumberg, O. (1987). Research on automatic verification of finite-state concurrent systems. Annual Review of Computer Science, 2, 269–290.
- Clearwater, S. H. (Ed.). (1996). Market-Based Control. World Scientific.
- **Clocksin**, W. F. and Mellish, C. S. (2003). *Programming in Prolog* (5th edition). Springer-Verlag.
- **Clocksin**, W. F. (2003). *Clause and Effect: Prolog Programming for the Working Programmer*. Springer.
- Coase, R. H. (1960). The problem of social cost. *Journal of Law and Economics*, pp. 1–44.
- Coates, A., Abbeel, P., and Ng, A. Y. (2009). Apprenticeship learning for helicopter control. *Association for Computing Machinery*, 52(7).
- **Cobham**, A. (1964). The intrinsic computational difficulty of functions. In *Proc. International Congress for Logic, Methodology, and Philosophy of Science*.
- **Cohen**, P. R. (1995). *Empirical Methods for Artificial Intelligence*. MIT Press.
- **Cohen**, P. R. and Levesque, H. J. (1990). Intention is choice with commitment. *AIJ*, 42, 213–261.
- Cohen, P. R., Morgan, J., and Pollack, M. E. (1990). *Intentions in Communication*. MIT Press.
- **Cohen**, P. R. and Perrault, C. R. (1979). Elements of a plan-based theory of speech acts. *Cognitive Science*, 3, 177–212.
- **Cohn**, A. G., Bennett, B., Gooday, J. M., and Gotts, N. (1997). RCC: A calculus for region based qualitative spatial reasoning. *GeoInformatica*, 1, 275–316.
- Collin, Z., Dechter, R., and Katz, S. (1999). Self-stabilizing distributed constraint satisfaction. *Chicago J. of Theoretical Computer Science*, 1999.
- Collins, M. (1999). *Head-driven Statistical Models for Natural Language Processing*. Ph.D. thesis, University of Pennsylvania.
- **Collins**, M. and Duffy, K. (2002). New ranking algorithms for parsing and tagging: Kernels over discrete structures, and the voted perceptron. In *ACL-02*.
- Colmerauer, A. and Roussel, P. (1993). The birth of Prolog. SIGPLAN Notices, 28, 37–52.

- Colmerauer, A., Kanoui, H., Pasero, R., and Roussel, P. (1973). Un système de communication hommemachine en Français. Rapport, Groupe d'Intelligence Artificielle, Université d'Aix-Marseille II.
- Condon, J. H. and Thompson, K. (1982). Belle chess hardware. In Clarke, M. R. B. (Ed.), *Advances in Computer Chess 3*. Pergamon.
- Congdon, C. B., Huber, M., Kortenkamp, D., Bidlack, C., Cohen, C., Huffman, S., Koss, F., Raschke, U., and Weymouth, T. (1992). CARMEL versus Flakey: A comparison of two robots. Tech. rep., American Association for Artificial Intelligence.
- Conlisk, J. (1989). Three variants on the Allais example. *American Economic Review*, 79, 392–407.
- **Connell**, J. (1989). A Colony Architecture for an Artificial Creature. Ph.D. thesis, Artificial Intelligence Laboratory, MIT.
- Conway, D. and White, J. (2012). *Machine Learning for Hackers*. O'Reilly.
- **Cook**, S. A. (1971). The complexity of theorem-proving procedures. In *STOC-71*.
- Cook, S. A. and Mitchell, D. (1997). Finding hard instances of the satisfiability problem: A survey. In Du, D., Gu, J., and Pardalos, P. (Eds.), Satisfiability problems: Theory and applications. American Mathematical Society.
- **Cooper**, G. (1990). The computational complexity of probabilistic inference using Bayesian belief networks. *AIJ*, 42, 393–405.
- **Cooper**, G. and Herskovits, E. (1992). A Bayesian method for the induction of probabilistic networks from data. *Machine Learning*, 9, 309–347.
- Copeland, J. (1993). Artificial Intelligence: A Philosophical Introduction. Blackwell.
- **Corbett-Davies**, S. and Goel, S. (2018). The measure and mismeasure of fairness: A critical review of fair machine learning. arXiv:1808.00023.
- **Corbett-Davies**, S., Pierson, E., Feller, A., Goel, S., and Huq, A. (2017). Algorithmic decision making and the cost of fairness. arXiv:1701.08230.
- Cormen, T. H., Leiserson, C. E., Rivest, R., and Stein, C. (2009). *Introduction to Algorithms* (3rd edition). MIT Press.
- Cortes, C. and Vapnik, V. N. (1995). Support vector networks. *Machine Learning*, 20, 273–297.
- **Cournot**, A. (Ed.). (1838). *Recherches sur les principes mathématiques de la théorie des richesses*. L. Hachette, Paris.
- Cover, T. and Thomas, J. (2006). *Elements of Information Theory* (2nd edition). Wiley.
- Cowan, J. D. and Sharp, D. H. (1988a). Neural nets. *Quarterly Reviews of Biophysics*, 21, 365–427.
- Cowan, J. D. and Sharp, D. H. (1988b). Neural nets and artificial intelligence. *Daedalus*, 117, 85–121.
- Cowell, R., Dawid, A. P., Lauritzen, S., and Spiegelhalter, D. J. (2002). *Probabilistic Networks and Expert Systems*. Springer.
- Cox, I. (1993). A review of statistical data association techniques for motion correspondence. *IJCV*, 10, 53–66.
- **Cox**, I. and Hingorani, S. L. (1994). An efficient implementation and evaluation of Reid's multiple hypothesis tracking algorithm for visual tracking. In *ICPR-94*.
- Cox, I. and Wilfong, G. T. (Eds.). (1990). Autonomous Robot Vehicles. Springer Verlag.
- Cox, R. T. (1946). Probability, frequency, and reasonable expectation. *American Journal of Physics*, 14, 1–13.
- Craig, J. (1989). Introduction to Robotics: Mechanics and Control (2nd edition). Addison-Wesley.

- Craik, K. (1943). *The Nature of Explanation*. Cambridge University Press.
- **Cramton**, P., Shoham, Y., and Steinberg, R. (Eds.). (2006). *Combinatorial Auctions*. MIT Press.
- Craven, M., DiPasquo, D., Freitag, D., McCallum, A., Mitchell, T. M., Nigam, K., and Slattery, S. (2000). Learning to construct knowledge bases from the World Wide Web. *AlJ*, 118, 69–113.
- **Crawford**, J. M. and Auton, L. D. (1993). Experimental results on the crossover point in satisfiability problems. In *AAAI-93*.
- Crick, F. (1999). The impact of molecular biology on neuroscience. *Phil. Trans. Roy. Soc.*, *B*, 354, 2021–2025
- Crick, F. and Koch, C. (2003). A framework for consciousness. *Nature Neuroscience*, 6, 119.
- Crisan, D. and Doucet, A. (2002). A survey of convergence results on particle filtering methods for practitioners. *IEEE Trans. Signal Processing*, 50, 736–746.
- **Cristianini**, N. and Hahn, M. (2007). *Introduction to Computational Genomics: A Case Studies Approach*. Cambridge University Press.
- **Cristianini**, N. and Schölkopf, B. (2002). Support vector machines and kernel methods: The new generation of learning machines. *AIMag*, 23, 31–41.
- Cristianini, N. and Shawe-Taylor, J. (2000). An Introduction to Support Vector Machines and Other Kernel-Based Learning Methods. Cambridge University Press.
- Crockett, L. (1994). The Turing Test and the Frame Problem: AI's Mistaken Understanding of Intelligence. Ablex.
- Croft, W. B., Metzler, D., and Strohman, T. (2010). Search Engines: Information Retrieval in Practice. Addison-Wesley.
- Cross, S. E. and Walker, E. (1994). DART: Applying knowledge based planning and scheduling to crisis action planning. In Zweben, M. and Fox, M. S. (Eds.), *Intelligent Scheduling*. Morgan Kaufmann.
- Cruse, A. (2011). Meaning in Language: An Introduction to Semantics and Pragmatics. Oxford University Press.
- Culberson, J. and Schaeffer, J. (1996). Searching with pattern databases. In Advances in Artificial Intelligence (Lecture Notes in Artificial Intelligence 1081). Springer-Verlag.
- **Culberson**, J. and Schaeffer, J. (1998). Pattern databases. *Computational Intelligence*, 14, 318–334.
- **Cummins**, D. and Allen, C. (1998). *The Evolution of Mind*. Oxford University Press.
- **Cushing**, W., Kambhampati, S., Mausam, and Weld, D. S. (2007). When is temporal planning *really* temporal? In *IJCAI-07*.
- Cusumano-Towner, M. F., Saad, F., Lew, A. K., and Mansinghka, V. K. (2019). Gen: A general-purpose probabilistic programming system with programmable inference. In *PLDI-19*.
- **Cybenko**, G. (1988). Continuous valued neural networks with two hidden layers are sufficient. Technical report, Department of Computer Science, Tufts University.
- **Cybenko**, G. (1989). Approximation by superpositions of a sigmoidal function. *Mathematics of Controls*, Signals, and Systems, 2, 303–314.
- Cyert, R. and de Groot, M. (1979). Adaptive utility. In Allais, M. and Hagen, O. (Eds.), *Expected Utility Hypothesis and the Allais Paradox*. D. Reidel.
- **Dagan**, I., Glickman, O., and Magnini, B. (2005). The PASCAL recognising textual entailment challenge. In *Machine Learning Challenges Workshop*.
- **Daganzo**, C. (1979). *Multinomial Probit: The Theory and Its Application to Demand Forecasting*. Academic Press.

- **Dagum**, P. and Luby, M. (1993). Approximating probabilistic inference in Bayesian belief networks is NP-hard. *AIJ*. 60, 141–153.
- **Dagum**, P. and Luby, M. (1997). An optimal approximation algorithm for Bayesian inference. *AIJ*, 93, 1–27.
- **Dai**, A. M. and Le, Q. V. (2016). Semi-supervised sequence learning. In *NeurIPS* 28.
- **Dalal**, N. and Triggs, B. (2005). Histograms of oriented gradients for human detection. In *CVPR-05*.
- **Dalvi**, N. N., Ré, C., and Suciu, D. (2009). Probabilistic databases. *CACM*, *52*, 86–94.
- **Daly**, R., Shen, Q., and Aitken, S. (2011). Learning Bayesian networks: Approaches and issues. *Knowledge Engineering Review*, 26, 99–157.
- **Damasio**, A. R. (1999). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. Houghton Mifflin.
- **Danaher**, J. and McArthur, N. (2017). *Robot Sex: Social and Ethical Implications*. MIT Press.
- **Dantzig**, G. B. (1949). Programming of interdependent activities: II. Mathematical model. *Econometrica*, *17*, 200–211.
- **Darwiche**, A. (2001). Recursive conditioning. *AIJ*, 126, 5–41
- **Darwiche**, A. and Ginsberg, M. L. (1992). A symbolic generalization of probability theory. In *AAAI-92*.
- **Darwiche**, A. (2009). *Modeling and reasoning with Bayesian networks*. Cambridge University Press.
- **Darwin**, C. (1859). On The Origin of Species by Means of Natural Selection. J. Murray.
- **Dasgupta**, P., Chakrabarti, P. P., and de Sarkar, S. C. (1994). Agent searching in a tree and the optimality of iterative deepening. *AIJ*, 71, 195–208.
- **Dasgupta**, P. and Maskin, E. (2008). On the robustness of majority rule. *Journal of the European Economic Association*, 6, 949–973.
- **Dauphin**, Y., Pascanu, R., Gulcehre, C., Cho, K., Ganguli, S., and Bengio, Y. (2015). Identifying and attacking the saddle point problem in high-dimensional non-convex optimization. In *NeurIPS 27*.
- **Davidson**, D. (1980). *Essays on Actions and Events*. Oxford University Press.
- **Davidson**, D. (1986). A nice derangement of epitaphs. *Philosophical Grounds of Rationality*, 4, 157–174.
- **Davis**, E. (1986). Representing and Acquiring Geographic Knowledge. Pitman and Morgan Kaufmann.
- **Davis**, E. (1990). Representations of Commonsense Knowledge. Morgan Kaufmann.
- **Davis**, E. (2005). Knowledge and communication: A first-order theory. *AIJ*, *166*, 81–140.
- **Davis**, E. (2006). The expressivity of quantifying over regions. *J. Logic and Computation*, 16, 891–916.
- Davis, E. (2007). Physical reasoning. In van Harmelan, F., Lifschitz, V., and Porter, B. (Eds.), *The Handbook of Knowledge Representation*. Elsevier.
- **Davis**, E. (2008). Pouring liquids: A study in commonsense physical reasoning. *AIJ*, *172*.
- **Davis**, E. (2017). Logical formalizations of commonsense reasoning: A survey. *JAIR*, 59, 651–723.
- **Davis**, E. and Morgenstern, L. (2004). Introduction: Progress in formal commonsense reasoning. *AIJ*, *153*, 1–12.
- **Davis**, E. and Morgenstern, L. (2005). A first-order theory of communication and multi-agent plans. *J. Logic and Computation*, 15, 701–749.

- **Davis**, M. (1957). A computer program for Presburger's algorithm. In *Proving Theorems (as Done by Man, Logician, or Machine)*. Proc. Summer Institute for Symbolic Logic. Second edition; publication date is 1960.
- **Davis**, M., Logemann, G., and Loveland, D. (1962). A machine program for theorem-proving. *CACM*, 5, 394–397.
- **Davis**, M. and Putnam, H. (1960). A computing procedure for quantification theory. *JACM*, 7, 201–215.
- **Dayan**, P. (1992). The convergence of  $TD(\lambda)$  for general  $\lambda$ . *Machine Learning*, 8, 341–362.
- Dayan, P. and Abbott, L. F. (2001). Theoretical Neuroscience: Computational and Mathematical Modeling of Neural Systems. MIT Press.
- **Dayan**, P. and Hinton, G. E. (1993). Feudal reinforcement learning. In *NeurIPS 5*.
- **Dayan**, P. and Niv, Y. (2008). Reinforcement learning and the brain: The good, the bad and the ugly. *Current Opinion in Neurobiology*, 18, 185–196.
- **de Condorcet**, M. (1785). Essay on the Application of Analysis to the Probability of Majority Decisions. Imprimerie Royale.
- **de Dombal**, F. T., Leaper, D. J., Horrocks, J. C., and Staniland, J. R. (1974). Human and computer-aided diagnosis of abdominal pain: Further report with emphasis on performance of clinicians. *British Medical Journal*, *1*, 376–380.
- **de Dombal**, F. T., Staniland, J. R., and Clamp, S. E. (1981). Geographical variation in disease presentation. *Medical Decision Making*, *1*, 59–69.
- **de Farias**, D. P. and Roy, B. V. (2003). The linear programming approach to approximate dynamic programming. *Operations Research*, *51*, 839–1016.
- **de Finetti**, B. (1937). Le prévision: ses lois logiques, ses sources subjectives. *Ann. Inst. Poincaré*, 7, 1–68.
- **de Finetti**, B. (1993). On the subjective meaning of probability. In Monari, P. and Cocchi, D. (Eds.), *Probabilita e Induzione*. Clueb.
- de Freitas, J. F. G., Niranjan, M., and Gee, A. H. (2000). Sequential Monte Carlo methods to train neural network models. *Neural Computation*, *12*, 933–953.
- **de Ghellinck**, G. (1960). Les problèmes de décisions séquentielles. *Cahiers du Centre d'Études de Recherche Opérationnelle*, 2, 161–179.
- **de Kleer**, J. (1975). Qualitative and quantitative knowledge in classical mechanics. Tech. rep., MIT Artificial Intelligence Laboratory.
- **de Kleer**, J. (1989). A comparison of ATMS and CSP techniques. In *IJCAI-89*.
- de Kleer, J. and Brown, J. S. (1985). A qualitative physics based on confluences. In Hobbs, J. R. and Moore, R. C. (Eds.), Formal Theories of the Commonsense World. Ablex.
- **de Marcken**, C. (1996). *Unsupervised Language Acquisition*. Ph.D. thesis, MIT.
- **De Morgan**, A. (1864). On the syllogism, No. IV, and on the logic of relations. *Transaction of the Cambridge Philosophical Society*, *X*, 331–358.
- de Salvo Braz, R., Amir, E., and Roth, D. (2007). Lifted first-order probabilistic inference. In Getoor, L. and Taskar, B. (Eds.), Introduction to Statistical Relational Learning. MIT Press.
- **Deacon**, T. W. (1997). The Symbolic Species: The Coevolution of Language and the Brain. W. W. Norton.
- Deale, M., Yvanovich, M., Schnitzius, D., Kautz, D., Carpenter, M., Zweben, M., Davis, G., and Daun, B. (1994). The space shuttle ground processing scheduling system. In Zweben, M. and Fox, M. (Eds.), *Intelligent Scheduling*. Morgan Kaufmann.

- **Dean**, J., Patterson, D. A., and Young, C. (2018). A new golden age in computer architecture: Empowering the machine-learning revolution. *IEEE Micro*, *38*, 21–29
- **Dean**, T., Basye, K., Chekaluk, R., and Hyun, S. (1990). Coping with uncertainty in a control system for navigation and exploration. In *AAAI-90*.
- **Dean**, T. and Boddy, M. (1988). An analysis of time-dependent planning. In *AAAI*-88.
- **Dean**, T., Firby, R. J., and Miller, D. (1990). Hierarchical planning involving deadlines, travel time, and resources. *Computational Intelligence*, *6*, 381–398.
- **Dean**, T., Kaelbling, L. P., Kirman, J., and Nicholson, A. (1993). Planning with deadlines in stochastic domains. In *AAAI-93*.
- **Dean**, T. and Kanazawa, K. (1989a). A model for projection and action. In *IJCAI-89*.
- **Dean**, T. and Kanazawa, K. (1989b). A model for reasoning about persistence and causation. *Computational Intelligence*, 5, 142–150.
- Dean, T. and Wellman, M. P. (1991). *Planning and Control*. Morgan Kaufmann.
- **Dearden**, R., Friedman, N., and Andre, D. (1999). Model-based Bayesian exploration. In *UAI-99*.
- **Dearden**, R., Friedman, N., and Russell, S. J. (1998). Bayesian Q-learning. In *AAAI-98*.
- **Debevec**, P., Taylor, C., and Malik, J. (1996). Modeling and rendering architecture from photographs: A hybrid geometry- and image-based approach. In *Proc. 23rd Annual Conference on Computer Graphics (SIG-GRAPH)*.
- **Debreu**, G. (1960). Topological methods in cardinal utility theory. In Arrow, K. J., Karlin, S., and Suppes, P. (Eds.), *Mathematical Methods in the Social Sciences*, 1959. Stanford University Press.
- **Dechter**, A. and Dechter, R. (1987). Removing redundancies in constraint networks. In *AAAI-87*.
- **Dechter**, R. (1990a). Enhancement schemes for constraint processing: Backjumping, learning and cutset decomposition. *AIJ*, *41*, 273–312.
- **Dechter**, R. (1990b). On the expressiveness of networks with hidden variables. In *AAAI-90*.
- **Dechter**, R. (1999). Bucket elimination: A unifying framework for reasoning. *AIJ*, *113*, 41–85.
- **Dechter**, R. and Pearl, J. (1985). Generalized best-first search strategies and the optimality of A\*. *JACM*, 32, 505–536.
- **Dechter**, R. and Pearl, J. (1987). Network-based heuristics for constraint-satisfaction problems. *AIJ*, *34*, 1–38.
- **Dechter**, R. and Pearl, J. (1989). Tree clustering for constraint networks. *AIJ*, 38, 353–366.
- **Dechter**, R. and Rish, I. (2003). Mini-buckets: A general scheme for bounded inference. *JACM*, *50*, 107–153
- **Dechter**, R. (2003). *Constraint Processing*. Morgan Kaufmann
- **Dechter**, R. (2019). *Reasoning with Probabilistic and Deterministic Graphical Models: Exact Algorithms* (2nd edition). Morgan & Claypool.
- **Dechter**, R. and Frost, D. (2002). Backjump-based backtracking for constraint satisfaction problems. *AIJ*, 136, 147–188.
- **Dechter**, R. and Mateescu, R. (2007). AND/OR search spaces for graphical models. *AIJ*, *171*, 73–106.
- **DeCoste**, D. and Schölkopf, B. (2002). Training invariant support vector machines. *Machine Learning*, 46, 161–190.
- **Dedekind**, R. (1888). Was sind und was sollen die Zahlen. Braunschweig, Germany.

- **Deerwester**, S. C., Dumais, S. T., Landauer, T. K., Furnas, G. W., and Harshman, R. A. (1990). Indexing by latent semantic analysis. *J. American Society for Information Science*, 41, 391–407.
- **DeGroot**, M. H. (1970). *Optimal Statistical Decisions*. McGraw-Hill.
- **DeGroot**, M. H. and Schervish, M. J. (2001). *Probability and Statistics* (3rd edition). Addison Wesley.
- **Dehaene**, S. (2014). Consciousness and the Brain: Deciphering How the Brain Codes Our Thoughts. Penguin Books.
- **Del Moral**, P., Doucet, A., and Jasra, A. (2006). Sequential Monte Carlo samplers. *J. Royal Statistical Society*, 68, 411–436.
- **Del Moral**, P. (2004). Feynman–Kac Formulae, Genealogical and Interacting Particle Systems with Applications. Springer-Verlag.
- **Delgrande**, J. and Schaub, T. (2003). On the relation between Reiter's default logic and its (major) variants. In Seventh European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty.
- **Delling**, D., Sanders, P., Schultes, D., and Wagner, D. (2009). Engineering route planning algorithms. In Lerner, J., Wagner, D., and Zweig, K. (Eds.), *Algorithmics, LNCS*. Springer-Verlag.
- **Dempster**, A. P. (1968). A generalization of Bayesian inference. *J. Royal Statistical Society*, *30 (Series B)*, 205–247.
- **Dempster**, A. P., Laird, N., and Rubin, D. (1977). Maximum likelihood from incomplete data via the EM algorithm. *J. Royal Statistical Society*, *39 (Series B)*, 1–38.
- **Denardo**, E. V. (1967). Contraction mappings in the theory underlying dynamic programming. *SIAM Review*, *9*, 165–177.
- **Deng**, J., Dong, W., Socher, R., Li, L.-J., Li, K., and Fei-Fei, L. (2009). Imagenet: A large-scale hierarchical image database. In *CVPR-09*.
- **Deng**, L. (2016). Deep learning: From speech recognition to language and multimodal processing. *APSIPA Transactions on Signal and Information Processing*, 5.
- **Deng**, L., Yu, D., et al. (2014). Deep learning: Methods and applications. Foundations and Trends in Signal Processing, 7, 197–387.
- Deng, X. and Papadimitriou, C. H. (1990). Exploring an unknown graph. In *FOCS-90*.
- **Deng**, X. and Papadimitriou, C. H. (1994). On the complexity of cooperative solution concepts. *Mathematics of Operations Research*, 19, 257–266.
- **Denney**, E., Fischer, B., and Schumann, J. (2006). An empirical evaluation of automated theorem provers in software certification. *Int. J. AI Tools*. *15*, 81–107.
- **D'Épenoux**, F. (1963). A probabilistic production and inventory problem. A probabilistic production and inventory problem, 10, 98–108.
- **Dervovic**, D., Herbster, M., Mountney, P., Severini, S., Usher, N., and Wossnig, L. (2018). Quantum linear systems algorithms: A primer. arXiv:1802.08227.
- **Descartes**, R. (1637). Discourse on method. In Cottingham, J., Stoothoff, R., and Murdoch, D. (Eds.), *The Philosophical Writings of Descartes*, Vol. I. Cambridge University Press, Cambridge.
- **Descotte**, Y. and Latombe, J.-C. (1985). Making compromises among antagonist constraints in a planner. *AIJ*, 27, 183–217.
- **Deshpande**, I., Hu, Y.-T., Sun, R., Pyrros, A., Siddiqui, N., Koyejo, S., Zhao, Z., Forsyth, D., and Schwing, A. (2019). Max-sliced Wasserstein distance and its use for GANs. In *CVPR-19*.

- **Deutscher**, G. (2010). Through the Language Glass: Why the World Looks Different in Other Languages. Metropolitan Books.
- Devlin, J., Chang, M.-W., Lee, K., and Toutanova, K. (2018). Bert: Pre-training of deep bidirectional transformers for language understanding. arXiv:1810.04805.
- **Devlin**, K. (2018). Turned On: Science, Sex and Robots. Bloomsbury.
- **Devroye**, L. (1987). A course in density estimation. Birkhauser
- **Dias**, M. B., Zlot, R., Kalra, N., and Stentz, A. (2006). Market-based multirobot coordination: A survey and analysis. *Proc. IEEE*, *94*, 1257–1270.
- Dickmanns, E. D. and Zapp, A. (1987). Autonomous high speed road vehicle guidance by computer vision. In Automatic Control—World Congress, 1987: Selected Papers from the 10th Triennial World Congress of the International Federation of Automatic Control.
- **Dietterich**, T. (2000). Hierarchical reinforcement learning with the MAXQ value function decomposition. *JAIR*, *13*, 227–303.
- **Dijkstra**, E. W. (1959). A note on two problems in connexion with graphs. *Numerische Mathematik*, *1*, 269–271.
- **Dijkstra**, E. W. (1984). The threats to computing science. In *ACM South Central Regional Conference*.
- Ding, Y., Sohn, J. H., Kawczynski, M. G., Trivedi, H., Harnish, R., Jenkins, N. W., Lituiev, D., Copeland, T. P., Aboian, M. S., Mari Aparici, C., et al. (2018). A deep learning model to predict a diagnosis of alzheimer disease by using 18F-FDG PET of the brain. Radiology, p. 180958.
- **Dinh**, H., Russell, A., and Su, Y. (2007). On the value of good advice: The complexity of  $A^*$  with accurate heuristics. In *AAAI-07*.
- **Dissanayake**, G., Newman, P., Clark, S., Durrant-Whyte, H., and Csorba, M. (2001). A solution to the simultaneous localisation and map building (SLAM) problem. *IEEE Transactions on Robotics and Automation*, 17, 229–241.
- **Dittmer**, S. and Jensen, F. (1997). Myopic value of information in influence diagrams. In *UAI-97*.
- **Do**, M. and Kambhampati, S. (2003). Planning as constraint satisfaction: solving the planning graph by compiling it into CSP. *AIJ*, *132*, 151–182.
- $\mathbf{Do}$ , M. B. and Kambhampati, S. (2001). Sapa: A domain-independent heuristic metric temporal planner. In ECP-01.
- **Doctorow**, C. (2001). Metacrap: Putting the torch to seven straw-men of the meta-utopia. www.well.com/doctorow/metacrap.htm.
- **Doctorow**, C. and Stross, C. (2012). *The Rapture of the Nerds: A Tale of the Singularity, Posthumanity, and Awkward Social Situations*. Tor Books.
- **Dodd**, L. (1988). The inside/outside algorithm: Grammatical inference applied to stochastic context-free grammars. Tech. rep., Royal Signals and Radar Establishment, Malvern.
- **Domingos**, P. and Pazzani, M. (1997). On the optimality of the simple Bayesian classifier under zero-one loss. *Machine Learning*, 29, 103–30.
- **Domingos**, P. (2012). A few useful things to know about machine learning. *Commun. ACM*, 55(10), 78–87.
- **Domingos**, P. (2015). The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World. Basic Books.
- **Dong**, X., Gabrilovich, E., Heitz, G., Horn, W., Lao, N., Murphy, K., Strohmann, T., Sun, S., and Zhang, W. (2014). Knowledge vault: A web-scale approach to probabilistic knowledge fusion. In *KDD-14*.

- **Doorenbos**, R. (1994). Combining left and right unlinking for matching a large number of learned rules. In *AAAI-94*.
- **Doran**, J. and Michie, D. (1966). Experiments with the graph traverser program. *Proc. Roy. Soc.*, 294, Series A, 235–259.
- **Dorf**, R. C. and Bishop, R. H. (2004). *Modern Control Systems* (10th edition). Prentice-Hall.
- Dorigo, M., Birattari, M., Blum, C., Clerc, M., Stützle, T., and Winfield, A. (2008). Ant Colony Optimization and Swarm Intelligence: 6th International Conference, ANTS 2008, Brussels, Belgium, September 22-24, 2008, Proceedings, Vol. 5217. Springer-Verlag.
- **Doshi-Velez**, F. and Kim, B. (2017). Towards a rigorous science of interpretable machine learning. arXiv:1702.08608.
- **Doucet**, A. (1997). Monte Carlo methods for Bayesian estimation of hidden Markov models: Application to radiation signals. Ph.D. thesis, Université de Paris-
- **Doucet**, A., de Freitas, J. F. G., and Gordon, N. (2001). *Sequential Monte Carlo Methods in Practice*. Springer-Verlag.
- **Doucet**, A., de Freitas, J. F. G., Murphy, K., and Russell, S. J. (2000). Rao-Blackwellised particle filtering for dynamic Bayesian networks. In *UAI-00*.
- **Doucet**, A. and Johansen, A. M. (2011). A tutorial on particle filtering and smoothing: Fifteen years later. In Crisan, D. and Rozovskii, B. (Eds.), *Oxford Handbook of Nonlinear Filtering*. Oxford.
- **Dowty**, D., Wall, R., and Peters, S. (1991). *Introduction to Montague Semantics*. D. Reidel.
- **Doyle**, J. (1979). A truth maintenance system. *AIJ*, *12*, 231–272.
- **Doyle**, J. (1983). What is rational psychology? Toward a modern mental philosophy. *AIMag*, *4*, 50–53.
- **Drabble**, B. (1990). Mission scheduling for space-craft: Diaries of T-SCHED. In *Expert Planning Systems*. Institute of Electrical Engineers.
- **Dragan**, A. D., Lee, K. C., and Srinivasa, S. (2013). Legibility and predictability of robot motion. In *HRI-13*.
- **Dredze**, M., Crammer, K., and Pereira, F. (2008). Confidence-weighted linear classification. In *ICML-*08
- **Dressel**, J. and Farid, H. (2018). The accuracy, fairness, and limits of predicting recidivism. *Science Advances*, 4, eaao5580.
- **Dreyfus**, H. L. (1972). What Computers Can't Do: A Critique of Artificial Reason. Harper and Row.
- **Dreyfus**, H. L. (1992). What Computers Still Can't Do: A Critique of Artificial Reason. MIT Press.
- **Dreyfus**, H. L. and Dreyfus, S. E. (1986). *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*. Blackwell.
- **Dreyfus**, S. E. (1962). The numerical solution of variational problems. *J. Math. Anal. and Appl.*, 5, 30–45.
- **Dreyfus**, S. E. (1969). An appraisal of some shortest-paths algorithms. *Operations Research*, 17, 395–412.
- **Dreyfus**, S. E. (1990). Artificial neural networks, back propagation, and the Kelley–Bryson gradient procedure. *J. Guidance, Control, and Dynamics*, 13, 926–
- **Du**, S. S., Lee, J. D., Li, H., Wang, L., and Zhai, X. (2018). Gradient descent finds global minima of deep neural networks. arXiv:1811.03804.
- **Dubois**, D. and Prade, H. (1994). A survey of belief revision and updating rules in various uncertainty models. *Int. J. Intelligent Systems*, *9*, 61–100.
- **Duda**, R. O. and Hart, P. E. (1973). *Pattern classification and scene analysis*. Wiley.

- **Duda**, R. O., Hart, P. E., and Stork, D. G. (2001). *Pattern Classification* (2nd edition). Wiley.
- **Dudek**, G. and Jenkin, M. (2000). *Computational Principles of Mobile Robotics*. Cambridge University Press.
- **Duffy**, D. (1991). Principles of Automated Theorem Proving. John Wiley & Sons.
- **Dunn**, H. L. (1946). Record linkage". *Am. J. Public Health*, *36*, 1412–1416.
- **Durfee**, E. H. and Lesser, V. R. (1989). Negotiating task decomposition and allocation using partial global planning. In Huhns, M. and Gasser, L. (Eds.), *Distributed AI*, Vol. 2. Morgan Kaufmann.
- **Durme**, B. V. and Pasca, M. (2008). Finding cars, goddesses and enzymes: Parametrizable acquisition of labeled instances for open-domain information extraction. In AAAI-08.
- **Dwork**, C. (2008). Differential privacy: A survey of results. In *International Conference on Theory and Applications of Models of Computation*.
- **Dwork**, C., Hardt, M., Pitassi, T., Reingold, O., and Zemel, R. (2012). Fairness through awareness. In *Proc. 3rd innovations in theoretical computer science conference.*
- **Dwork**, C., Roth, A., *et al.* (2014). The algorithmic foundations of differential privacy. *Foundations and Trends in Theoretical Computer Science*, *9*, 211–407.
- **Dyson**, F. (2004). A meeting with Enrico Fermi. *Nature*, 427, 297.
- **Dyson**, G. (1998). Darwin among the machines: the evolution of global intelligence. Perseus Books.
- Earley, J. (1970). An efficient context-free parsing algorithm. *CACM*, *13*, 94–102.
- **Ebendt**, R. and Drechsler, R. (2009). Weighted A\* search–unifying view and application. *AIJ*, 173, 1310–1242.
- Eckerle, J., Chen, J., Sturtevant, N. R., Zilles, S., and Holte, R. C. (2017). Sufficient conditions for node expansion in bidirectional heuristic search. In *ICAPS-17*.
- Eckhouse, L., Lum, K., Conti-Cook, C., and Ciccolini, J. (2019). Layers of bias: A unified approach for understanding problems with risk assessment. *Criminal Justice and Behavior*, 46, 185–209.
- Edelkamp, S. (2009). Scaling search with symbolic pattern databases. In *Model Checking and Artificial Intelligence (MOCHART)*.
- **Edelkamp**, S. and Schrödl, S. (2012). *Heuristic Search*. Morgan Kaufmann.
- **Edmonds**, J. (1965). Paths, trees, and flowers. *Canadian J. of Mathematics*, 17, 449–467.
- **Edwards**, P. (Ed.). (1967). *The Encyclopedia of Philosophy*. Macmillan.
- **Eiter**, T., Leone, N., Mateis, C., Pfeifer, G., and Scarcello, F. (1998). The KR system dlv: Progress report, comparisons and benchmarks. In *KR*-98.
- Elio, R. (Ed.). (2002). Common Sense, Reasoning, and Rationality. Oxford University Press.
- Elkan, C. (1997). Boosting and naive Bayesian learning. Tech. rep., Department of Computer Science and Engineering, University of California, San Diego.
- **Ellsberg**, D. (1962). *Risk*, *Ambiguity*, *and Decision*. Ph.D. thesis, Harvard University.
- Elman, J. L. (1990). Finding structure in time. *Cognitive Science*, 14, 179–211.
- Elman, J. L., Bates, E., Johnson, M., Karmiloff-Smith, A., Parisi, D., and Plunkett, K. (1997). *Rethinking Innateness*. MIT Press.
- **Elo**, A. E. (1978). *The rating of chess players: Past and present*. Arco Publishing.

- **Elsken**, T., Metzen, J. H., and Hutter, F. (2018). Neural architecture search: A survey. arXiv:1808.05377.
- Empson, W. (1953). Seven Types of Ambiguity. New Directions.
- Enderton, H. B. (1972). A Mathematical Introduction to Logic. Academic Press.
- Engel, J., Resnick, C., Roberts, A., Dieleman, S., Norouzi, M., Eck, D., and Simonyan, K. (2017). Neural audio synthesis of musical notes with wavenet autoencoders. In *Proc. 34th International Conference on Machine Learning-Volume 70.*
- **Epstein**, R., Roberts, G., and Beber, G. (Eds.). (2008). *Parsing the Turing test*. Springer.
- **Erdmann**, M. A. and Mason, M. (1988). An exploration of sensorless manipulation. *IEEE Journal of Robotics and Automation*, 4, 369–379.
- Ernst, H. A. (1961). MH-1, a Computer-Operated Mechanical Hand. Ph.D. thesis, MIT.
- Ernst, M., Millstein, T., and Weld, D. S. (1997). Automatic SAT-compilation of planning problems. In *IJCAI-97*.
- **Erol**, K., Hendler, J., and Nau, D. S. (1994). HTN planning: Complexity and expressivity. In *AAAI-94*.
- Erol, K., Hendler, J., and Nau, D. S. (1996). Complexity results for HTN planning. *AIJ*, 18, 69–93.
- **Erol**, Y., Li, L., Ramsundar, B., and Russell, S. J. (2013). The extended parameter filter. In *ICML-13*.
- **Erol**, Y., Wu, Y., Li, L., and Russell, S. J. (2017). A nearly-black-box online algorithm for joint parameter and state estimation in temporal models. In *AAAI-17*.
- Esteva, A., Kuprel, B., Novoa, R. A., Ko, J., Swetter, S. M., Blau, H. M., and Thrun, S. (2017). Dermatologist-level classification of skin cancer with deep neural networks. *Nature*, 542, 115.
- **Etzioni**, A. (2004). From Empire to Community: A New Approach to International Relation. Palgrave Macmillan
- **Etzioni**, A. and Etzioni, O. (2017a). Incorporating ethics into artificial intelligence. *The Journal of Ethics*, *21*, 403–418.
- Etzioni, A. and Etzioni, O. (2017b). Should artificial intelligence be regulated? *Issues in Science and Technology, Summer.*
- Etzioni, O. (1989). Tractable decision-analytic control. In *Proc. First International Conference on Knowledge Representation and Reasoning*.
- Etzioni, O., Banko, M., Soderland, S., and Weld, D. S. (2008). Open information extraction from the web. *CACM*, *51*.
- **Etzioni**, O., Hanks, S., Weld, D. S., Draper, D., Lesh, N., and Williamson, M. (1992). An approach to planning with incomplete information. In *KR-92*.
- **Etzioni**, O., Banko, M., and Cafarella, M. J. (2006). Machine reading. In *AAAI-06*.
- Etzioni, O., Cafarella, M. J., Downey, D., Popescu, A.-M., Shaked, T., Soderland, S., Weld, D. S., and Yates, A. (2005). Unsupervised named-entity extraction from the web: An experimental study. *AIJ*, *165*(1), 91–134.
- **Evans**, T. G. (1968). A program for the solution of a class of geometric-analogy intelligence-test questions. In Minsky, M. L. (Ed.), *Semantic Information Processing*. MIT Press.
- **Fagin**, R., Halpern, J. Y., Moses, Y., and Vardi, M. Y. (1995). *Reasoning about Knowledge*. MIT Press.
- **Fahlman**, S. E. (1974). A planning system for robot construction tasks. *AIJ*, 5, 1–49.
- **Faugeras**, O. (1992). What can be seen in three dimensions with an uncalibrated stereo rig? In *ECCV*, Vol. 588 of *Lecture Notes in Computer Science*.

- **Faugeras**, O., Luong, Q.-T., and Papadopoulo, T. (2001). *The Geometry of Multiple Images*. MIT Press.
- **Fawcett**, T. and Provost, F. (1997). Adaptive fraud detection. *Data mining and knowledge discovery*, 1, 291–316.
- **Fearing**, R. S. and Hollerbach, J. M. (1985). Basic solid mechanics for tactile sensing. *Int. J. Robotics Research*, 4, 40–54.
- **Featherstone**, R. (1987). *Robot Dynamics Algorithms*. Kluwer Academic Publishers.
- **Feigenbaum**, E. A. (1961). The simulation of verbal learning behavior. *Proc. Western Joint Computer Conference*, 19, 121–131.
- **Feigenbaum**, E. A., Buchanan, B. G., and Lederberg, J. (1971). On generality and problem solving: A case study using the DENDRAL program. In Meltzer, B. and Michie, D. (Eds.), *Machine Intelligence 6*. Edinburgh University Press.
- **Feldman**, J. and Sproull, R. F. (1977). Decision theory and artificial intelligence II: The hungry monkey. Technical report, Computer Science Department, University of Rochester.
- **Feldman**, J. and Yakimovsky, Y. (1974). Decision theory and artificial intelligence I: Semantics-based region analyzer. *AIJ*, 5, 349–371.
- **Feldman**, M. (2017). Oak Ridge readies Summit supercomputer for 2018 debut. *Top500.org*, bit.ly/2ERRFr9.
- **Fellbaum**, C. (2001). Wordnet: An Electronic Lexical Database. MIT Press.
- **Fellegi**, I. and Sunter, A. (1969). A theory for record linkage". *JASA*, *64*, 1183–1210.
- **Felner**, A., Korf, R. E., and Hanan, S. (2004). Additive pattern database heuristics. *JAIR*, 22, 279–318.
- **Felner**, A. (2018). Position paper: Using early goal test in A\*. In *Eleventh Annual Symposium on Combinatorial Search*.
- **Felner**, A., Korf, R. E., Meshulam, R., and Holte, R. C. (2007). Compressed pattern databases. *JAIR*,
- Felner, A., Zahavi, U., Holte, R. C., Schaeffer, J., Sturtevant, N. R., and Zhang, Z. (2011). Inconsistent heuristics in theory and practice. *AIJ*, *175*, 1570–1603.
- **Felzenszwalb**, P. and McAllester, D. A. (2007). The generalized A\* architecture. *JAIR*.
- Fenton, N. and Neil, M. (2018). Risk Assessment and Decision Analysis with Bayesian Networks (2nd edition). Chapman and Hall.
- **Ferguson**, T. (1992). Mate with knight and bishop in kriegspiel. *Theoretical Computer Science*, *96*, 389–403.
- **Ferguson**, T. (1995). Mate with the two bishops in kriegspiel. www.math.ucla.edu/~tom/papers.
- **Ferguson**, T. (2001). *Optimal Stopping and Applications*. www.math.ucla.edu/ tom/Stopping/Contents.html.
- **Ferguson**, T. (1973). Bayesian analysis of some non-parametric problems. *Annals of Statistics*, 1, 209–230.
- **Fern**, A., Natarajan, S., Judah, K., and Tadepalli, P. (2014). A decision-theoretic model of assistance. *JAIR*, *50*, 71–104.
- **Fernandez**, J. M. F. and Mahlmann, T. (2018). The Dota 2 bot competition. *IEEE Transactions on Games*.
- **Ferraris**, P. and Giunchiglia, E. (2000). Planning as satisability in nondeterministic domains. In *AAAI-00*.
- Ferriss, T. (2007). The 4-Hour Workweek. Crown
- Ferrucci, D., Brown, E., Chu-Carroll, J., Fan, J., Gondek, D., Kalyanpur, A. A., Lally, A., Murdock, J. W., Nyberg, E., Prager, J., Schlaefer, N., and Welty, C. (2010). Building Watson: An overview of the DeepQA project. *AI Magazine, Fall*.

- **Fikes**, R. E., Hart, P. E., and Nilsson, N. J. (1972). Learning and executing generalized robot plans. *AIJ*, *3*, 251–288.
- **Fikes**, R. E. and Nilsson, N. J. (1971). STRIPS: A new approach to the application of theorem proving to problem solving. *AIJ*, 2, 189–208.
- Fikes, R. E. and Nilsson, N. J. (1993). STRIPS, a retrospective. *AIJ*, *59*, 227–232.
- **Fine**, S., Singer, Y., and Tishby, N. (1998). The hierarchical hidden Markov model: Analysis and applications. *Machine Learning*, 32.
- Finn, C., Abbeel, P., and Levine, S. (2017). Modelagnostic meta-learning for fast adaptation of deep networks. In *Proc. 34th International Conference on Machine Learning-Volume 70.*
- **Finney**, D. J. (1947). *Probit analysis: A statistical treatment of the sigmoid response curve*. Cambridge University Press.
- **Firoiu**, V., Whitney, W. F., and Tenenbaum, J. B. (2017). Beating the world's best at Super Smash Bros. with deep reinforcement learning. arXiv:1702.06230.
- **Firth**, J. (1957). *Papers in Linguistics*. Oxford University Press.
- **Fisher**, R. A. (1922). On the mathematical foundations of theoretical statistics. *Phil. Trans. Roy. Soc.*, A, 222, 309–368.
- **Fix**, E. and Hodges, J. L. (1951). Discriminatory analysis—Nonparametric discrimination: Consistency properties. Tech. rep., USAF School of Aviation Medicine.
- **Floreano**, D., Zufferey, J. C., Srinivasan, M. V., and Ellington, C. (2009). *Flying Insects and Robots*. Springer.
- **Floyd**, R. W. (1962). Algorithm 97: Shortest path. *CACM*, 5, 345.
- Fogel, D. B. (2000). Evolutionary Computation: Toward a New Philosophy of Machine Intelligence. IEEE Press.
- **Fogel**, L. J., Owens, A. J., and Walsh, M. J. (1966). *Artificial Intelligence through Simulated Evolution*. Wiley.
- **Forbes**, J., Huang, T., Kanazawa, K., and Russell, S. J. (1995). The BATmobile: Towards a Bayesian automated taxi. In *IJCAI-95*.
- **Forbus**, K. D. (1985). Qualitative process theory. In Bobrow, D. (Ed.), *Qualitative Reasoning About Physical Systems*. MIT Press.
- Forbus, K. D. and de Kleer, J. (1993). *Building Problem Solvers*. MIT Press.
- Forbus, K. D., Hinrichs, T. R., De Kleer, J., and Usher, J. M. (2010). FIRE: Infrastructure for experience-based systems with common sense. In AAAI Fall Symposium: Commonsense Knowledge.
- Ford, K. M. and Hayes, P. J. (1995). Turing Test considered harmful. In *IJCAI-95*.
- Ford, L. R. (1956). Network flow theory. Tech. rep., RAND Corporation.
- Ford, M. (2015). Rise of the Robots: Technology and the Threat of a Jobless Future. Basic Books.
- Ford, M. (2018). Architects of Intelligence. Packt.
- Forestier, J.-P. and Varaiya, P. (1978). Multilayer control of large Markov chains. *IEEE Transactions on Automatic Control*, 23, 298–304.
- Forgy, C. (1981). OPS5 user's manual. Technical report, Computer Science Department, Carnegie-Mellon University.
- **Forgy**, C. (1982). A fast algorithm for the many patterns/many objects match problem. *AIJ*, *19*, 17–37.
- Forster, E. M. (1909). *The Machine Stops*. Sheba Blake.

- Forsyth, D. and Ponce, J. (2002). Computer Vision: A Modern Approach. Prentice Hall.
- **Fouhey**, D., Kuo, W.-C., Efros, A., and Malik, J. (2018). From lifestyle vlogs to everyday interactions. In *CVPR-18*.
- Fourier, J. (1827). Analyse des travaux de l'Académie Royale des Sciences, pendant l'année 1824; partie mathématique. Histoire de l'Académie Royale des Sciences de France, 7, xlvii—lv.
- **Fox**, C. and Tversky, A. (1995). Ambiguity aversion and comparative ignorance. *Quarterly Journal of Economics*, 110, 585–603.
- **Fox**, D., Burgard, W., Dellaert, F., and Thrun, S. (1999). Monte Carlo localization: Efficient position estimation for mobile robots. In *AAAI-99*.
- Fox, M. S. (1990). Constraint-guided scheduling: A short history of research at CMU. *Computers in Industry*, 14, 79–88.
- **Fox**, M. S., Allen, B., and Strohm, G. (1982). Job shop scheduling: An investigation in constraint-directed reasoning. In *AAAI-82*.
- **Franco**, J. and Paull, M. (1983). Probabilistic analysis of the Davis Putnam procedure for solving the satisfiability problem. *Discrete Applied Mathematics*, 5, 77–87.
- Francois-Lavet, V., Henderson, P., Islam, R., Bellemare, M. G., and Pineau, J. (2018). An introduction to deep reinforcement learning. Foundations and Trends in Machine Learning, 11, 219–354.
- **Frank**, I., Basin, D. A., and Matsubara, H. (1998). Finding optimal strategies for imperfect information games. In *AAAI-98*.
- Frank, R. H. and Cook, P. J. (1996). The Winner-Take-All Society. Penguin.
- **Frans**, K., Ho, J., Chen, X., Abbeel, P., and Schulman, J. (2018). Meta learning shared hierarchies. In *ICLR-18*
- Franz, A. and Brants, T. (2006). All our n-gram are belong to you. Google blog, aig.googleblog.com/2006/08/all-our-n-gram-are-belong-to-you.html.
- Frege, G. (1879). Begriffsschrift, eine der arithmetischen nachgebildete Formelsprache des reinen Denkens. Halle, Berlin. English translation appears in van Heijenoort (1967).
- **Freitag**, D. and McCallum, A. (2000). Information extraction with hmm structures learned by stochastic optimization. In *AAAI-00*.
- **Freuder**, E. C. (1978). Synthesizing constraint expressions. *CACM*, *21*, 958–966.
- **Freuder**, E. C. (1982). A sufficient condition for backtrack-free search. *JACM*, 29, 24–32.
- **Freuder**, E. C. (1985). A sufficient condition for backtrack-bounded search. *JACM*, *32*, 755–761.
- **Freund**, Y. and Schapire, R. E. (1996). Experiments with a new boosting algorithm. In *ICML*-96.
- **Freund**, Y. and Schapire, R. E. (1999). Large margin classification using the perceptron algorithm. *Machine Learning*, *37*, 277–296.
- Frey, B. J. (1998). Graphical models for machine learning and digital communication. MIT Press.
- Frey, C. B. and Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological forecasting and social change*, 114, 254–280.
- **Friedberg**, R. M. (1958). A learning machine: Part I. *IBM Journal of Research and Development*, 2, 2–13.
- **Friedberg**, R. M., Dunham, B., and North, T. (1959). A learning machine: Part II. *IBM Journal of Research and Development*, 3, 282–287.

- **Friedman**, G. J. (1959). Digital simulation of an evolutionary process. *General Systems Yearbook*, 4, 171–184
- **Friedman**, J., Hastie, T., and Tibshirani, R. (2000). Additive logistic regression: A statistical view of boosting. *Annals of Statistics*, 28, 337–374.
- **Friedman**, J. (2001). Greedy function approximation: A gradient boosting machine. *Annals of statistics*, 29, 1189–1232.
- **Friedman**, N. (1998). The Bayesian structural EM algorithm. In *UAI-98*.
- **Friedman**, N. and Goldszmidt, M. (1996). Learning Bayesian networks with local structure. In *UAI-96*.
- **Friedman**, N. and Koller, D. (2003). Being Bayesian about Bayesian network structure: A Bayesian approach to structure discovery in Bayesian networks. *Machine Learning*, 50, 95–125.
- **Friedman**, N., Murphy, K., and Russell, S. J. (1998). Learning the structure of dynamic probabilistic networks. In *UAI-98*.
- Friedman, N. (2004). Inferring cellular networks using probabilistic graphical models. *Science*, 303.
- **Fruhwirth**, T. and Abdennadher, S. (2003). *Essentials of constraint programming*. Cambridge University Press.
- **Fuchs**, J. J., Gasquet, A., Olalainty, B., and Currie, K. W. (1990). PlanERS-1: An expert planning system for generating spacecraft mission plans. In *First International Conference on Expert Planning Systems*. Institute of Electrical Engineers.
- **Fudenberg**, D. and Tirole, J. (1991). *Game theory*. MIT Press
- **Fukunaga**, A. S., Rabideau, G., Chien, S., and Yan, D. (1997). ASPEN: A framework for automated planning and scheduling of spacecraft control and operations. In *Proc. International Symposium on AI, Robotics and Automation in Space*.
- **Fukushima**, K. (1980). Neocognitron: A self-organizing neural network model for a mechanism of pattern recognition unaffected by shift in position. *Biological Cybernetics*, *36*, 193–202.
- **Fukushima**, K. and Miyake, S. (1982). Neocognitron: A self-organizing neural network model for a mechanism of visual pattern recognition. In *Competition and cooperation in neural nets*. Springer.
- Fuller, S. B., Straw, A. D., Peek, M. Y., Murray, R. M., and Dickinson, M. H. (2014). Flying Drosophila stabilize their vision-based velocity controller by sensing wind with their antennae. *Proc. National Academy of Sciences of the United States of America*, 111 13, E1182–91.
- **Fung**, C., Yoon, C. J. M., and Beschastnikh, I. (2018). Mitigating sybils in federated learning poisoning. arXiv:1808.04866.
- **Fung**, R. and Chang, K. C. (1989). Weighting and integrating evidence for stochastic simulation in Bayesian networks. In *UAI 5*.
- **Gaddum**, J. H. (1933). Reports on biological standard III: Methods of biological assay depending on a quantal response. Special report series of the medical research council, Medical Research Council.
- **Gaifman**, H. (1964a). Concerning measures in first order calculi. *Israel J. Mathematics*, 2, 1–18.
- **Gaifman**, H. (1964b). Concerning measures on Boolean algebras. *Pacific J. Mathematics*, 14, 61–73.
- Gallaire, H. and Minker, J. (Eds.). (1978). *Logic and Databases*. Plenum.
- Gallier, J. H. (1986). Logic for Computer Science: Foundations of Automatic Theorem Proving. Harper and Pow
- **Galton**, F. (1886). Regression towards mediocrity in hereditary stature. *J. Anthropological Institute of Great Britain and Ireland*, *15*, 246–263.

- Gamba, A., Gamberini, L., Palmieri, G., and Sanna, R. (1961). Further experiments with PAPA. *Nuovo Cimento Supplemento*, 20, 221–231.
- **Gandomi**, A. and Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International journal of information management*, 35, 137–144.
- **Gao**, J. (2014). Machine learning applications for data center optimization. Google Research.
- García, J. and Fernández, F. (2015). A comprehensive survey on safe reinforcement learning. *JMLR*, 16, 1437–1480.
- **Gardner**, M. (1968). *Logic Machines, Diagrams and Boolean Algebra*. Dover.
- Garey, M. R. and Johnson, D. S. (1979). *Computers and Intractability*. W. H. Freeman.
- **Gaschnig**, J. (1977). A general backtrack algorithm that eliminates most redundant tests. In *IJCAI-77*.
- Gaschnig, J. (1979). Performance measurement and analysis of certain search algorithms. Technical report, Computer Science Department, Carnegie-Mellon University.
- Gasser, R. (1995). Efficiently harnessing computational resources for exhaustive search. Ph.D. thesis, ETH Zürich.
- Gat, E. (1998). Three-layered architectures. In Kortenkamp, D., Bonasso, R. P., and Murphy, R. (Eds.), Al-based Mobile Robots: Case Studies of Successful Robot Systems. MIT Press.
- **Gatys**, L. A., Ecker, A. S., and Bethge, M. (2016). Image style transfer using convolutional neural networks. In *CVPR-16*.
- Gauci, J., Conti, E., Liang, Y., Virochsiri, K., He, Y., Kaden, Z., Narayanan, V., and Ye, X. (2018). Horizon: Facebook's open source applied reinforcement learning platform. arXiv:1811.00260.
- Gauss, C. F. (1809). Theoria Motus Corporum Coelestium in Sectionibus Conicis Solem Ambientium. Sumtibus F. Perthes et I. H. Besser, Hamburg.
- **Gauss**, C. F. (1829). Beiträge zur theorie der algebraischen gleichungen. *Werke*, *3*, 71–102.
- **Gazzaniga**, M. (2018). *The Consciousness Instinct*. Farrar, Straus and Girou.
- Gebru, T., Morgenstern, J., Vecchione, B., Vaughan, J. W., Wallach, H. M., III, H. D., and Crawford, K. (2018). Datasheets for datasets. arXiv:1803.09010.
- Geiger, D., Verma, T., and Pearl, J. (1990a). d-separation: From theorems to algorithms. In Henrion, M., Shachter, R. D., Kanal, L. N., and Lemmer, J. F. (Eds.), *UAI-90*. Elsevier.
- **Geiger**, D., Verma, T., and Pearl, J. (1990b). Identifying independence in Bayesian networks. *Networks*, 20, 507–534.
- **Gelb**, A. (1974). Applied Optimal Estimation. MIT Press.
- Gelernter, H. (1959). Realization of a geometrytheorem proving machine. In *Proc. an Interna*tional Conference on Information Processing. UN-ESCO House.
- **Gelfond**, M. and Lifschitz, V. (1988). Compiling circumscriptive theories into logic programs. In *Non-Monotonic Reasoning: 2nd International Workshop Proceedings*.
- **Gelfond**, M. (2008). Answer sets. In van Harmelan, F., Lifschitz, V., and Porter, B. (Eds.), *Handbook of Knowledge Representation*. Elsevier.
- **Gelman**, A. (2004). Exploratory data analysis for complex models. *Journal of Computational and Graphical Statistics*, 13, 755–779.
- Gelman, A., Carlin, J. B., Stern, H. S., and Rubin, D. (1995). *Bayesian Data Analysis*. Chapman & Hall.

- **Geman**, S. and Geman, D. (1984). Stochastic relaxation, Gibbs distributions, and Bayesian restoration of images. *PAMI*, 6, 721–741.
- **Gene Ontology Consortium**, The. (2008). The gene ontology project in 2008. *Nucleic Acids Research*, *36*(D440–D444).
- **Genesereth**, M. R. (1984). The use of design descriptions in automated diagnosis. *AIJ*, 24, 411–436.
- Genesereth, M. R. and Nilsson, N. J. (1987). Logical Foundations of Artificial Intelligence. Morgan Kaufmann
- **Genesereth**, M. R. and Nourbakhsh, I. (1993). Timesaving tips for problem solving with incomplete information. In *AAAI-93*.
- **Genesereth**, M. R. and Smith, D. E. (1981). Metalevel architecture. Memo, Computer Science Department, Stanford University.
- Gent, I., Petrie, K., and Puget, J.-F. (2006). Symmetry in constraint programming. In Rossi, F., van Beek, P., and Walsh, T. (Eds.), *Handbook of Constraint Programming*. Elsevier.
- **Géron**, A. (2019). Hands-On Machine Learning with Scikit-Learn, Kerasm and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems. O'Reilly.
- **Gers**, F. A., Schmidhuber, J., and Cummins, F. (2000). Learning to forget: Continual prediction with LSTM. *Neural Computation*, *12*, 2451–2471.
- **Getoor**, L. and Taskar, B. (Eds.). (2007). *Introduction to Statistical Relational Learning*. MIT Press.
- **Ghaheri**, A., Shoar, S., Naderan, M., and Hoseini, S. S. (2015). The applications of genetic algorithms in medicine. *Oman medical journal*, *30*, 406–416.
- Ghahramani, Z. (1998). Learning dynamic Bayesian networks. In Adaptive Processing of Sequences and Data Structures.
- **Ghahramani**, Z. (2005). Tutorial on nonparametric Bayesian methods. Given at the UAI-05 Conference.
- Ghallab, M., Howe, A., Knoblock, C. A., and McDermott, D. (1998). PDDL—The planning domain definition language. Tech. rep., Yale Center for Computational Vision and Control.
- **Ghallab**, M. and Laruelle, H. (1994). Representation and control in IxTeT, a temporal planner. In *AIPS-94*.
- **Ghallab**, M., Nau, D. S., and Traverso, P. (2004). *Automated Planning: Theory and practice*. Morgan
- **Ghallab**, M., Nau, D. S., and Traverso, P. (2016). *Automated Planning and aAting*. Cambridge University Press.
- **Gibbs**, R. W. (2006). Metaphor interpretation as embodied simulation. *Mind*, 21, 434–458.
- **Gibson**, J. J. (1950). *The Perception of the Visual World*. Houghton Mifflin.
- **Gibson**, J. J. (1979). *The Ecological Approach to Visual Perception*. Houghton Mifflin.
- **Gibson**, J. J., Olum, P., and Rosenblatt, F. (1955). Parallax and perspective during aircraft landings. *American Journal of Psychology*, 68, 372–385.
- Gilks, W. R., Richardson, S., and Spiegelhalter, D. J. (Eds.). (1996). *Markov chain Monte Carlo in practice*. Chapman and Hall.
- **Gilks**, W. R., Thomas, A., and Spiegelhalter, D. J. (1994). A language and program for complex Bayesian modelling. *The Statistician*, 43, 169–178.
- Gilks, W. R. and Berzuini, C. (2001). Following a moving target—Monte Carlo inference for dynamic Bayesian models. J. Royal Statistical Society, 63, 127– 146.

- Gilks, W. R. and Wild, P. P. (1992). Adaptive rejection sampling for Gibbs sampling. *Applied Statistics*, 41, 337–348.
- Gillies, D. B. (1959). Solutions to general non-zerosum games. In Tucker, A. W. and Luce, L. D. (Eds.), Contributions to the Theory of Games, volume IV. Princeton University Press.
- **Gilmore**, P. C. (1960). A proof method for quantification theory: Its justification and realization. *IBM Journal of Research and Development*, 4, 28–35.
- **Gilpin**, A., Sandholm, T., and Sorensen, T. (2008). A heads-up no-limit Texas Hold'em poker player: Discretized betting models and automatically generated equilibrium-finding programs. In *AAMAS-08*.
- **Ginsberg**, M. L. (1993). *Essentials of Artificial Intelligence*. Morgan Kaufmann.
- **Ginsberg**, M. L. (2001). GIB: Imperfect infoormation in a computationally challenging game. *JAIR*, *14*, 303–358
- **Gionis**, A., Indyk, P., and Motwani, R. (1999). Similarity search in high dimensions vis hashing. In *Proc.* 25th Very Large Database (VLDB) Conference.
- **Girshick**, R., Donahue, J., Darrell, T., and Malik, J. (2016). Region-based convolutional networks for accurate object detection and segmentation. *PAMI*, 38, 142–58.
- Gittins, J. C. (1989). Multi-Armed Bandit Allocation Indices. Wiley.
- Gittins, J. C. and Jones, D. M. (1974). A dynamic allocation index for the sequential design of experiments. In Gani, J. (Ed.), *Progress in Statistics*. North-Holland.
- **Glanc**, A. (1978). On the etymology of the word "robot". *SIGART Newsletter*, 67, 12.
- **Glickman**, M. E. (1999). Parameter estimation in large dynamic paired comparison experiments. *Applied Statistics*, 48, 377–394.
- **Glorot**, X., Bordes, A., and Bengio, Y. (2011). Deep sparse rectifier neural networks. In *AISTATS* '2011.
- **Glover**, F. and Laguna, M. (Eds.). (1997). *Tabu search*. Kluwer.
- **Gluss**, B. (1959). An optimum policy for detecting a fault in a complex system. *Operations Research*, 7, 468–477.
- Godefroid, P. (1990). Using partial orders to improve automatic verification methods. In *Proc. 2nd Int'l Workshop on Computer Aided Verification*.
- Gödel, K. (1930). Über die Vollständigkeit des Logikkalküls. Ph.D. thesis, University of Vienna.
- Gödel, K. (1931). Über formal unentscheidbare Sätze der Principia mathematica und verwandter Systeme I. Monatshefte für Mathematik und Physik, 38, 173–198.
- Goebel, J., Volk, K., Walker, H., and Gerbault, F. (1989). Automatic classification of spectra from the infrared astronomical satellite (IRAS). Astronomy and Astrophysics, 222, L5–L8.
- **Goertzel**, B. and Pennachin, C. (2007). *Artificial General Intelligence*. Springer.
- Gogate, V. and Domingos, P. (2011). Approximation by quantization. In UAI-11.
- **Gold**, E. M. (1967). Language identification in the limit. *Information and Control*, 10, 447–474.
- **Goldberg**, A. V., Kaplan, H., and Werneck, R. F. (2006). Reach for A\*: Efficient point-to-point shortest path algorithms. In Workshop on algorithm engineering and experiments.
- Goldberg, Y. (2017). Neural network methods for natural language processing. *Synthesis Lectures on Human Language Technologies*, 10.
- **Goldberg**, Y., Zhao, K., and Huang, L. (2013). Efficient implementation of beam-search incremental parsers. In *ACL-13*.

- **Goldman**, R. and Boddy, M. (1996). Expressive planning and explicit knowledge. In *AIPS-96*.
- **Goldszmidt**, M. and Pearl, J. (1996). Qualitative probabilities for default reasoning, belief revision, and causal modeling. *AIJ*, *84*, 57–112.
- **Golomb**, S. and Baumert, L. (1965). Backtrack proramming. *JACM*, *14*, 516–524.
- **Golub**, G., Heath, M., and Wahba, G. (1979). Generalized cross-validation as a method for choosing a good ridge parameter. *Technometrics*, 21.
- **Gomes**, C., Selman, B., Crato, N., and Kautz, H. (2000). Heavy-tailed phenomena in satisfiability and constrain processing. *JAR*, 24, 67–100.
- Gomes, C., Kautz, H., Sabharwal, A., and Selman, B. (2008). Satisfiability solvers. In van Harmelen, F., Lifschitz, V., and Porter, B. (Eds.), *Handbook of Knowledge Representation*. Elsevier.
- **Gomes**, C. and Selman, B. (2001). Algorithm portfolios. *AIJ*, *126*, 43–62.
- Gomes, C., Selman, B., and Kautz, H. (1998). Boosting combinatorial search through randomization. In *AAAI-98*.
- **Gonthier**, G. (2008). Formal proof–The four-color theorem. *Notices of the AMS*, *55*, 1382–1393.
- **Good**, I. J. (1961). A causal calculus. *British Journal of the Philosophy of Science*, 11, 305–318.
- **Good**, I. J. (1965a). The mystery of Go. *New Scientist*, 427, 172–174.
- Good, I. J. (1965b). Speculations concerning the first ultraintelligent machine. In Alt, F. L. and Rubinoff, M. (Eds.), *Advances in Computers*, Vol. 6. Academic Press.
- **Good**, I. J. (1983). *Good Thinking: The Foundations of Probability and Its Applications*. University of Minnesota Press.
- **Goodfellow**, I., Bengio, Y., and Courville, A. (2016). *Deep Learning*. MIT Press.
- Goodfellow, I., Bulatov, Y., Ibarz, J., Arnoud, S., and Shet, V. (2014). Multi-digit number recognition from Street View imagery using deep convolutional neural networks. In *International Conference on Learning Representations*.
- Goodfellow, I., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., Courville, A., and Bengio, Y. (2015a). Generative adversarial nets. In *NeurIPS 27*.
- **Goodfellow**, I., Vinyals, O., and Saxe, A. M. (2015b). Qualitatively characterizing neural network optimization problems. In *International Conference on Learning Representations*.
- **Goodman**, J. (2001). A bit of progress in language modeling. Tech. rep., Microsoft Research.
- **Goodman**, N. D., Mansinghka, V. K., Roy, D., Bonawitz, K., and Tenenbaum, J. B. (2008). Church: A language for generative models. In *UAI-08*.
- **Goodman**, N. (1977). *The Structure of Appearance* (3rd edition). D. Reidel.
- Gopnik, A. and Glymour, C. (2002). Causal maps and Bayes nets: A cognitive and computational account of theory-formation. In Caruthers, P., Stich, S., and Siegal, M. (Eds.), *The Cognitive Basis of Science*. Cambridge University Press.
- Gordon, A. D., Graepel, T., Rolland, N., Russo, C., Borgström, J., and Guiver, J. (2014). Tabular: A schema-driven probabilistic programming language. In *POPL-14*.
- **Gordon**, A. S. and Hobbs, J. R. (2017). A Formal Theory of Commonsense Psychology: How People Think People Think. Cambridge University Press.
- **Gordon**, M. J., Milner, A. J., and Wadsworth, C. P. (1979). *Edinburgh LCF*. Springer-Verlag.

- **Gordon**, N. (1994). *Bayesian methods for tracking*. Ph.D. thesis, Imperial College.
- **Gordon**, N., Salmond, D. J., and Smith, A. F. M. (1993). Novel approach to nonlinear/non-Gaussian Bayesian state estimation. *IEE Proceedings F (Radar and Signal Processing)*, 140, 107–113.
- **Gordon**, S. A. (1994). A faster Scrabble move generation algorithm. *Software Practice and Experience*, 24, 219–232.
- Gorry, G. A. (1968). Strategies for computer-aided diagnosis. *Math. Biosciences*, 2, 293–318.
- **Gorry**, G. A., Kassirer, J. P., Essig, A., and Schwartz, W. B. (1973). Decision analysis as the basis for computer-aided management of acute renal failure. *American Journal of Medicine*, 55, 473–484.
- **Gottlob**, G., Leone, N., and Scarcello, F. (1999a). A comparison of structural CSP decomposition methods. In *IJCAI-99*.
- **Gottlob**, G., Leone, N., and Scarcello, F. (1999b). Hypertree decompositions and tractable queries. In *PODS*-99.
- **Goyal**, Y., Khot, T., Summers-Stay, D., Batra, D., and Parikh, D. (2017). Making the V in VQA matter: Elevating the role of image understanding in visual question answering. In *CVPR-17*.
- **Grace**, K., Salvatier, J., Dafoe, A., Zhang, B., and Evans, O. (2017). When will AI exceed human performance? Evidence from AI experts. arXiv:1705.08807.
- Graham, S. L., Harrison, M. A., and Ruzzo, W. L. (1980). An improved context-free recognizer. ACM Transactions on Programming Languages and Systems, 2, 415–462.
- **Grassmann**, H. (1861). *Lehrbuch der Arithmetik*. Th. Chr. Fr. Enslin, Berlin.
- **Grayson**, C. J. (1960). Decisions under uncertainty: Drilling decisions by oil and gas operators. Tech. rep., Harvard Business School.
- **Green**, B., Wolf, A., Chomsky, C., and Laugherty, K. (1961). BASEBALL: An automatic question answerer. In *Proc. Western Joint Computer Conference*.
- **Green**, C. (1969a). Application of theorem proving to problem solving. In *IJCAI-69*.
- **Green**, C. (1969b). Theorem-proving by resolution as a basis for question-answering systems. In Meltzer, B., Michie, D., and Swann, M. (Eds.), *Machine Intelligence 4*. Edinburgh University Press.
- **Green**, C. and Raphael, B. (1968). The use of theoremproving techniques in question-answering systems. In *Proc. 23rd ACM National Conference*.
- **Gribkoff**, E., Van den Broeck, G., and Suciu, D. (2014). Understanding the complexity of lifted inference and asymmetric weighted model counting. In *UAI-14*.
- **Griffiths**, T. L., Kemp, C., and Tenenbaum, J. B. (2008). Bayesian models of cognition. In Sun, R. (Ed.), *The Cambridge handbook of computational cognitive modeling*. Cambridge University Press.
- **Grinstead**, C. and Snell, J. (1997). *Introduction to Probability*. American Mathematical Society.
- **Grosz**, B. J. and Stone, P. (2018). A century long commitment to assessing artificial intelligence and its impact on society. *Communications of the ACM*, 61.
- Grove, W. and Meehl, P. (1996). Comparative efficiency of informal (subjective, impressionistic) and formal (mechanical, algorithmic) prediction procedures: The clinical statistical controversy. *Psychology, Public Policy, and Law, 2, 293–323.*
- **Gruber**, T. (2004). Interview of Tom Gruber. *AIS SIGSEMIS Bulletin*, 1.
- **Gu**, J. (1989). Parallel Algorithms and Architectures for Very Fast AI Search. Ph.D. thesis, Univ. of Utah.

- **Guard**, J., Oglesby, F., Bennett, J., and Settle, L. (1969). Semi-automated mathematics. *JACM*, *16*, 49–62
- **Guestrin**, C., Koller, D., Gearhart, C., and Kanodia, N. (2003a). Generalizing plans to new environments in relational MDPs. In *IJCAI-03*.
- **Guestrin**, C., Koller, D., Parr, R., and Venkataraman, S. (2003b). Efficient solution algorithms for factored MDPs. *JAIR*, *19*, 399–468.
- **Guestrin**, C., Lagoudakis, M. G., and Parr, R. (2002). Coordinated reinforcement learning. In *ICML-02*.
- **Guibas**, L. J., Knuth, D. E., and Sharir, M. (1992). Randomized incremental construction of Delaunay and Voronoi diagrams. *Algorithmica*, 7, 381–413.
- Gulshan, V., Peng, L., Coram, M., Stumpe, M. C., Wu, D., Narayanaswamy, A., Venugopalan, S., Widner, K., Madams, T., Cuadros, J., et al. (2016). Development and validation of a deep learning algorithm for detection of diabetic retinopathy in retinal fundus photographs. *Jama*, 316, 2402–2410.
- Gunkel, D. J. (2018). Robot Rights. MIT Press.
- **Gunning**, D. (2016). Explainable artificial intelligence (xai). Tech. rep., DARPA.
- **Guo**, C., Goldstein, T., Hannun, A., and van der Maaten, L. (2019). Certified data removal from machine learning models. arXiv:1911.03030.
- **Gururangan**, S., Swayamdipta, S., Levy, O., Schwartz, R., Bowman, S., and Smith, N. A. (2018). Annotation artifacts in natural language inference data. arXiv:1803.02324.
- Guyon, I., Bennett, K., Cawley, G. C., Escalante, H. J., Escalera, S., Ho, T. K., Macià, N., Ray, B., Saeed, M., Statnikov, A. R., and Viegas, E. (2015). Design of the 2015 ChaLearn AutoML challenge. In *IJCNN-15*.
- **Guyon**, I. and Elisseeff, A. (2003). An introduction to variable and feature selection. *JMLR*, *3*, 1157–1182.
- **Hacking**, I. (1975). *The Emergence of Probability*. Cambridge University Press.
- **Hadfield-Menell**, D., Dragan, A. D., Abbeel, P., and Russell, S. J. (2017a). Cooperative inverse reinforcement learning. In *NeurIPS 29*.
- **Hadfield-Menell**, D., Dragan, A. D., Abbeel, P., and Russell, S. J. (2017b). The off-switch game. In *IJCAI-17*
- **Hadfield-Menell**, D. and Russell, S. J. (2015). Multitasking: Efficient optimal planning for bandit superprocesses. In *UAI-15*.
- **Hailperin**, T. (1984). Probability logic. *Notre Dame J. Formal Logic*, 25, 198–212.
- Hald, A. (1990). A History of Probability and Statistics and Their Applications before 1750. Wiley.
- Hales, T. (2005). A proof of the Kepler conjecture. *Annals of mathematics*, 162, 1065–1185.
- Hales, T., Adams, M., Bauer, G., Dang, T. D., Harrison, J., Le Truong, H., Kaliszyk, C., Magron, V., McLaughlin, S., Nguyen, T. T., et al. (2017). A formal proof of the Kepler conjecture. In Forum of Mathematics, Pi.
- **Halevy**, A. (2007). Dataspaces: A new paradigm for data integration. In *Brazilian Symposium on Databases*.
- Halevy, A., Norvig, P., and Pereira, F. (2009). The unreasonable effectiveness of data. *IEEE Intelligent Systems*, *March/April*, 8–12.
- **Halpern**, J. Y. (1990). An analysis of first-order logics of probability. *AIJ*, 46, 311–350.
- Halpern, J. Y. (1999). Technical addendum, Cox's theorem revisited. *JAIR*, 11, 429–435.
- **Halpern**, J. Y. and Weissman, V. (2008). Using first-order logic to reason about policies. *ACM Transactions on Information and System Security*, 11, 1–41.

Hammersley, J. M. and Handscomb, D. C. (1964). Monte Carlo Methods. Methuen.

Han, J., Pei, J., and Kamber, M. (2011). *Data Mining: Concepts and Techniques*. Elsevier.

**Han**, X. and Boyden, E. (2007). Multiple-color optical activation, silencing, and desynchronization of neural activity, with single-spike temporal resolution. *PLoS One*, *e299*.

**Handschin**, J. E. and Mayne, D. Q. (1969). Monte Carlo techniques to estimate the conditional expectation in multi-stage nonlinear filtering. *Int. J. Control*, 9.547–559.

Hans, A., Schneegaß, D., Schäfer, A. M., and Udluft, S. (2008). Safe exploration for reinforcement learning. In *ESANN*.

**Hansen**, E. (1998). Solving POMDPs by searching in policy space. In *UAI-98*.

**Hansen**, E. and Zilberstein, S. (2001). LAO\*: a heuristic search algorithm that finds solutions with loops. *AIJ*, 129, 35–62.

**Hansen**, P. and Jaumard, B. (1990). Algorithms for the maximum satisfiability problem. *Computing*, 44, 279–303.

Hanski, I. and Cambefort, Y. (Eds.). (1991). *Dung Beetle Ecology*. Princeton University Press.

**Hansson**, O. and Mayer, A. (1989). Heuristic search as evidential reasoning. In *UAI 5*.

**Haralick**, R. M. and Elliott, G. L. (1980). Increasing tree search efficiency for constraint satisfaction problems. *AIJ*, *14*, 263–313.

**Hardin**, G. (1968). The tragedy of the commons. *Science*, *162*, 1243–1248.

**Hardt**, M., Price, E., Srebro, N., *et al.* (2017). Equality of opportunity in supervised learning. In *NeurIPS* 

Harris, T. (2016). How technology is hijacking your mind—From a magician and Google design ethicist. medium.com/thrive-global/how-technology-hijacks-peoples-minds-from-a-magician-and-google-s-design-ethicist-56d62ef5edf3.

Harris, Z. (1954). Distributional structure. Word, 10.

Harrison, J. and March, J. G. (1984). Decision making and postdecision surprises. *Administrative Science Ouarterly*, 29, 26–42.

**Harrow**, A. W., Hassidim, A., and Lloyd, S. (2009). Quantum algorithm for linear systems of equations. *Physical Review Letters*, *103 15*, 150502.

**Harsanyi**, J. (1967). Games with incomplete information played by Bayesian players. *Management Science*, *14*, 159–182.

Hart, P. E., Nilsson, N. J., and Raphael, B. (1968). A formal basis for the heuristic determination of minimum cost paths. *IEEE Transactions on Systems Science and Cybernetics*, SSC-4(2), 100–107.

Hart, T. P. and Edwards, D. J. (1961). The tree prune (TP) algorithm. Artificial intelligence project memo, MIT.

**Hartley**, H. (1958). Maximum likelihood estimation from incomplete data. *Biometrics*, 14, 174–194.

**Hartley**, R. and Zisserman, A. (2000). *Multiple view geometry in computer vision*. Cambridge University Press

**Hashimoto**, K., Xiong, C., Tsuruoka, Y., and Socher, R. (2016). A joint many-task model: Growing a neural network for multiple NLP tasks. arXiv:1611.01587.

**Haslum**, P., Botea, A., Helmert, M., Bonet, B., and Koenig, S. (2007). Domain-independent construction of pattern database heuristics for cost-optimal planning. In *AAAI-07*.

**Haslum**, P. and Geffner, H. (2001). Heuristic planning with time and resources. In *Proc. IJCAI-01 Workshop on Planning with Resources*.

**Haslum**, P. (2006). Improving heuristics through relaxed search – An analysis of TP4 and HSP\*a in the 2004 planning competition. *JAIR*, 25, 233–267.

**Hastie**, T. and Tibshirani, R. (1996). Discriminant adaptive nearest neighbor classification and regression. In *NeurIPS* 8.

Hastie, T., Tibshirani, R., and Friedman, J. (2009). *The Elements of Statistical Learning: Data Mining, Inference and Prediction* (2nd edition). Springer-Verlag.

**Hastings**, W. K. (1970). Monte Carlo sampling methods using Markov chains and their applications. *Biometrika*, 57, 97–109.

**Hatem**, M. and Ruml, W. (2014). Simpler bounded suboptimal search. In *AAAI-14*.

Haugeland, J. (1985). Artificial Intelligence: The Very Idea. MIT Press.

Havelund, K., Lowry, M., Park, S., Pecheur, C., Penix, J., Visser, W., and White, J. L. (2000). Formal analysis of the remote agent before and after flight. In *Proc. 5th NASA Langley Formal Methods Workshop*.

**Havenstein**, H. (2005). Spring comes to AI winter. *Computer World*, Fe. 14.

**Hawkins**, J. (1961). Self-organizing systems: A review and commentary. *Proc. IRE*, 49, 31–48.

**Hay**, N., Russell, S. J., Shimony, S. E., and Tolpin, D. (2012). Selecting computations: Theory and applications. In *UAI-12*.

Hayes, P. J. (1978). The naive physics manifesto. In Michie, D. (Ed.), *Expert Systems in the Microelectronic Age*. Edinburgh University Press.

**Hayes**, P. J. (1979). The logic of frames. In Metzing, D. (Ed.), *Frame Conceptions and Text Understanding*. de Gruyter.

Hayes, P. J. (1985a). Naive physics I: Ontology for liquids. In Hobbs, J. R. and Moore, R. C. (Eds.), Formal Theories of the Commonsense World, chap. 3. Ablex.

Hayes, P. J. (1985b). The second naive physics manifesto. In Hobbs, J. R. and Moore, R. C. (Eds.), Formal Theories of the Commonsense World, chap. 1. Ablex.

Hays, J. and Efros, A. (2007). Scene completion Using millions of photographs. ACM Transactions on Graphics (SIGGRAPH), 26.

He, H., Bai, Y., Garcia, E. A., and Li, S. (2008). ADASYN: Adaptive synthetic sampling approach for international learning. In 2008 IEEE International Joint Conference on Neural Networks (IEEE World Congress on Computational Intelligence).

**He**, K., Zhang, X., Ren, S., and Sun, J. (2016). Deep residual learning for image recognition. In *CVPR-16*.

**Heawood**, P. J. (1890). Map colouring theorem. *Quarterly Journal of Mathematics*, 24, 332–338.

**Hebb**, D. O. (1949). *The Organization of Behavior*. Wiley

**Heckerman**, D. (1986). Probabilistic interpretation for MYCIN's certainty factors. In Kanal, L. N. and Lemmer, J. F. (Eds.), *UAI* 2. Elsevier.

**Heckerman**, D. (1991). *Probabilistic Similarity Networks*. MIT Press.

**Heckerman**, D. (1998). A tutorial on learning with Bayesian networks. In Jordan, M. I. (Ed.), *Learning in graphical models*. Kluwer.

**Heckerman**, D., Geiger, D., and Chickering, D. M. (1994). Learning Bayesian networks: The combination of knowledge and statistical data. Technical report, Microsoft Research.

**Heess**, N., Wayne, G., Silver, D., Lillicrap, T., Erez, T., and Tassa, Y. (2016). Learning continuous control policies by stochastic value gradients. In *NeurIPS* 28.

Heidegger, M. (1927). Being and Time. SCM Press.

Heinlein, R. A. (1973). Time Enough for Love. Putnam

**Held**, M. and Karp, R. M. (1970). The traveling salesman problem and minimum spanning trees. *Operations Research*, 18, 1138–1162.

**Helmert**, M. (2001). On the complexity of planning in transportation domains. In ECP-01.

**Helmert**, M. (2006). The fast downward planning system. *JAIR*. 26. 191–246.

**Helmert**, M. and Röger, G. (2008). How good is almost perfect? In *AAAI-08*.

**Helmert**, M., Röger, G., and Karpas, E. (2011). Fast downward stone soup: A baseline for building planner portfolios. In *ICAPS*.

**Hendeby**, G., Karlsson, R., and Gustafsson, F. (2010). Particle filtering: The need for speed. *EURASIP J. Adv. Sig. Proc.*, *June*.

**Henrion**, M. (1988). Propagation of uncertainty in Bayesian networks by probabilistic logic sampling. In Lemmer, J. F. and Kanal, L. N. (Eds.), *UAI 2*. Elsevier.

Henzinger, T. A. and Sastry, S. (Eds.). (1998). *Hybrid Systems: Computation and Control*. Springer-Verlag.

**Herbrand**, J. (1930). *Recherches sur la Théorie de la Démonstration*. Ph.D. thesis, University of Paris.

**Herbrich**, R., Minka, T., and Graepel, T. (2007). TrueSkill: A Bayesian skill rating system. In *NeurIPS* 19.

**Hernández-Orallo**, J. (2016). Evaluation in artificial intelligence: From task-oriented to ability-oriented measurement. *Artificial Intelligence Review*, 48, 397–447

**Hess**, C. and Ostrom, E. (2007). *Understanding Knowledge as a Commons*. MIT Press.

**Hewitt**, C. (1977). Viewing control structures as patterns of passing messages. *AIJ*, 8, 323–364.

**Hewitt**, C. (1969). PLANNER: a language for proving theorems in robots. In *IJCAI-69*.

**Hezaveh**, Y. D., Levasseur, L. P., and Marshall, P. J. (2017). Fast automated analysis of strong gravitational lenses with convolutional neural networks. *Nature*, 548, 555–557.

**Hierholzer**, C. (1873). Über die Möglichkeit, einen Linienzug ohne Wiederholung und ohne Unterbrechung zu umfahren. *Mathematische Annalen*, 6, 30–32

**Hilbert**, M. and Lopez, P. (2011). The world's technological capacity to store, communicate, and compute information. *Science*, *332*, 60–65.

**Hilgard**, E. R. and Bower, G. H. (1975). *Theories of Learning* (4th edition). Prentice-Hall.

Hind, M., Mehta, S., Mojsilovic, A., Nair, R., Ramamurthy, K. N., Olteanu, A., and Varshney, K. R. (2018). Increasing trust in AI services through supplier's declarations of conformity. arXiv:1808.07261.

**Hintikka**, J. (1962). *Knowledge and Belief*. Cornell University Press.

**Hinton**, G. E. and Anderson, J. A. (1981). *Parallel Models of Associative Memory*. Lawrence Erlbaum.

**Hinton**, G. E. and Nowlan, S. J. (1987). How learning can guide evolution. *Complex Systems*, 1, 495–502.

**Hinton**, G. E. and Sejnowski, T. (1983). Optimal perceptual inference. In *CVPR-83*.

Hinton, G. E. and Sejnowski, T. (1986). Learning and relearning in Boltzmann machines. In Rumelhart, D. E. and McClelland, J. L. (Eds.), *Parallel Distributed Processing*. MIT Press.

Hinton, G. E. (1987). Learning translation invariant recognition in a massively parallel network. In Goos, G. and Hartmanis, J. (Eds.), PARLE: Parallel Architectures and Languages Europe. Springer-Verlag.

- Hinton, G. E., Deng, L., Yu, D., Dahl, G., Mohamed, A. R., Jaitly, N., Senior, A., Vanhoucke, V., Nguyen, P., Sainath, T., and Kingsbury, B. (2012). Deep neural networks for acoustic modeling in speech recognition. *Signal Processing Magazine*, 29, 82 97.
- **Hinton**, G. E., Osindero, S., and Teh, Y. W. (2006). A fast learning algorithm for deep belief nets. *Neural Computation*, 18, 1527–1554.
- Hirth, M., Hoßfeld, T., and Tran-Gia, P. (2013). Analyzing costs and accuracy of validation mechanisms for crowdsourcing platforms. *Mathematical and Computer Modelling*, 57, 2918–2932.
- **Ho**, M. K., Littman, M. L., MacGlashan, J., Cushman, F., and Austerweil, J. L. (2017). Showing versus doing: Teaching by demonstration. In *NeurIPS* 29.
- **Ho**, T. K. (1995). Random decision forests. In *Proc.* 3rd Int'l Conf. on Document Analysis and Recognition.
- **Hobbs**, J. R. (1990). *Literature and Cognition*. CSLI Press.
- **Hobbs**, J. R. and Moore, R. C. (Eds.). (1985). *Formal Theories of the Commonsense World*. Ablex.
- **Hochreiter**, S. (1991). Untersuchungen zu dynamischen neuronalen Netzen. Diploma thesis, Technische Universität München.
- **Hochreiter**, S. and Schmidhuber, J. (1997). Long short-term memory. *Neural Computation*, 9, 1735–1780.
- **Hoffman**, M., Bach, F. R., and Blei, D. M. (2011). Online learning for latent Dirichlet allocation. In *NeurIPS* 23.
- **Hoffmann**, J. (2001). FF: The fast-forward planning system. *AIMag*, 22, 57–62.
- **Hoffmann**, J. and Brafman, R. I. (2006). Conformant planning via heuristic forward search: A new approach. *AIJ*, *170*, 507–541.
- **Hoffmann**, J. and Brafman, R. I. (2005). Contingent planning via heuristic forward search with implicit belief states. In *ICAPS-05*.
- **Hoffmann**, J. (2005). Where "ignoring delete lists" works: Local search topology in planning benchmarks. *JAIR*, 24, 685–758.
- **Hoffmann**, J. and Nebel, B. (2001). The FF planning system: Fast plan generation through heuristic search. *JAIR*, *14*, 253–302.
- **Hoffmann**, J., Sabharwal, A., and Domshlak, C. (2006). Friends or foes? An AI planning perspective on abstraction and search. In *ICAPS-06*.
- **Hofleitner**, A., Herring, R., Abbeel, P., and Bayen, A. M. (2012). Learning the dynamics of arterial traffic from probe data using a dynamic Bayesian network. *IEEE Transactions on Intelligent Transportation Systems*, 13, 1679–1693.
- Hogan, N. (1985). Impedance control: An approach to manipulation. Parts I, II, and III. *J. Dynamic Systems, Measurement, and Control*, 107, 1–24.
- **Hoiem**, D., Efros, A., and Hebert, M. (2007). Recovering surface layout from an image. *IJCV*, 75, 151–172.
- **Holland**, J. H. (1975). *Adaption in Natural and Artificial Systems*. University of Michigan Press.
- **Holland**, J. H. (1995). *Hidden Order: How Adaptation Builds Complexity*. Addison-Wesley.
- **Holte**, R. C., Felner, A., Sharon, G., and Sturtevant, N. R. (2016). Bidirectional search that is guaranteed to meet in the middle. In *AAAI-16*.
- **Holzmann**, G. J. (1997). The Spin model checker. *IEEE Transactions on Software Engineering*, 23, 279–295.
- **Hood**, A. (1824). Case 4th—28 July 1824 (Mr. Hood's cases of injuries of the brain). *Phrenological Journal and Miscellany*, 2, 82–94.

- **Hooker**, J. (1995). Testing heuristics: We have it all wrong. *J. Heuristics*, 1, 33–42.
- Hoos, H. H. and Stützle, T. (2004). Stochastic Local Search: Foundations and Applications. Morgan Kaufmann
- **Hoos**, H. H. and Tsang, E. (2006). Local search methods. In Rossi, F., van Beek, P., and Walsh, T. (Eds.), *Handbook of Constraint Processing*. Elsevier.
- **Hopfield**, J. J. (1982). Neural networks and physical systems with emergent collective computational abilities. *PNAS*, 79, 2554–2558.
- **Horn**, A. (1951). On sentences which are true of direct unions of algebras. *JSL*, 16, 14–21.
- **Horn**, B. K. P. (1970). Shape from shading: A method for obtaining the shape of a smooth opaque object from one view. Technical report, MIT Artificial Intelligence Laboratory.
- Horn, B. K. P. and Brooks, M. J. (1989). *Shape from Shading*. MIT Press.
- Horn, K. V. (2003). Constructing a logic of plausible inference: A guide to Cox's theorem. *IJAR*, *34*, 3–24.
- **Horning**, J. J. (1969). A Study of Grammatical Inference. Ph.D. thesis, Stanford University.
- **Horswill**, I. (2000). Functional programming of behavior-based systems. *Autonomous Robots*, 9, 83–93.
- Horvitz, E. J. (1987). Problem-solving design: Reasoning about computational value, trade-offs, and resources. In *Proc. Second Annual NASA Research Forum*.
- **Horvitz**, E. J. and Barry, M. (1995). Display of information for time-critical decision making. In *UAI-95*.
- **Horvitz**, E. J., Breese, J. S., Heckerman, D., and Hovel, D. (1998). The Lumiere project: Bayesian user modeling for inferring the goals and needs of software users. In *UAI-98*.
- **Horvitz**, E. J., Breese, J. S., and Henrion, M. (1988). Decision theory in expert systems and artificial intelligence. *IJAR*, 2, 247–302.
- **Horvitz**, E. J. and Breese, J. S. (1996). Ideal partition of resources for metareasoning. In *AAAI-96*.
- **Hotelling**, H. (1933). Analysis of a complex of statistical variables into principal components. *J. Ed. Psych.*, 24, 417–441.
- Howard, J. and Gugger, S. (2020). Deep Learning for Coders with fastai and PyTorch. O'Reilly.
- **Howard**, J. and Ruder, S. (2018). Fine-tuned language models for text classification. arXiv:1801.06146.
- **Howard**, R. A. (1960). *Dynamic Programming and Markov Processes*. MIT Press.
- **Howard**, R. A. (1966). Information value theory. *IEEE Transactions on Systems Science and Cybernetics*, SSC-2, 22–26.
- **Howard**, R. A. (1989). Microrisks for medical decision analysis. *Int. J. Technology Assessment in Health Care*, 5, 357–370.
- Howard, R. A. and Matheson, J. E. (1984). Influence diagrams. In Howard, R. A. and Matheson, J. E. (Eds.), Readings on the Principles and Applications of Decision Analysis. Strategic Decisions Group.
- **Howe**, D. (1987). The computational behaviour of Girard's paradox. In *LICS-87*.
- **Howson**, C. (2003). Probability and logic. *J. Applied Logic*, *1*, 151–165.
- **Hsiao**, K., Kaelbling, L. P., and Lozano-Perez, T. (2007). Grasping POMDPs. In *ICRA-07*.
- **Hsu**, F.-H. (2004). Behind Deep Blue: Building the Computer that Defeated the World Chess Champion. Princeton University Press.

- **Hsu**, F.-H., Anantharaman, T. S., Campbell, M. S., and Nowatzyk, A. (1990). A grandmaster chess machine. *Scientific American*, 263, 44–50.
- **Hu**, J. and Wellman, M. P. (1998). Multiagent reinforcement learning: Theoretical framework and an algorithm. In *ICML-98*.
- **Hu**, J. and Wellman, M. P. (2003). Nash Q-learning for general-sum stochastic games. *JMLR*, 4, 1039–1069.
- Huang, T., Koller, D., Malik, J., Ogasawara, G., Rao, B., Russell, S. J., and Weber, J. (1994). Automatic symbolic traffic scene analysis using belief networks. In AAAI-94.
- **Huang**, T. and Russell, S. J. (1998). Object identification: A Bayesian analysis with application to traffic surveillance. *AIJ*, *103*, 1–17.
- **Hubel**, D. H. and Wiesel, T. N. (1962). Receptive fields, binocular interaction and functional architecture in the cat's visual cortex. *J. Physiology*, *160*, 106–154.
- **Hubel**, D. H. and Wiesel, T. N. (1968). Receptive fields and functional architecture of monkey striate cortex. *J. Physiology*, 195, 215–243.
- Hubel, D. H. (1988). Eye, Brain, and Vision. W. H. Freeman
- **Hubel**, D. H. and Wiesel, T. N. (1959). Receptive fields of single neurons in the cat's striate cortex. *Journal of Physiology*, 148, 574–591.
- **Huddleston**, R. D. and Pullum, G. K. (2002). *The Cambridge Grammar of the English Language*. Cambridge University Press.
- **Huffman**, D. A. (1971). Impossible objects as nonsense sentences. In Meltzer, B. and Michie, D. (Eds.), *Machine Intelligence 6*. Edinburgh University Press.
- **Hughes**, B. D. (1995). Random Walks and Random Environments, Vol. 1: Random Walks. Oxford University Press.
- **Hughes**, G. E. and Cresswell, M. J. (1996). *A New Introduction to Modal Logic*. Routledge.
- **Huhns**, M. N. and Singh, M. (Eds.). (1998). *Readings in Agents*. Morgan Kaufmann.
- **Hume**, D. (1739). A Treatise of Human Nature (2nd edition). Republished by Oxford University Press, 1978, Oxford.
- **Humphrys**, M. (2008). How my program passed the Turing test. In Epstein, R., Roberts, G., and Beber, G. (Eds.), *Parsing the Turing Test*. Springer.
- **Hunsberger**, L. and Grosz, B. J. (2000). A combinatorial auction for collaborative planning. In *Int. Conference on Multi-Agent Systems*.
- **Hunt**, W. and Brock, B. (1992). A formal HDL and its use in the FM9001 verification. *Phil. Trans. Roy. Soc.*, 339
- **Hunter**, L. and States, D. J. (1992). Bayesian classification of protein structure. *IEEE Expert*, 7, 67–75.
- **Hur**, C.-K., Nori, A. V., Rajamani, S. K., and Samuel, S. (2014). Slicing probabilistic programs. In *PLDI-14*.
- **Hurst**, M. (2000). *The Interpretation of Text in Tables*. Ph.D. thesis, Edinburgh.
- **Hurwicz**, L. (1973). The design of mechanisms for resource allocation. *American Economic Review Papers and Proceedings*, 63, 1–30.
- **Huth**, M. and Ryan, M. (2004). Logic in Computer Science: Modelling and Reasoning About Systems (2nd edition). Cambridge University Press.
- **Huttenlocher**, D. and Ullman, S. (1990). Recognizing solid objects by alignment with an image. *IJCV*, 5, 195–212.
- **Hutter**, F., Kotthoff, L., and Vanschoren, J. (2019). *Automated Machine Learning*. Springer.

- Huygens, C. (1657). De ratiociniis in ludo aleae. In van Schooten, F. (Ed.), Exercitionum Mathematicorum. Elsevirii, Amsterdam. Translated into English by John Arbuthnot (1692).
- **Huyn**, N., Dechter, R., and Pearl, J. (1980). Probabilistic analysis of the complexity of A\*. *AIJ*, 15, 241–254.
- **Huynh**, V. A. and Roy, N. (2009). icLQG: Combining local and global optimization for control in information space. In *ICRA-09*.
- **Hwa**, R. (1998). An empirical evaluation of probabilistic lexicalized tree insertion grammars. In *ACL*-
- **Hwang**, C. H. and Schubert, L. K. (1993). EL: A formal, yet natural, comprehensive knowledge representation. In *AAAI-93*.
- **Hyafil**, L. and Rivest, R. (1976). Constructing optimal binary decision trees is NP-complete. *Information Processing Letters*, 5, 15–17.
- **Ieong**, S. and Shoham, Y. (2005). Marginal contribution nets: A compact representation scheme for coalitional games. In *Proc. Sixth ACM Conference on Electronic Commerce (EC'05)*.
- **Ingerman**, P. Z. (1967). Panini–Backus form suggested. *CACM*, *10*, 137.
- **Intille**, S. and Bobick, A. (1999). A framework for recognizing multi-agent action from visual evidence. In *AAAI-99*.
- **Ioffe**, S. and Szegedy, C. (2015). Batch normalization: Accelerating deep network training by reducing internal covariate shift. arXiv:1502.03167.
- **Irpan**, A. (2018). Deep reinforcement learning doesn't work yet. www.alexirpan.com/2018/02/14/rl-hard.html.
- **Isard**, M. and Blake, A. (1996). Contour tracking by stochastic propagation of conditional density. In *ECCV-96*.
- **Isola**, P., Zhu, J.-Y., Zhou, T., and Efros, A. (2017). Image-to-image translation with conditional adversarial networks. In *CVPR-17*.
- **Jaakkola**, T. and Jordan, M. I. (1996). Computing upper and lower bounds on likelihoods in intractable networks. In *UAI-96*.
- **Jacobson**, D. H. and Mayne, D. Q. (1970). *Differential Dynamic Programming*. North-Holland.
- Jaderberg, M., Czarnecki, W. M., Dunning, I., Marris, L., Lever, G., Castaneda, A. G., Beattie, C., Rabinowitz, N. C., Morcos, A. S., Ruderman, A., et al. (2019). Human-level performance in 3D multiplayer games with population-based reinforcement learning. *Science*, 364, 859–865.
- Jaderberg, M., Dalibard, V., Osindero, S., Czarnecki, W. M., Donahue, J., Razavi, A., Vinyals, O., Green, T., Dunning, I., Simonyan, K., Fernando, C., and Kavukcuoglu, K. (2017). Population based training of neural networks. arXiv:1711.09846.
- **Jaffar**, J. and Lassez, J.-L. (1987). Constraint logic programming. In *Proc. Fourteenth ACM POPL Conference*. Association for Computing Machinery.
- Jaffar, J., Michaylov, S., Stuckey, P. J., and Yap, R. H. C. (1992). The CLP(R) language and system. ACM Transactions on Programming Languages and Systems, 14, 339–395.
- **Jain**, D., Barthels, A., and Beetz, M. (2010). Adaptive Markov logic networks: Learning statistical relational models with dynamic parameters. In *ECAI-10*.
- Jain, D., Kirchlechner, B., and Beetz, M. (2007). Extending Markov logic to model probability distributions in relational domains. In 30th Annual German Conference on AI (KI).
- **James**, G., Witten, D., Hastie, T., and Tibshirani, R. (2013). An Introduction to Statistical Learning with Applications in R. Springer-Verlag.

- **Jarrett**, K., Kavukcuoglu, K., Ranzato, M., and Le-Cun, Y. (2009). What is the best multi-stage architecture for object recognition? In *ICCV-09*.
- Jaynes, E. T. (2003). *Probability Theory: The Logic of Science*. Cambridge Univ. Press.
- **Jeffrey**, R. C. (1983). *The Logic of Decision* (2nd edition). University of Chicago Press.
- Jeffreys, H. (1948). Theory of Probability. Oxford.
- **Jelinek**, F. (1976). Continuous speech recognition by statistical methods. *Proc. IEEE*, 64, 532–556.
- **Jelinek**, F. and Mercer, R. L. (1980). Interpolated estimation of Markov source parameters from sparse data. In *Proc. Workshop on Pattern Recognition in Practice*.
- Jennings, H. S. (1906). Behavior of the Lower Organisms. Columbia University Press.
- **Jenniskens**, P., Betlem, H., Betlem, J., and Barifaijo, E. (1994). The Mbale meteorite shower. *Meteoritics*, 29, 246–254.
- **Jensen**, F. V. (2007). *Bayesian Networks and Decision Graphs*. Springer-Verlag.
- **Ji**, Z., Lipton, Z. C., and Elkan, C. (2014). Differential privacy and machine learning: A survey and review. arXiv:1412.7584.
- **Jiang**, H. and Nachum, O. (2019). Identifying and correcting label bias in machine learning. arXiv:1901.04966.
- **Jimenez**, P. and Torras, C. (2000). An efficient algorithm for searching implicit AND/OR graphs with cycles. *AIJ*, *124*, 1–30.
- **Joachims**, T. (2001). A statistical learning model of text classification with support vector machines. In
- **Johnson**, M. (1998). PCFG models of linguistic tree representations. *Comput. Linguist.*, 24, 613–632.
- **Johnson**, W. W. and Story, W. E. (1879). Notes on the "15" puzzle. *American Journal of Mathematics*, 2, 397–404.
- **Johnston**, M. D. and Adorf, H.-M. (1992). Scheduling with neural networks: The case of the Hubble space telescope. *Computers and Operations Research*, 19, 209–240.
- **Jonathan**, P. J. Y., Fung, C. C., and Wong, K. W. (2009). Devious chatbots-interactive malware with a plot. In *FIRA RoboWorld Congress*.
- **Jones**, M. and Love, B. C. (2011). Bayesian fundamentalism or enlightenment? On the explanatory status and theoretical contributions of Bayesian models of cognition. *BBS*, *34*, 169–231.
- **Jones**, R. M., Laird, J., and Nielsen, P. E. (1998). Automated intelligent pilots for combat flight simulation. In *AAAI-98*.
- Jones, R., McCallum, A., Nigam, K., and Riloff, E. (1999). Bootstrapping for text learning tasks. In Proc. IJCAI-99 Workshop on Text Mining: Foundations, Techniques, and Applications.
- **Jones**, T. (2007). *Artificial Intelligence: A Systems Approach*. Infinity Science Press.
- **Jonsson**, A., Morris, P., Muscettola, N., Rajan, K., and Smith, B. (2000). Planning in interplanetary space: Theory and practice. In *AIPS-00*.
- **Jordan**, M. I. (2005). Dirichlet processes, Chinese restaurant processes and all that. Tutorial presentation at the NeurIPS Conference.
- **Jordan**, M. I. (1986). Serial order: A parallel distributed processing approach. Tech. rep., UCSD Institute for Cognitive Science.
- **Jordan**, M. I., Ghahramani, Z., Jaakkola, T., and Saul, L. K. (1999). An introduction to variational methods for graphical models. *Machine Learning*, *37*, 183–233.

- Jouannaud, J.-P. and Kirchner, C. (1991). Solving equations in abstract algebras: A rule-based survey of unification. In Lassez, J.-L. and Plotkin, G. (Eds.), Computational Logic. MIT Press.
- **Joulin**, A., Grave, E., Bojanowski, P., and Mikolov, T. (2016). Bag of tricks for efficient text classification. arXiv:1607.01759.
- Jouppi, N. P., Young, C., Patil, N., Patterson, D. A., et al. (2017). In-datacenter performance analysis of a tensor processing unit. In ACM/IEEE 44th International Symposium on Computer Architecture.
- $\mathbf{Joy}$ , B. (2000). Why the future doesn't need us. Wired,
- **Jozefowicz**, R., Vinyals, O., Schuster, M., Shazeer, N., and Wu, Y. (2016). Exploring the limits of language modeling. arXiv:1602.02410.
- **Jozefowicz**, R., Zaremba, W., and Sutskever, I. (2015). An empirical exploration of recurrent network architectures. In *ICML-15*.
- **Juels**, A. and Wattenberg, M. (1996). Stochastic hill-climbing as a baseline method for evaluating genetic algorithms. In *NeurIPS* 8.
- **Julesz**, B. (1971). *Foundations of Cyclopean Perception*. University of Chicago Press.
- **Julian**, K. D., Kochenderfer, M. J., and Owen, M. P. (2018). Deep neural network compression for aircraft collision avoidance systems. arXiv:1810.04240.
- Juliani, A., Berges, V., Vckay, E., Gao, Y., Henry, H., Mattar, M., and Lange, D. (2018). Unity: A general platform for intelligent agents. arXiv:1809.02627.
- **Junker**, U. (2003). The logic of ilog (j)configurator: Combining constraint programming with a description logic. In *Proc. IJCAI-03 Configuration Workshop*.
- Jurafsky, D. and Martin, J. H. (2020). Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition (3rd edition). Prentice-Hall.
- **Kadane**, J. B. and Simon, H. A. (1977). Optimal strategies for a class of constrained sequential problems. *Annals of Statistics*, 5, 237–255.
- **Kadane**, J. B. and Larkey, P. D. (1982). Subjective probability and the theory of games. *Management Science*, 28, 113–120.
- **Kaelbling**, L. P., Littman, M. L., and Cassandra, A. R. (1998). Planning and acting in partially observable stochastic domains. *AIJ*, *101*, 99–134.
- **Kaelbling**, L. P. and Rosenschein, S. J. (1990). Action and planning in embedded agents. *Robotics and Autonomous Systems*, *6*, 35–48.
- **Kager**, R. (1999). *Optimality Theory*. Cambridge University Press.
- **Kahn**, H. and Marshall, A. W. (1953). Methods of reducing sample size in Monte Carlo computations. *Operations Research*, 1, 263–278.
- **Kahn**, H. (1950a). Random sampling (Monte Carlo) techniques in neutron attenuation problems–I. *Nucleonics*, 6, 27–passim.
- Kahn, H. (1950b). Random sampling (Monte Carlo) techniques in neutron attenuation problems–II. *Nucleonics*, 6, 60–65.
- **Kahneman**, D. (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux.
- Kahneman, D., Slovic, P., and Tversky, A. (Eds.). (1982). Judgment under Uncertainty: Heuristics and Biases. Cambridge University Press.
- **Kahneman**, D. and Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263–291.
- **Kaindl**, H. and Khorsand, A. (1994). Memory-bounded bidirectional search. In *AAAI-94*.

**Kalman**, R. (1960). A new approach to linear filtering and prediction problems. *J. Basic Engineering*, 82, 35–46.

**Kambhampati**, S. (1994). Exploiting causal structure to control retrieval and refitting during plan reuse. *Computational Intelligence*, *10*, 213–244.

**Kanade**, T., Thorpe, C., and Whittaker, W. (1986). Autonomous land vehicle project at CMU. In *ACM Fourteenth Annual Conference on Computer Science*.

Kanal, E. (2017). Machine learning in cybersecurity. CMU SEI Blog, insights.sei. cmu.edu/sei\_blog/2017/06/machine-learning-in-cybersecurity.html.

**Kanazawa**, A., Black, M., Jacobs, D., and Malik, J. (2018a). End-to-end recovery of human shape and pose. In *CVPR-18*.

**Kanazawa**, A., Tulsiani, M., Efros, A., and Malik, J. (2018b). Learning category-specific mesh reconstruction from image collections. In *ECCV-18*.

**Kanazawa**, K., Koller, D., and Russell, S. J. (1995). Stochastic simulation algorithms for dynamic probabilistic networks. In *UAI-95*.

Kang, S. M. and Wildes, R. P. (2016). Review of action recognition and detection methods. arXiv:1610.06906.

Kanter, J. M. and Veeramachaneni, K. (2015). Deep feature synthesis: Towards automating data science endeavors. In *Proc. IEEE Int'l Conf. on Data Science and Advanced Analytics*.

Kantorovich, L. V. (1939). Mathematical methods of organizing and planning production. Published in translation in *Management Science*, 6(4), 366–422, 1960

**Kaplan**, D. and Montague, R. (1960). A paradox regained. *Notre Dame Formal Logic*, 1, 79–90.

Karaboga, D. and Basturk, B. (2007). A powerful and efficient algorithm for numerical function optimization: Artificial bee colony (ABC) algorithm. *Journal of global optimization*, 39, 459–471.

Karamchandani, A., Bjerager, P., and Cornell, C. A. (1989). Adaptive importance sampling. In *Proc. Fifth International Conference on Structural Safety and Reliability*.

**Karmarkar**, N. (1984). A new polynomial-time algorithm for linear programming. *Combinatorica*, 4, 373–395

Karp, R. M. (1972). Reducibility among combinatorial problems. In Miller, R. E. and Thatcher, J. W. (Eds.), Complexity of Computer Computations. Plenum.

**Karpathy**, A. (2015). The unreasonable effectiveness of recurrent neural networks. Andrej Karpathy blog, karpathy.github.io/2015/05/21/rnn-effectiveness/.

**Karpathy**, A. and Fei-Fei, L. (2015). Deep visual-semantic alignments for generating image descriptions. In *CVPR-15*.

**Karras**, T., Aila, T., Laine, S., and Lehtinen, J. (2017). Progressive growing of GANs for improved quality, stability, and variation. arXiv:1710.10196.

**Karsch**, K., Hedau, V., Forsyth, D., and Hoiem, D. (2011). Rendering synthetic objects into legacy photographs. In *SIGGRAPH Asia*.

**Kartam**, N. A. and Levitt, R. E. (1990). A constraint-based approach to construction planning of multi-story buildings. In *Expert Planning Systems*. Institute of Electrical Engineers.

**Kasami**, T. (1965). An efficient recognition and syntax analysis algorithm for context-free languages. Tech. rep., Air Force Cambridge Research Laboratory.

**Katehakis**, M. N. and Veinott, A. F. (1987). The multiarmed bandit problem: Decomposition and computation. *Mathematics of Operations Research*, 12, 185– 376. **Katz**, B. (1997). Annotating the world wide web using natural language. In *RIAO* '97.

Kaufmann, M., Manolios, P., and Moore, J. S. (2000). Computer-Aided Reasoning: An Approach. Kluwer.

Kautz, H. (2006). Deconstructing planning as satisfiability. In AAAI-06.

**Kautz**, H., McAllester, D. A., and Selman, B. (1996). Encoding plans in propositional logic. In *KR-96*.

**Kautz**, H. and Selman, B. (1992). Planning as satisfiability. In *ECAI-92*.

**Kautz**, H. and Selman, B. (1998). BLACKBOX: A new approach to the application of theorem proving to problem solving. Working Notes of the AIPS-98 Workshop on Planning as Combinatorial Search.

Kavraki, L., Svestka, P., Latombe, J.-C., and Overmars, M. (1996). Probabilistic roadmaps for path planning in high-dimensional configuration spaces. *IEEE Transactions on Robotics and Automation*, 12, 566–580

**Kazemi**, S. M., Kimmig, A., Van den Broeck, G., and Poole, D. (2017). New liftable classes for first-order probabilistic inference. In *NeurIPS* 29.

**Kearns**, M. (1990). *The Computational Complexity of Machine Learning*. MIT Press.

**Kearns**, M., Mansour, Y., and Ng, A. Y. (2000). Approximate planning in large POMDPs via reusable trajectories. In *NeurIPS 12*.

**Kearns**, M. and Singh, S. (1998). Near-optimal reinforcement learning in polynomial time. In *ICML-98*.

**Kearns**, M. and Vazirani, U. (1994). *An Introduction to Computational Learning Theory*. MIT Press.

Kearns, M. (1988). Thoughts on hypothesis boosting.

**Kearns**, M., Mansour, Y., and Ng, A. Y. (2002). A sparse sampling algorithm for near-optimal planning in large Markov decision processes. *Machine Learning*, 49, 193–208.

**Kebeasy**, R. M., Hussein, A. I., and Dahy, S. A. (1998). Discrimination between natural earthquakes and nuclear explosions using the Aswan Seismic Network. *Annali di Geofisica*, 41, 127–140.

**Keeney**, R. L. (1974). Multiplicative utility functions. *Operations Research*, 22, 22–34.

**Keeney**, R. L. and Raiffa, H. (1976). *Decisions with Multiple Objectives: Preferences and Value Tradeoffs*. Wiley

Kelley, H. J. (1960). Gradient theory of optimal flight paths. *ARS Journal*, *30*, 947–954.

**Kemp**, M. (Ed.). (1989). *Leonardo on Painting: An Anthology of Writings*. Yale University Press.

**Kempe**, A. B. (1879). On the geographical problem of the four-colors. *American Journal of Mathematics*, 2, 193–200.

**Kephart**, J. O. and Chess, D. M. (2003). The vision of autonomic computing. *IEEE Computer*, *36*, 41–50.

Kersting, K., Raedt, L. D., and Kramer, S. (2000). Interpreting Bayesian logic programs. In *Proc. AAAI-00 Workshop on Learning Statistical Models from Relational Data.* 

Keskar, N. S., McCann, B., Varshney, L., Xiong, C., and Socher, R. (2019). CTRL: A conditional transformer language model for controllable generation. arXiv:1909

**Keynes**, J. M. (1921). A Treatise on Probability. Macmillan.

**Khare**, R. (2006). Microformats: The next (small) thing on the semantic web. *IEEE Internet Computing*, 10, 68–75.

**Khatib**, O. (1986). Real-time obstacle avoidance for robot manipulator and mobile robots. *Int. J. Robotics Research*, *5*, 90–98.

**Kim**, B., Khanna, R., and Koyejo, O. O. (2017). Examples are not enough, learn to criticize! Criticism for interpretability. In *NeurIPS* 29.

Kim, J. H. (1983). CONVINCE: A Conversational Inference Consolidation Engine. Ph.D. thesis, Department of Computer Science, UCLA.

**Kim**, J. H. and Pearl, J. (1983). A computational model for combined causal and diagnostic reasoning in inference systems. In *IJCAI-83*.

Kim, J.-H., Lee, C.-H., Lee, K.-H., and Kuppuswamy, N. (2007). Evolving personality of a genetic robot in ubiquitous environment. In *Proc. 16th IEEE International Symposium on Robot and Human Interactive Communication.* 

**Kim**, T. W. (2018). Explainable artificial intelligence (XAI), the goodness criteria and the grasp-ability test. arXiv:1810.09598.

**Kingma**, D. P. and Welling, M. (2013). Auto-encoding variational Bayes. arXiv:1312.6114.

Kirk, D. E. (2004). Optimal Control Theory: An Introduction. Dover.

**Kirkpatrick**, S., Gelatt, C. D., and Vecchi, M. P. (1983). Optimization by simulated annealing. *Science*, 220, 671–680.

**Kisynski**, J. and Poole, D. (2009). Lifted aggregation in directed first-order probabilistic models. In *IJCAI*-00

**Kitaev**, N., Kaiser, L., and Levskaya, A. (2020). Reformer: The efficient transformer. arXiv:2001.04451.

**Kitaev**, N. and Klein, D. (2018). Constituency parsing with a self-attentive encoder. arXiv:1805.01052.

**Kitani**, K. M., abd James Andrew Bagnell, B. D. Z., and Hebert, M. (2012). Activity forecasting. In *ECCV-12* 

Kitano, H., Asada, M., Kuniyoshi, Y., Noda, I., and Osawa, E. (1997). RoboCup: The robot world cup initiative. In *Proc. First International Conference on Autonomous Agents*.

**Kjaerulff**, U. (1992). A computational scheme for reasoning in dynamic probabilistic networks. In *UAI-92*.

**Klarman**, H. E., Francis, J., and Rosenthal, G. D. (1968). Cost effectiveness analysis applied to the treatment of chronic renal disease. *Medical Care*, 6, 48–54.

**Klein**, D. and Manning, C. (2001). Parsing with treebank grammars: Empirical bounds, theoretical models, and the structure of the Penn treebank. In *ACL-01*.

**Klein**, D. and Manning, C. (2003). A\* parsing: Fast exact Viterbi parse selection. In *HLT-NAACL-03*.

**Kleinberg**, J. M., Mullainathan, S., and Raghavan, M. (2016). Inherent trade-offs in the fair determination of risk scores. arXiv:1609.05807.

**Klemperer**, P. (2002). What really matters in auction design. *J. Economic Perspectives*, 16.

**Kneser**, R. and Ney, H. (1995). Improved backing-off for M-gram language modeling. In *ICASSP-95*.

**Knoblock**, C. A. (1991). Search reduction in hierarchical problem solving. In *AAAI-91*.

**Knuth**, D. E. (1964). Representing numbers using only one 4. *Mathematics Magazine*, *37*, 308–310.

**Knuth**, D. E. (1975). An analysis of alpha–beta pruning. *AIJ*, *6*, 293–326.

**Knuth**, D. E. (2015). *The Art of Computer Programming*, Vol. 4, Fascicle 6: Satisfiability. Addison-Wesley.

**Knuth**, D. E. and Bendix, P. B. (1970). Simple word problems in universal algebras. In Leech, J. (Ed.), Computational Problems in Abstract Algebra. Pergamon.

**Kober**, J., Bagnell, J. A., and Peters, J. (2013). Reinforcement learning in robotics: A survey. *International Journal of Robotics Research*, *32*, 1238–1274.

Koch, C. (2019). The Feeling of Life Itself. MIT Press.

**Kochenderfer**, M. J. (2015). *Decision Making Under Uncertainty: Theory and Application*. MIT Press.

**Kocsis**, L. and Szepesvari, C. (2006). Bandit-based Monte-Carlo planning. In *ECML-06*.

**Koditschek**, D. (1987). Exact robot navigation by means of potential functions: Some topological considerations. In *ICRA-87*.

**Koehn**, P. (2009). *Statistical Machine Translation*. Cambridge University Press.

**Koelsch**, S. and Siebel, W. A. (2005). Towards a neural basis of music perception. *Trends in Cognitive Sciences*, 9, 578–584.

Koenderink, J. J. (1990). Solid Shape. MIT Press.

**Koenderink**, J. J. and van Doorn, A. J. (1991). Affine structure from motion. *J. Optical Society of America A*, *8*, 377–385.

Koenig, S. (1991). Optimal probabilistic and decisiontheoretic planning using Markovian decision theory. Master's report, Computer Science Division, University of California, Berkeley.

**Koenig**, S. (2000). Exploring unknown environments with real-time search or reinforcement learning. In *NeurIPS* 12.

**Koenig**, S. (2001). Agent-centered search. *AIMag*, 22, 109–131.

Koenig, S. and Likhachev, M. (2002). D\* Lite. AAAI-

**Koenig**, S., Likhachev, M., and Furcy, D. (2004). Lifelong planning A\*. *AIJ*, *155*, 93–146.

Kolesky, D. B., Truby, R. L., Gladman, A. S., Busbee, T. A., Homan, K. A., and Lewis, J. A. (2014). 3D bioprinting of vascularized, heterogeneous cell-laden tissue constructs. *Advanced Materials*, 26, 3124–3130.

**Koller**, D., Meggido, N., and von Stengel, B. (1996). Efficient computation of equilibria for extensive two-person games. *Games and Economic Behaviour*, 14, 247–259.

**Koller**, D. and Pfeffer, A. (1997). Representations and solutions for game-theoretic problems. *AIJ*, *94*, 167–215.

**Koller**, D. and Pfeffer, A. (1998). Probabilistic frame-based systems. In *AAAI-98*.

**Koller**, D. and Friedman, N. (2009). *Probabilistic Graphical Models: Principles and Techniques*. MIT Press.

**Koller**, D., McAllester, D. A., and Pfeffer, A. (1997). Effective Bayesian inference for stochastic programs. In *AAAI-97*.

**Koller**, D. and Parr, R. (2000). Policy iteration for factored MDPs. In *UAI-00*.

Koller, D. and Sahami, M. (1997). Hierarchically classifying documents using very few words. In *ICML-97*.

**Kolmogorov**, A. N. (1941). Interpolation und extrapolation von stationaren zufalligen folgen. *Bulletin of the Academy of Sciences of the USSR*, Ser. Math. 5, 3–14.

**Kolmogorov**, A. N. (1950). Foundations of the Theory of Probability. Chelsea.

**Kolmogorov**, A. N. (1963). On tables of random numbers. *Sankhya, the Indian Journal of Statistics: Series A*, 25(4), 369–376.

**Kolmogorov**, A. N. (1965). Three approaches to the quantitative definition of information. *Problems in Information Transmission*, 1, 1–7.

**Kolter**, J. Z., Abbeel, P., and Ng, A. Y. (2008). Hierarchical apprenticeship learning, with application to quadruped locomotion. In *NeurIPS 20*.

**Kondrak**, G. and van Beek, P. (1997). A theoretical evaluation of selected backtracking algorithms. *AIJ*, 89, 365–387.

Konečný, J., McMahan, H. B., Yu, F. X., Richtárik, P., Suresh, A. T., and Bacon, D. (2016). Federated learning: Strategies for improving communication efficiency. arXiv:1610.05492.

Konolige, K. (1997). COLBERT: A language for reactive control in Saphira. In *Künstliche Intelligenz: Advances in Artificial Intelligence*, LNAI.

**Konolige**, K. (2004). Large-scale map-making. In *AAAI-04* 

Konolige, K. (1982). A first order formalization of knowledge and action for a multi-agent planning system. In Hayes, J. E., Michie, D., and Pao, Y.-H. (Eds.), *Machine Intelligence 10*. Ellis Horwood.

**Konolige**, K. (1994). Easy to be hard: Difficult problems for greedy algorithms. In *KR-94*.

**Koopmans**, T. C. (1972). Representation of preference orderings over time. In McGuire, C. B. and Radner, R. (Eds.), *Decision and Organization*. Elsevier.

Korb, K. B. and Nicholson, A. (2010). *Bayesian Artificial Intelligence*. CRC Press.

**Korf**, R. E. (1985a). Depth-first iterative-deepening: an optimal admissible tree search. *AIJ*, 27, 97–109.

**Korf**, R. E. (1985b). Iterative-deepening A\*: An optimal admissible tree search. In *IJCAI-85*.

**Korf**, R. E. (1987). Planning as search: A quantitative approach. *AIJ*, *33*, 65–88.

**Korf**, R. E. (1990). Real-time heuristic search. *AIJ*, 42, 189–212.

**Korf**, R. E. (1993). Linear-space best-first search. *AIJ*, 62, 41–78.

**Korf**, R. E. and Chickering, D. M. (1996). Best-first minimax search. *AIJ*, *84*, 299–337.

**Korf**, R. E. and Felner, A. (2002). Disjoint pattern database heuristics. *AIJ*, *134*, 9–22.

**Korf**, R. E. and Zhang, W. (2000). Divide-and-conquer frontier search applied to optimal sequence alignment. In *AAAI-00*.

**Korf**, R. E. (1997). Finding optimal solutions to Rubik's Cube using pattern databases. In *AAAI-97*.

**Korf**, R. E. and Reid, M. (1998). Complexity analysis of admissible heuristic search. In *AAAI-98*.

**Koutsoupias**, E. and Papadimitriou, C. H. (1992). On the greedy algorithm for satisfiability. *Information Processing Letters*, 43, 53–55.

**Kovacs**, D. L. (2011). BNF definition of PDDL3.1. Unpublished manuscript from the IPC-2011 website.

**Kowalski**, R. (1974). Predicate logic as a programming language. In *Proc. IFIP Congress*.

Kowalski, R. (1979). Logic for Problem Solving. Elsevier.

**Kowalski**, R. (1988). The early years of logic programming. *CACM*, *31*, 38–43.

**Kowalski**, R. and Sergot, M. (1986). A logic-based calculus of events. *New Generation Computing*, 4, 67–

**Koza**, J. R. (1992). Genetic Programming: On the Programming of Computers by Means of Natural Selection. MIT Press.

Koza, J. R. (1994). Genetic Programming II: Automatic Discovery of Reusable Programs. MIT Press.

Koza, J. R., Bennett, F. H., Andre, D., and Keane, M. A. (1999). *Genetic Programming III: Darwinian Invention and Problem Solving*. Morgan Kaufmann.

**Krakovna**, V. (2018). Specification gaming examples in AI.

**Kraska**, T., Beutel, A., Chi, E. H., Dean, J., and Polyzotis, N. (2017). The case for learned index structures. arXiv:1712.01208.

**Kraus**, S. (2001). *Strategic Negotiation in Multiagent Environments*. MIT Press.

**Kraus**, S., Ephrati, E., and Lehmann, D. (1991). Negotiation in a non-cooperative environment. *AIJ*, *3*, 255–281.

**Krause**, A. and Guestrin, C. (2005). Optimal nonmyopic value of information in graphical models: Efficient algorithms and theoretical limits. In *IJCAI-05*.

**Krause**, A. and Guestrin, C. (2009). Optimal value of information in graphical models. *JAIR*, *35*, 557–591.

**Krause**, A., McMahan, B., Guestrin, C., and Gupta, A. (2008). Robust submodular observation selection. *JMLR*, 9, 2761–2801.

**Kripke**, S. A. (1963). Semantical considerations on modal logic. *Acta Philosophica Fennica*, 16, 83–94.

Krishna, V. (2002). Auction Theory. Academic Press.

Krishnamurthy, V. (2016). Partially Observed Markov Decision Processes: From Filtering to Controlled Sensing. Cambridge University Press.

Krishnanand, K. and Ghose, D. (2009). Glowworm swarm optimisation: A new method for optimising multi-modal functions. *International Journal of Computational Intelligence Studies*, 1, 93–119.

**Krizhevsky**, A., Sutskever, I., and Hinton, G. E. (2013). ImageNet classification with deep convolutional neural networks. In *NeurIPS* 25.

Krogh, A., Brown, M., Mian, I. S., Sjolander, K., and Haussler, D. (1994). Hidden Markov models in computational biology: Applications to protein modeling. *J. Molecular Biology*, 235, 1501–1531.

**Krogh**, A. and Hertz, J. A. (1992). A simple weight decay can improve generalization. In *NeurIPS 4*.

Kruppa, E. (1913). Zur Ermittlung eines Objecktes aus zwei Perspektiven mit innerer Orientierung. Sitz.-Ber. Akad. Wiss., Wien, Math. Naturw., Kl. Abt. IIa, 122, 1939–1948.

**Kübler**, S., McDonald, R., and Nivre, J. (2009). *Dependency Parsing*. Morgan & Claypool.

**Kuffner**, J. J. and LaValle, S. (2000). RRT-connect: An efficient approach to single-query path planning. In *ICRA-00*.

**Kuhn**, H. W. (1953). Extensive games and the problem of information. In Kuhn, H. W. and Tucker, A. W. (Eds.), *Contributions to the Theory of Games II*. Princeton University Press.

**Kuhn**, H. W. (1955). The Hungarian method for the assignment problem. *Naval Research Logistics Quarterly*, 2, 83–97.

**Kuipers**, B. J. (1985). Qualitative simulation. In Bobrow, D. (Ed.), *Qualitative Reasoning About Physical Systems*. MIT Press.

**Kuipers**, B. J. and Levitt, T. S. (1988). Navigation and mapping in large-scale space. *AIMag*, *9*, 25–43.

**Kuipers**, B. J. (2001). Qualitative simulation. In Meyers, R. A. (Ed.), *Encyclopedia of Physical Science and Technology*. Academic Press.

**Kulkarni**, T., Kohli, P., Tenenbaum, J. B., and Mansinghka, V. K. (2015). Picture: A probabilistic programming language for scene perception. In *CVPR-15*.

Kumar, P. R. and Varaiya, P. (1986). Stochastic Systems: Estimation, Identification, and Adaptive Control. Prentice-Hall.

**Kumar**, S. (2017). A survey of deep learning methods for relation extraction. arXiv:1705.03645.

Kumar, V. and Kanal, L. N. (1988). The CDP: A unifying formulation for heuristic search, dynamic programming, and branch-and-bound. In Kanal, L. N. and Kumar, V. (Eds.), Search in Artificial Intelligence. Springer-Verlag.

**Kurien**, J., Nayak, P., and Smith, D. E. (2002). Fragment-based conformant planning. In *AIPS-02*.

- Kurth, T., Treichler, S., Romero, J., Mudigonda, M., Luehr, N., Phillips, E. H., Mahesh, A., Matheson, M., Deslippe, J., Fatica, M., Prabhat, and Houston, M. (2018). Exascale deep learning for climate analytics. arXiv:1810.01993.
- Kurzweil, R. (2005). The Singularity is Near. Viking.
- Kwok, C., Etzioni, O., and Weld, D. S. (2001). Scaling question answering to the web. In *Proc. 10th International Conference on the World Wide Web*.
- La Mettrie, J. O. (1748). *L'homme machine*. E. Luzac, Leyde, France.
- La Mura, P. and Shoham, Y. (1999). Expected utility networks. In *UAI-99*.
- **Laborie**, P. (2003). Algorithms for propagating resource constraints in AI planning and scheduling. *AIJ*, 143, 151–188.
- **Ladkin**, P. (1986a). Primitives and units for time specification. In *AAAI-86*.
- **Ladkin**, P. (1986b). Time representation: a taxonomy of interval relations. In *AAAI-86*.
- **Lafferty**, J., McCallum, A., and Pereira, F. (2001). Conditional random fields: Probabilistic models for segmenting and labeling sequence data. In *ICML-01*.
- Lai, T. L. and Robbins, H. (1985). Asymptotically efficient adaptive allocation rules. *Advances in Applied Mathematics*, 6, 4–22.
- **Laird**, J., Newell, A., and Rosenbloom, P. S. (1987). SOAR: An architecture for general intelligence. *AIJ*, *33*, 1–64.
- Laird, J., Rosenbloom, P. S., and Newell, A. (1986). Chunking in Soar: The anatomy of a general learning mechanism. *Machine Learning*, *1*, 11–46.
- Laird, J. (2008). Extending the Soar cognitive architecture. In *Artificial General Intelligence Conference*.
- **Lake**, B., Salakhutdinov, R., and Tenenbaum, J. B. (2015). Human-level concept learning through probabilistic program induction. *Science*, *350*, 1332–1338.
- Lakoff, G. (1987). Women, Fire, and Dangerous Things: What Categories Reveal About the Mind. University of Chicago Press.
- Lakoff, G. and Johnson, M. (1980). *Metaphors We Live By*. University of Chicago Press.
- Lakoff, G. and Johnson, M. (1999). Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought. Basic Books.
- Lam, J. and Greenspan, M. (2008). Eye-in-hand visual servoing for accurate shooting in pool robotics. In 5th Canadian Conference on Computer and Robot Vision.
- **Lamarck**, J. B. (1809). *Philosophie zoologique*. Chez Dentu et L'Auteur, Paris.
- **Lample**, G. and Conneau, A. (2019). Cross-lingual language model pretraining. arXiv:1901.07291.
- **Landhuis**, E. (2004). Lifelong debunker takes on arbiter of neutral choices: Magician-turned-mathematician uncovers bias in a flip of a coin. *Stanford Report*. June 7.
- Langdon, W. and Poli, R. (2002). Foundations of Genetic Programming. Springer.
- Langton, C. (Ed.). (1995). Artificial Life. MIT Press.
- **LaPaugh**, A. S. (2010). Algorithms and theory of computation handbook. In Atallah, M. J. and Blanton, M. (Eds.), *VLSI Layout Algorithms*. Chapman & Hall/CRC.
- Laplace, P. (1816). Essai philosophique sur les probabilités (3rd edition). Courcier Imprimeur, Paris.
- **Larochelle**, H. and Murray, I. (2011). The neural autoregressive distribution estimator. In *AISTATS-11*.
- **Larson**, S. C. (1931). The shrinkage of the coefficient of multiple correlation. *J. Educational Psychology*, 22, 45–55.

- Laskey, K. B. (1995). Sensitivity analysis for probability assessments in Bayesian networks. *IEEE Transactions on Systems, Man and Cybernetics*, 25, 901–909
- **Laskey**, K. B. (2008). MEBN: A language for first-order Bayesian knowledge bases. *AIJ*, *172*, 140–178.
- Latombe, J.-C. (1991). Robot Motion Planning.
- Lauritzen, S. (1995). The EM algorithm for graphical association models with missing data. *Computational Statistics and Data Analysis*, 19, 191–201.
- Lauritzen, S., Dawid, A. P., Larsen, B., and Leimer, H. (1990). Independence properties of directed Markov fields. *Networks*, 20, 491–505.
- **Lauritzen**, S. and Spiegelhalter, D. J. (1988). Local computations with probabilities on graphical structures and their application to expert systems. *J. Royal Statistical Society*, *B* 50, 157–224.
- **Lauritzen**, S. and Wermuth, N. (1989). Graphical models for associations between variables, some of which are qualitative and some quantitative. *Annals of Statistics*, 17, 31–57.
- **LaValle**, S. (2006). *Planning Algorithms*. Cambridge University Press.
- Lawler, E. L., Lenstra, J. K., Kan, A., and Shmoys, D. B. (1992). *The Travelling Salesman Problem*. Wiley Interscience.
- Lawler, E. L., Lenstra, J. K., Kan, A., and Shmoys, D. B. (1993). Sequencing and scheduling: Algorithms and complexity. In Graves, S. C., Zipkin, P. H., and Kan, A. H. G. R. (Eds.), Logistics of Production and Inventory: Handbooks in Operations Research and Management Science, Volume 4. North-Holland.
- **Lawler**, E. L. and Wood, D. E. (1966). Branch-and-bound methods: A survey. *Operations Research*, *14*, 699–719.
- **Lazanas**, A. and Latombe, J.-C. (1992). Landmark-based robot navigation. In *AAAI-92*.
- **Le**, T. A., Baydin, A. G., and Wood, F. (2017). Inference compilation and universal probabilistic programming. In *AISTATS-17*.
- **Lebedev**, M. A. and Nicolelis, M. A. (2006). Brain-machine interfaces: Past, present and future. *Trends in Neurosciences*, 29, 536–546.
- **Lecoutre**, C. (2009). *Constraint Networks: Techniques and Algorithms*. Wiley-IEEE Press.
- **LeCun**, Y., Denker, J., and Solla, S. (1990). Optimal brain damage. In *NeurIPS 2*.
- **LeCun**, Y., Jackel, L., Boser, B., and Denker, J. (1989). Handwritten digit recognition: Applications of neural network chips and automatic learning. *IEEE Communications Magazine*, 27, 41–46.
- LeCun, Y., Jackel, L., Bottou, L., Brunot, A., Cortes, C., Denker, J., Drucker, H., Guyon, I., Muller, U., Sackinger, E., Simard, P., and Vapnik, V. N. (1995). Comparison of learning algorithms for handwritten digit recognition. In *Int. Conference on Artificial Neural Networks*.
- **LeCun**, Y., Bengio, Y., and Hinton, G. E. (2015). Deep learning. *Nature*, 521, 436–444.
- **Lee**, D., Seo, H., and Jung, M. W. (2012). Neural basis of reinforcement learning and decision making. *Annual Review of Neuroscience*, *35*, 287–308.
- Lee, K.-F. (2018). AI Superpowers: China, Silicon Valley, and the New World Order. Houghton Mifflin.
- Leech, G., Rayson, P., and Wilson, A. (2001). Word Frequencies in Written and Spoken English: Based on the British National Corpus. Longman.
- **Legendre**, A. M. (1805). *Nouvelles méthodes pour la détermination des orbites des comètes*. Chez Firmin Didot, Paris.

- Lehmann, J., Isele, R., Jakob, M., Jentzsch, A., Kontokostas, D., Mendes, P. N., Hellmann, S., Morsey, M., van Kleef, P., Auer, S., and Bizer, C. (2015). DBpedia A large-scale, multilingual knowledge base extracted from Wikipedia. *Semantic Web*, *6*, 167–195.
- Lehrer, J. (2009). How We Decide. Houghton Mifflin.
- Leike, J., Martic, M., Krakovna, V., Ortega, P. A., Everitt, T., Lefrancq, A., Orseau, L., and Legg, S. (2017). AI safety gridworlds. arXiv:1711.09883.
- Lelis, L., Arfaee, S. J., Zilles, S., and Holte, R. C. (2012). Learning heuristic functions faster by using predicted solution costs. In *Proc. Fifth Annual Symposium on Combinatorial Search*.
- Lenat, D. B. (1975). BEINGS: Knowledge as interacting experts. In *IJCAI-75*.
- Lenat, D. B. and Guha, R. V. (1990). Building Large Knowledge-Based Systems: Representation and Inference in the CYC Project. Addison-Wesley.
- **Leonard**, H. S. and Goodman, N. (1940). The calculus of individuals and its uses. *JSL*, 5, 45–55.
- Leonard, J. and Durrant-Whyte, H. (1992). Directed Sonar Sensing for Mobile Robot Navigation. Kluwer.
- **Lepage**, G. P. (1978). A new algorithm for adaptive multidimensional integration. *Journal of Computational Physics*, 27, 192–203.
- **Lerner**, U. (2002). *Hybrid Bayesian Networks for Reasoning About Complex Systems*. Ph.D. thesis, Stanford University.
- **Leśniewski**, S. (1916). Podstawy ogólnej teorii mnogości. Popławski.
- Lesser, V. R. and Corkill, D. D. (1988). The distributed vehicle monitoring testbed: A tool for investigating distributed problem solving networks. In Engelmore, R. and Morgan, T. (Eds.), *Blackboard Systems*. Addison-Weslev.
- **Letz**, R., Schumann, J., Bayerl, S., and Bibel, W. (1992). SETHEO: A high-performance theorem prover. *JAR*, 8, 183–212.
- **Levesque**, H. J. and Brachman, R. J. (1987). Expressiveness and tractability in knowledge representation and reasoning. *Computational Intelligence*, *3*, 78–93.
- **Levin**, D. A., Peres, Y., and Wilmer, E. L. (2008). *Markov Chains and Mixing Times*. American Mathematical Society.
- **Levine**, S., Finn, C., Darrell, T., and Abbeel, P. (2016). End-to-end training of deep visuomotor policies. *JMLR*, *17*, 1334–1373.
- Levine, S., Pastor, P., Krizhevsky, A., Ibarz, J., and Quillen, D. (2018). Learning hand-eye coordination for robotic grasping with deep learning and large-scale data collection. *International Journal of Robotics Research*, 37, 421–436.
- Levy, D. (1989). The million pound bridge program. In Levy, D. and Beal, D. (Eds.), *Heuristic Programming in Artificial Intelligence*. Ellis Horwood.
- **Levy**, D. (2008). Love and Sex with Robots: The Evolution of Human—Robot Relationships. Harper.
- **Levy**, O. and Goldberg, Y. (2014). Linguistic regularities in sparse and explicit word representations. In *Proc. Eighteenth Conference on Computational Natural Language Learning*.
- **Leyton-Brown**, K. and Shoham, Y. (2008). *Essentials of Game Theory: A Concise, Multidisciplinary Introduction*. Morgan & Claypool.
- Li, C. M. and Anbulagan (1997). Heuristics based on unit propagation for satisfiability problems. In *IJCAI*-07
- Li, K. and Malik, J. (2018a). Implicit maximum likelihood estimation. arXiv:1809.09087.
- Li, K. and Malik, J. (2018b). On the implicit assumptions of GANs. arXiv:1811.12402.

- Li, M., Vitányi, P., et al. (2008). An Introduction to Kolmogorov Complexity and Its Applications (3rd edition). Springer-Verlag.
- Li, T.-M., Gharbi, M., Adams, A., Durand, F., and Ragan-Kelley, J. (2018). Differentiable programming for image processing and deep learning in Halide. *ACM Transactions on Graphics*, 37, 139.
- Li, W. and Todorov, E. (2004). Iterative linear quadratic regulator design for nonlinear biological movement systems. In *Proc. 1st International Conference on Informatics in Control, Automation and Robotics*.
- Li, X. and Yao, X. (2012). Cooperatively coevolving particle swarms for large scale optimization. *IEEE Trans. Evolutionary Computation*, 16, 210–224.
- Li, Z., Li, P., Krishnan, A., and Liu, J. (2011). Largescale dynamic gene regulatory network inference combining differential equation models with local dynamic Bayesian network analysis. *Bioinformatics*, 27 19, 2686–91
- **Liang**, P., Jordan, M. I., and Klein, D. (2011). Learning dependency-based compositional semantics. arXiv:1109.6841.
- **Liang**, P. and Potts, C. (2015). Bringing machine learning and compositional semantics together. *Annual Review of Linguistics*, 1, 355–376.
- **Liberatore**, P. (1997). The complexity of the language **A**. *Electronic Transactions on Artificial Intelligence*, *1*, 13–38.
- **Lifschitz**, V. (2001). Answer set programming and plan generation. *AIJ*, *138*, 39–54.
- Lighthill, J. (1973). Artificial intelligence: A general survey. In Lighthill, J., Sutherland, N. S., Needham, R. M., Longuet-Higgins, H. C., and Michie, D. (Eds.), Artificial Intelligence: A Paper Symposium. Science Research Council of Great Britain.
- **Lillicrap**, T., Hunt, J. J., Pritzel, A., Heess, N., Erez, T., Tassa, Y., Silver, D., and Wierstra, D. (2015). Continuous control with deep reinforcement learning. arXiv:1509.02971.
- **Lin**, S. (1965). Computer solutions of the travelling salesman problem. *Bell Systems Technical Journal*, 44(10), 2245–2269.
- **Lin**, S. and Kernighan, B. W. (1973). An effective heuristic algorithm for the travelling-salesman problem. *Operations Research*, *21*, 498–516.
- **Lindley**, D. V. (1956). On a measure of the information provided by an experiment. *Annals of Mathematical Statistics*, 27, 986–1005.
- Lindsay, R. K., Buchanan, B. G., Feigenbaum, E. A., and Lederberg, J. (1980). Applications of Artificial Intelligence for Organic Chemistry: The DENDRAL Project. McGraw-Hill.
- **Lindsten**, F., Jordan, M. I., and Schön, T. B. (2014). Particle Gibbs with ancestor sampling. *JMLR*, *15*, 2145–2184.
- **Littman**, M. L. (1994). Markov games as a framework for multi-agent reinforcement learning. In *ICML*-94.
- **Littman**, M. L., Cassandra, A. R., and Kaelbling, L. P. (1995). Learning policies for partially observable environments: Scaling up. In *ICML-95*.
- **Littman**, M. L. (2015). Reinforcement learning improves behaviour from evaluative feedback. *Nature*, 521, 445–451.
- Littman, M. L., Topcu, U., Fu, J., Isbell, C., Wen, M., and MacGlashan, J. (2017). Environment-independent task specifications via GLTL. arXiv:1704.04341.
- Liu, B., Gemp, I., Ghavamzadeh, M., Liu, J., Mahadevan, S., and Petrik, M. (2018). Proximal gradient temporal difference learning: Stable reinforcement learning with polynomial sample complexity. *JAIR*, 63, 461–494.

- **Liu**, H., Simonyan, K., Vinyals, O., Fernando, C., and Kavukcuoglu, K. (2017). Hierarchical representations for efficient architecture search. arXiv:1711.00436.
- **Liu**, H., Simonyan, K., and Yang, Y. (2019). DARTS: Differentiable architecture search. In *ICLR-19*.
- **Liu**, J. and Chen, R. (1998). Sequential Monte Carlo methods for dynamic systems. *JASA*, 93, 1022–1031.
- Liu, J. and West, M. (2001). Combined parameter and state estimation in simulation-based filtering. In Doucet, A., de Freitas, J. F. G., and Gordon, N. (Eds.), Sequential Monte Carlo Methods in Practice. Springer.
- Liu, L. T., Dean, S., Rolf, E., Simchowitz, M., and Hardt, M. (2018a). Delayed impact of fair machine learning. arXiv:1803.04383.
- **Liu**, M.-Y., Breuel, T., and Kautz, J. (2018b). Unsupervised image-to-image translation networks. In *NeurIPS 30*.
- Liu, X., Faes, L., Kale, A. U., Wagner, S. K., Fu, D. J., Bruynseels, A., Mahendiran, T., Moraes, G., Shamdas, M., Kern, C., Ledsam, J. R., Schmid, M., Balaskas, K., Topol, E., Bachmann, L. M., Keane, P. A., and Denniston, A. K. (2019a). A comparison of deep learning performance against health-care professionals in detecting diseases from medical imaging: A systematic review and meta-analysis. *The Lancet Digital Health*.
- Liu, Y., Ott, M., Goyal, N., Du, J., Joshi, M., Chen, D., Levy, O., Lewis, M., Zettlemoyer, L., and Stoyanov, V. (2019b). RoBERTa: A robustly optimized BERT pretraining approach. arXiv:1907.11692.
- Liu, Y., Jain, A., Eng, C., Way, D. H., Lee, K., Bui, P., Kanada, K., de Oliveira Marinho, G., Gallegos, J., Gabriele, S., Gupta, V., Singh, N., Natarajan, V., Hofmann-Wellenhof, R., Corrado, G., Peng, L., Webster, D. R., Ai, D., Huang, S., Liu, Y., Dunn, R. C., and Coz, D. (2019c). A deep learning system for differential diagnosis of skin diseases. arXiv:1909.
- Liu, Y., Gadepalli, K. K., Norouzi, M., Dahl, G., Kohlberger, T., Venugopalan, S., Boyko, A. S., Timofeev, A., Nelson, P. Q., Corrado, G., Hipp, J. D., Peng, L., and Stumpe, M. C. (2017). Detecting cancer metastases on gigapixel pathology images. arXiv:1703.02442.
- Liu, Y., Kohlberger, T., Norouzi, M., Dahl, G., Smith, J. L., Mohtashamian, A., Olson, N., Peng, L., Hipp, J. D., and Stumpe, M. C. (2018). Artificial intelligence-based breast cancer nodal metastasis detection: Insights into the black box for pathologists. *Archives of Pathology & Laboratory Medicine*, 143, 859–868.
- **Livescu**, K., Glass, J., and Bilmes, J. (2003). Hidden feature modeling for speech recognition using dynamic Bayesian networks. In *EUROSPEECH-2003*.
- **Lloyd**, S. (2000). Ultimate physical limits to computation. *Nature*, 406, 1047–1054.
- **Lloyd**, W. F. (1833). *Two Lectures on the Checks to Population*. Oxford University.
- Llull, R. (1305). *Ars Magna*. Published as Salzinger, I. *et al.* (Eds.), *Raymundi Lulli Opera omnia*, Mainz, 1721–1742.
- **Loftus**, E. and Palmer, J. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *J. Verbal Learning and Verbal Behavior*, 13, 585–589.
- **Lohn**, J. D., Kraus, W. F., and Colombano, S. P. (2001). Evolutionary optimization of yagi-uda antennas. In *Proc. Fourth International Conference on Evolvable Systems*.
- **Longuet-Higgins**, H. C. (1981). A computer algorithm for reconstructing a scene from two projections. *Nature*, 293, 133–135.

- Loos, S., Irving, G., Szegedy, C., and Kaliszyk, C. (2017). Deep network guided proof search. In *Proc. 21st Int'l Conf. on Logic for Programming, Artificial Intelligence and Reasoning*.
- **Lopez de Segura**, R. (1561). *Libro de la invencion liberal y arte del juego del axedrez*. Andres de Angulo.
- **Lorentz**, R. (2015). Early playout termination in MCTS. In Plaat, A., van den Herik, J., and Kosters, W. (Eds.), *Advances in Computer Games*. Springer-Verlag.
- Love, N., Hinrichs, T., and Genesereth, M. R. (2006). General game playing: Game description language specification. Tech. rep., Stanford University Computer Science Dept.
- **Lovejoy**, W. S. (1991). A survey of algorithmic methods for partially observed Markov decision processes. *Annals of Operations Research*, 28, 47–66.
- Lovelace, A. (1843). Sketch of the analytical engine invented by Charles Babbage. Notes appended to Lovelace's translation of an article of the above title written by L. F. Menabrea based on lectures by Charles babbage in 1840. The translation appeared in R. Taylor (Ed.), Scientific Memoirs, vol. III. R. and J. E. Taylor, London.
- **Loveland**, D. (1970). A linear format for resolution. In *Proc. IRIA Symposium on Automatic Demonstration*.
- **Lowe**, D. (1987). Three-dimensional object recognition from single two-dimensional images. *AIJ*, 31, 255, 205
- **Lowe**, D. (2004). Distinctive image features from scale-invariant keypoints. *IJCV*, 60, 91–110.
- **Löwenheim**, L. (1915). Über möglichkeiten im Relativkalkül. *Mathematische Annalen*, 76, 447–470.
- **Lowerre**, B. T. (1976). *The* HARPY *Speech Recognition System*. Ph.D. thesis, Computer Science Department, Carnegie-Mellon University.
- **Lowry**, M. (2008). Intelligent software engineering tools for NASA's crew exploration vehicle. In *ISMIS*-08
- **Loyd**, S. (1959). *Mathematical Puzzles of Sam Loyd:* Selected and Edited by Martin Gardner. Dover.
- **Lozano-Perez**, T. (1983). Spatial planning: A configuration space approach. *IEEE Transactions on Computers*, C-32, 108–120.
- **Lozano-Perez**, T., Mason, M., and Taylor, R. (1984). Automatic synthesis of fine-motion strategies for robots. *Int. J. Robotics Research*, *3*, 3–24.
- Lu, F. and Milios, E. (1997). Globally consistent range scan alignment for environment mapping. *Autonomous Robots*, 4, 333–349.
- **Lubberts**, A. and Miikkulainen, R. (2001). Coevolving a Go-playing neural network. In *GECCO-01*.
- **Luby**, M., Sinclair, A., and Zuckerman, D. (1993). Optimal speedup of Las Vegas algorithms. *Information Processing Letters*, 47, 173–180.
- Lucas, J. R. (1961). Minds, machines, and Gödel. *Philosophy*, 36.
- **Lucas**, J. R. (1976). This Gödel is killing me: A rejoinder. *Philosophia*, 6, 145–148.
- **Lucas**, P., van der Gaag, L., and Abu-Hanna, A. (2004). Bayesian networks in biomedicine and health-care. *Artificial Intelligence in Medicine*.
- Luce, D. R. and Raiffa, H. (1957). Games and Decisions. Wiley.
- **Lukasiewicz**, T. (1998). Probabilistic logic programming. In *ECAI-98*.
- **Lundberg**, S. M. and Lee, S.-I. (2018). A unified approach to interpreting model predictions. In *NeurIPS*

- **Lunn**, D., Jackson, C., Best, N., Thomas, A., and Spiegelhalter, D. J. (2013). *The BUGS Book: A Practical Introduction to Bayesian Analysis*. Chapman and Hall.
- **Lunn**, D., Thomas, A., Best, N., and Spiegelhalter, D. J. (2000). WinBUGS—a Bayesian modelling framework: Concepts, structure, and extensibility. *Statistics and Computing*, 10, 325–337.
- **Luo**, S., Bimbo, J., Dahiya, R., and Liu, H. (2017). Robotic tactile perception of object properties: A review. *Mechatronics*, 48, 54–67.
- **Lyman**, P. and Varian, H. R. (2003). How much information? www.sims.berkeley.edu/how-much-info-2003.
- **Lynch**, K. and Park, F. C. (2017). *Modern Robotics*. Cambridge University Press.
- **Machina**, M. (2005). Choice under uncertainty. In *Encyclopedia of Cognitive Science*. Wiley.
- MacKay, D. J. C. (2002). *Information Theory, Inference and Learning Algorithms*. Cambridge University Press.
- **MacKenzie**, D. (2004). *Mechanizing Proof.* MIT Press.
- Mackworth, A. K. (1977). Consistency in networks of relations. *AIJ*, 8, 99–118.
- **Mackworth**, A. K. and Freuder, E. C. (1985). The complexity of some polynomial network consistency algorithms for constraint satisfaction problems. *AIJ*, 25, 65–74.
- **Madhavan**, R. and Schlenoff, C. I. (2003). Moving object prediction for off-road autonomous navigation. In *Unmanned Ground Vehicle Technology V*.
- **Mailath**, G. and Samuelson, L. (2006). *Repeated Games and Reputations: Long-Run Relationships*. Oxford University Press.
- **Majercik**, S. M. and Littman, M. L. (2003). Contingent planning under uncertainty via stochastic satisfiability. *AIJ*, *147*, 119–162.
- **Malhotra**, P., Vig, L., Shroff, G., and Agarwal, P. (2015). Long short term memory networks for anomaly detection in time series. In *ISANN-15*.
- Malik, D., Palaniappan, M., Fisac, J. F., Hadfield-Menell, D., Russell, S. J., and Dragan, A. D. (2018). An efficient, generalized bellman update for cooperative inverse reinforcement learning. In *ICML-18*.
- Malone, T. W. (2004). *The Future of Work*. Harvard Business Review Press.
- **Maneva**, E., Mossel, E., and Wainwright, M. (2007). A new look at survey propagation and its generalizations. arXiv:cs/0409012.
- **Manna**, Z. and Waldinger, R. (1971). Toward automatic program synthesis. *CACM*, *14*, 151–165.
- **Manna**, Z. and Waldinger, R. (1985). *The Logical Basis for Computer Programming: Volume 1: Deductive Reasoning*. Addison-Wesley.
- Manne, A. S. (1960). Linear programming and sequential decisions. *Management Science*, 6, 259–267.
- Manning, C. and Schütze, H. (1999). Foundations of Statistical Natural Language Processing. MIT Press.
- **Manning**, C., Raghavan, P., and Schütze, H. (2008). *Introduction to Information Retrieval*. Cambridge University Press.
- **Mannion**, M. (2002). Using first-order logic for product line model validation. In *Software Product Lines: Second International Conference*.
- Mansinghka, V. K., Selsam, D., and Perov, Y. (2013). Venture: A higher-order probabilistic programming platform with programmable inference. arXiv:1404.0099.

- Marbach, P. and Tsitsiklis, J. N. (1998). Simulationbased optimization of Markov reward processes. Technical report, Laboratory for Information and Decision Systems, MIT.
- Marcus, G. (2009). Kluge: The Haphazard Evolution of the Human Mind. Mariner Books.
- Marcus, M. P., Santorini, B., and Marcinkiewicz, M. A. (1993). Building a large annotated corpus of English: The Penn treebank. *Computational Linguistics*, 19. 313–330.
- **Marinescu**, R. and Dechter, R. (2009). AND/OR branch-and-bound search for combinatorial optimization in graphical models. *AIJ*, *173*, 1457–1491.
- Markov, A. (1913). An example of statistical investigation in the text of "Eugene Onegin" illustrating coupling of "tests" in chains. *Proc. Academy of Sciences of St. Petersburg*, 7, 153–162.
- Marler, R. T. and Arora, J. S. (2004). Survey of multiobjective optimization methods for engineering. *Structural and Multidisciplinary Optimization*, 26, 369– 395.
- Maron, M. E. (1961). Automatic indexing: An experimental inquiry. *JACM*, 8, 404–417.
- **Màrquez**, L. and Rodríguez, H. (1998). Part-of-speech tagging using decision trees. In *ECML*-98.
- Marr, D. and Poggio, T. (1976). Cooperative computation of stereo disparity. *Science*, 194, 283–287.
- Marr, D. (1982). Vision: A Computational Investigation into the Human Representation and Processing of Visual Information. W. H. Freeman.
- Marriott, K. and Stuckey, P. J. (1998). Programming with Constraints: An Introduction. MIT Press.
- Marsland, S. (2014). *Machine Learning: An Algorithmic Perspective* (2nd edition). CRC Press.
- **Martelli**, A. and Montanari, U. (1973). Additive AND/OR graphs. In *IJCAI-73*.
- **Martelli**, A. (1977). On the complexity of admissible search algorithms. *AIJ*, 8, 1–13.
- Marthi, B., Pasula, H., Russell, S. J., and Peres, Y. (2002). Decayed MCMC filtering. In *UAI-02*.
- **Marthi**, B., Russell, S. J., Latham, D., and Guestrin, C. (2005). Concurrent hierarchical reinforcement learning. In *IJCAI-05*.
- Marthi, B., Russell, S. J., and Wolfe, J. (2007). Angelic semantics for high-level actions. In *ICAPS-07*.
- **Marthi**, B., Russell, S. J., and Wolfe, J. (2008). Angelic hierarchical planning: Optimal and online algorithms. In *ICAPS-08*.
- Martin, D., Fowlkes, C., and Malik, J. (2004). Learning to detect natural image boundaries using local brightness, color, and texture cues. *PAMI*, 26, 530–540
- Martin, F. G. (2012). Will massive open online courses change how we teach? *CACM*, 55, 26–28.
- Martin, J. H. (1990). A Computational Model of Metaphor Interpretation. Academic Press.
- **Mason**, M. (1993). Kicking the sensing habit. *AIMag*, *14*, 58–59.
- Mason, M. (2001). *Mechanics of Robotic Manipulation*. MIT Press.
- Mason, M. and Salisbury, J. (1985). Robot Hands and the Mechanics of Manipulation. MIT Press.
- Mataric, M. J. (1997). Reinforcement learning in the multi-robot domain. *Autonomous Robots*, 4, 73–83.
- Mates, B. (1953). Stoic Logic. University of California Press.

- Matuszek, C., Cabral, J., Witbrock, M., and DeOliveira, J. (2006). An introduction to the syntax and semantics of Cyc. In Proc. AAAI Spring Symposium on Formalizing and Compiling Background Knowledge and Its Applications to Knowledge Representation and Ouestion Answering.
- **Mausam and Kolobov**, A. (2012). *Planning with Markov Decision Processes: An AI Perspective*. Morgan & Claypool.
- **Maxwell**, J. (1868). On governors. *Proc. Roy. Soc.*, 16, 270–283.
- **Mayer**, J., Khairy, K., and Howard, J. (2010). Drawing an elephant with four complex parameters. *American Journal of Physics*, 78, 648–649.
- Mayor, A. (2018). Gods and Robots: Myths, Machines, and Ancient Dreams of Technology. Princeton University Press.
- **McAllester**, D. A. (1980). An outlook on truth maintenance. AI memo, MIT AI Laboratory.
- **McAllester**, D. A. (1988). Conspiracy numbers for min-max search. *AIJ*, *35*, 287–310.
- McAllester, D. A. (1998). What is the most pressing issue facing AI and the AAAI today? Candidate statement, election for Councilor of the American Association for Artificial Intelligence.
- **McAllester**, D. A. and Rosenblitt, D. (1991). Systematic nonlinear planning. In *AAAI-91*.
- **McAllester**, D. A. (1990). Truth maintenance. In *AAAI-90*
- McAllester, D. A., Milch, B., and Goodman, N. D. (2008). Random-world semantics and syntactic independence for expressive languages. Technical report, MIT
- **McCallum**, A. (2003). Efficiently inducing features of conditional random fields. In *UAI-03*.
- **McCallum**, A., Schultz, K., and Singh, S. (2009). FACTORIE: Probabilistic programming via imperatively defined factor graphs. In *NeurIPS* 22.
- McCarthy, J. (1958). Programs with common sense. In *Proc. Symposium on Mechanisation of Thought Processes*
- **McCarthy**, J. (1963). Situations, actions, and causal laws. Memo, Stanford University Artificial Intelligence Project.
- **McCarthy**, J. (1968). Programs with common sense. In Minsky, M. L. (Ed.), *Semantic Information Processing*. MIT Press.
- **McCarthy**, J. (1980). Circumscription: A form of non-monotonic reasoning. *AIJ*, *13*, 27–39.
- McCarthy, J. (2007). From here to human-level AI.
- McCarthy, J. and Hayes, P. J. (1969). Some philosophical problems from the standpoint of artificial intelligence. In Meltzer, B., Michie, D., and Swann, M. (Eds.), Machine Intelligence 4. Edinburgh University Press
- McCawley, J. D. (1988). *The Syntactic Phenomena of English*. University of Chicago Press.
- **McCorduck**, P. (2004). *Machines Who Think: A Personal Inquiry Into the History and Prospects of Artificial Intelligence* (Revised edition). A K Peters.
- **McCulloch**, W. S. and Pitts, W. (1943). A logical calculus of the ideas immanent in nervous activity. *Bulletin of Mathematical Biophysics*, *5*, 115–137.
- **McCune**, W. (1997). Solution of the Robbins problem. *JAR*, *19*, 263–276.
- McCune, W. (1990). Otter 2.0. In International Conference on Automated Deduction.
- **McDermott**, D. (1976). Artificial intelligence meets natural stupidity. *SIGART Newsletter*, *57*, 4–9.

**McDermott**, D. (1978a). Planning and acting. *Cognitive Science*, 2, 71–109.

**McDermott**, D. (1978b). Tarskian semantics, or no notation without denotation! *Cognitive Science*, 2, 277 – 282.

**McDermott**, D. (1985). Reasoning about plans. In Hobbs, J. and Moore, R. (Eds.), *Formal theories of the commonsense world*. Ablex.

**McDermott**, D. (1987). A critique of pure reason. *Computational Intelligence*, *3*, 151–237.

**McDermott**, D. (1996). A heuristic estimator for means-ends analysis in planning. In *ICAPS-96*.

**McDermott**, D. and Doyle, J. (1980). Non-monotonic logic: i. *AIJ*, *13*, 41–72.

**McDermott**, J. (1982). R1: A rule-based configurer of computer systems. *AIJ*, *19*, 39–88.

McEliece, R. J., MacKay, D. J. C., and Cheng, J.-F. (1998). Turbo decoding as an instance of Pearl's "belief propagation" algorithm. *IEEE Journal on Selected Areas in Communications*, 16, 140–152.

**McGregor**, J. J. (1979). Relational consistency algorithms and their application in finding subgraph and graph isomorphisms. *Information Sciences*, 19, 229–250.

McIlraith, S. and Zeng, H. (2001). Semantic web services. *IEEE Intelligent Systems*, 16, 46–53.

**McKinney**, W. (2012). *Python for Data Analysis: Data Wrangling with Pandas*. O'Reilly.

McLachlan, G. J. and Krishnan, T. (1997). *The EM Algorithm and Extensions*. Wiley.

**McMahan**, H. B. and Andrew, G. (2018). A general approach to adding differential privacy to iterative training procedures. arXiv:1812.06210.

McMillan, K. L. (1993). Symbolic Model Checking.

McWhorter, J. H. (2014). The Language Hoax: Why the World Looks the Same in Any Language. Oxford University Press.

**Meehl**, P. (1955). *Clinical vs. Statistical Prediction*. University of Minnesota Press.

**Mehrabi**, N., Morstatter, F., Saxena, N., Lerman, K., and Galstyan, A. (2019). A survey on bias and fairness in machine learning. arXiv:1908.09635.

Mendel, G. (1866). Versuche über pflanzen-hybriden. Verhandlungen des Naturforschenden Vereins, Abhandlungen, Brünn, 4, 3–47. Translated into English by C. T. Druery, published by Bateson (1902).

**Mercer**, J. (1909). Functions of positive and negative type and their connection with the theory of integral equations. *Phil. Trans. Roy. Soc.*, A, 209, 415–446.

**Merleau-Ponty**, M. (1945). *Phenomenology of Perception*. Routledge.

**Metropolis**, N., Rosenbluth, A., Rosenbluth, M., Teller, A., and Teller, E. (1953). Equations of state calculations by fast computing machines. *J. Chemical Physics*, *21*, 1087–1091.

**Metropolis**, N. and Ulam, S. (1949). The beginning of the Monte Carlo method. *Journal of the American Statistical Association*, 44, 335–341.

Mézard, M., Parisi, G., and Virasoro, M. (1987). Spin Glass Theory and Beyond: An Introduction to the Replica Method and Its Applications. World Scientific.

Michie, D. (1966). Game-playing and game-learning automata. In Fox, L. (Ed.), *Advances in Programming and Non-Numerical Computation*. Pergamon.

**Michie**, D. (1972). Machine intelligence at Edinburgh. *Management Informatics*, 2, 7–12.

**Michie**, D. and Chambers, R. A. (1968). BOXES: An experiment in adaptive control. In Dale, E. and Michie, D. (Eds.), *Machine Intelligence* 2. Elsevier.

Michie, D. (1963). Experiments on the mechanization of game-learning Part I. Characterization of the model and its parameters. *The Computer Journal*, 6, 232–236

Miikkulainen, R., Liang, J., Meyerson, E., Rawal, A., Fink, D., Francon, O., Raju, B., Shahrzad, H., Navruzyan, A., Duffy, N., et al. (2019). Evolving deep neural networks. In Artificial Intelligence in the Age of Neural Networks and Brain Computing. Elsevier.

**Mikolov**, T., Chen, K., Corrado, G., and Dean, J. (2013). Efficient estimation of word representations in vector space. arXiv:1301.3781.

Mikolov, T., Karafiát, M., Burget, L., Černockỳ, J., and Khudanpur, S. (2010). Recurrent neural network based language model. In *Eleventh Annual Conference of the International Speech Communication Association*.

**Mikolov**, T., Sutskever, I., Chen, K., Corrado, G., and Dean, J. (2014). Distributed representations of words and phrases and their compositionality. In *NeurIPS 26*.

**Milch**, B. (2006). *Probabilistic Models with Unknown Objects*. Ph.D. thesis, UC Berkeley.

Milch, B., Marthi, B., Sontag, D., Russell, S. J., Ong, D., and Kolobov, A. (2005). BLOG: Probabilistic models with unknown objects. In *IJCAI-05*.

Milch, B., Zettlemoyer, L., Kersting, K., Haimes, M., and Kaelbling, L. P. (2008). Lifted probabilistic inference with counting formulas. In *AAAI-08*.

**Milgrom**, P. (1997). Putting auction theory to work: The simultaneous ascending auction. Tech. rep., Stanford University Department of Economics.

Mill, J. S. (1863). *Utilitarianism*. Parker, Son and Bourn, London.

Miller, A. C., Merkhofer, M. M., Howard, R. A., Matheson, J. E., and Rice, T. R. (1976). Development of automated aids for decision analysis. Technical report, SRI International.

Miller, T., Howe, P., and Sonenberg, L. (2017). Explainable AI: Beware of inmates running the asylum. In *Proc. IJCAI-17 Workshop on Explainable AI*.

Minka, T. (2010). Bayesian linear regression. Unpublished manuscript.

**Minka**, T., Cleven, R., and Zaykov, Y. (2018). TrueSkill 2: An improved Bayesian skill rating system. Tech. rep., Microsoft Research.

Minker, J. (2001). Logic-Based Artificial Intelligence. Kluwer.

Minsky, M. L. (1975). A framework for representing knowledge. In Winston, P. H. (Ed.), *The Psychology of Computer Vision*. McGraw-Hill.

Minsky, M. L. (1986). The Society of Mind. Simon and Schuster.

Minsky, M. L. (2007). The Emotion Machine: Commonsense Thinking, Artificial Intelligence, and the Future of the Human Mind. Simon and Schuster.

Minsky, M. L. and Papert, S. (1969). *Perceptrons: An Introduction to Computational Geometry*. MIT Press.

**Minsky**, M. L. and Papert, S. (1988). *Perceptrons: An Introduction to Computational Geometry* (Expanded edition). MIT Press.

**Minsky**, M. L., Singh, P., and Sloman, A. (2004). The St. Thomas common sense symposium: Designing architectures for human-level intelligence. *AlMag*, 25, 113–124.

**Minton**, S., Johnston, M. D., Philips, A. B., and Laird, P. (1992). Minimizing conflicts: A heuristic repair method for constraint satisfaction and scheduling problems. *AIJ*, *58*, 161–205.

Mirjalili, S. M. and Lewis, A. (2014). Grey wolf optimizer. *Advances in Engineering Software*, 69, 46–61.

**Misak**, C. (2004). *The Cambridge Companion to Peirce*. Cambridge University Press.

Mitchell, M., Wu, S., Zaldivar, A., Barnes, P., Vasserman, L., Hutchinson, B., Spitzer, E., Raji, I. D., and Gebru, T. (2019). Model cards for model reporting. *Proc. of the Conference on Fairness, Accountability, and Transparency.* 

Mitchell, M. (1996). An Introduction to Genetic Algorithms. MIT Press.

Mitchell, M. (2019). Artificial Intelligence: A Guide for Thinking Humans. Farrar, Straus and Giroux.

**Mitchell**, M., Holland, J. H., and Forrest, S. (1996). When will a genetic algorithm outperform hill climbing? In *NeurIPS* 6.

Mitchell, T. M. (1997). Machine Learning. McGraw-

Mitchell, T. M. (2005). Reading the web: A breakthrough goal for AI. *AIMag*, 26.

Mitchell, T. M. (2007). Learning, information extraction and the web. In ECML-07.

Mitchell, T. M., Cohen, W., Hruschka, E., Talukdar, P., Yang, B., Betteridge, J., Carlson, A., Dalvi, B., Gardner, M., Kisiel, B., *et al.* (2018). Never-ending learning. *CACM*, *61*, 103–115.

Mitchell, T. M., Shinkareva, S. V., Carlson, A., Chang, K.-M., Malave, V. L., Mason, R. A., and Just, M. A. (2008). Predicting human brain activity associated with the meanings of nouns. *Science*, 320, 1191–1195.

**Mittelstadt**, B. (2019). Principles alone cannot guarantee ethical AI. *Nature Machine Intelligence*, *1*, 501–507.

Mitten, L. G. (1960). An analytic solution to the least cost testing sequence problem. *Journal of Industrial Engineering*, 11, 17.

Miyato, T., Kataoka, T., Koyama, M., and Yoshida, Y. (2018). Spectral normalization for generative adversarial networks. arXiv:1802.05957.

Mnih, V., Kavukcuoglu, K., Silver, D., Graves, A., Antonoglou, I., Wierstra, D., and Riedmiller, M. A. (2013). Playing Atari with deep reinforcement learning. arXiv:1312.5602.

Mnih, V., Kavukcuoglu, K., Silver, D., Rusu, A. A., Veness, J., Bellemare, M. G., Graves, A., Riedmiller, M. A., Fidjeland, A., Ostrovski, G., Petersen, S., Beattie, C., Sadik, A., Antonoglou, I., King, H., Kumaran, D., Wierstra, D., Legg, S., and Hassabis, D. (2015). Human-level control through deep reinforcement learning. *Nature*, 518, 529–533.

**Mohr**, R. and Henderson, T. C. (1986). Arc and path consistency revisited. *AIJ*, 28, 225–233.

Montague, R. (1970). English as a formal language. In Visentini, B. (Ed.), *Linguaggi nella Società e nella Tecnica*. Edizioni di Comunità.

Montague, R. (1973). The proper treatment of quantification in ordinary English. In Hintikka, K. J. J., Moravcsik, J. M. E., and Suppes, P. (Eds.), *Approaches to Natural Language*. D. Reidel.

**Montanari**, U. (1974). Networks of constraints: Fundamental properties and applications to picture processing. *Information Sciences*, 7, 95–132.

**Montemerlo**, M. and Thrun, S. (2004). Large-scale robotic 3-D mapping of urban structures. In *Proc. International Symposium on Experimental Robotics*.

**Montemerlo**, M., Thrun, S., Koller, D., and Wegbreit, B. (2002). FastSLAM: A factored solution to the simultaneous localization and mapping problem. In *AAAI-02*.

**Mooney**, R. (1999). Learning for semantic interpretation: Scaling up without dumbing down. In *Proc. 1st Workshop on Learning Language in Logic*.

**Moore**, A. M. and Wong, W.-K. (2003). Optimal reinsertion: A new search operator for accelerated and more accurate Bayesian network structure learning. In *ICML-03*.

**Moore**, A. W. and Atkeson, C. G. (1993). Prioritized sweeping—Reinforcement learning with less data and less time. *Machine Learning*, *13*, 103–130.

**Moore**, A. W. and Lee, M. S. (1997). Cached sufficient statistics for efficient machine learning with large datasets. *JAIR*, 8, 67–91.

Moore, E. F. (1959). The shortest path through a maze. In *Proc. International Symposium on the Theory of Switching, Part II.* Harvard University Press.

**Moore**, R. C. (1980). Reasoning about knowledge and action. Artificial intelligence center technical note, SRI International.

Moore, R. C. (1985). A formal theory of knowledge and action. In Hobbs, J. R. and Moore, R. C. (Eds.), Formal Theories of the Commonsense World. Ablex.

Moore, R. C. and DeNero, J. (2011). L1 and L2 regularization for multiclass hinge loss models. In Symposium on Machine Learning in Speech and Natural Language Processing.

Moravčík, M., Schmid, M., Burch, N., Lisý, V., Morrill, D., Bard, N., Davis, T., Waugh, K., Johanson, M., and Bowling, M. (2017). Deepstack: Expert-level artificial intelligence in no-limit poker. arXiv:1701.01724.

**Moravec**, H. P. (1983). The Stanford cart and the CMU rover. *Proc. IEEE*, 71, 872–884.

**Moravec**, H. P. and Elfes, A. (1985). High resolution maps from wide angle sonar. In *ICRA-85*.

Moravec, H. P. (2000). Robot: Mere Machine to Transcendent Mind. Oxford University Press.

Morgan, C. L. (1896). *Habit and Instinct*. Edward Arnold

Morgan, T. J. H. and Griffiths, T. L. (2015). What the Baldwin Effect affects. In *COGSCI-15*.

Morjaria, M. A., Rink, F. J., Smith, W. D., Klempner, G., Burns, C., and Stein, J. (1995). Elicitation of probabilities for belief networks: Combining qualitative and quantitative information. In *UAI-95*.

Morrison, P. and Morrison, E. (Eds.). (1961). Charles Babbage and His Calculating Engines: Selected Writings by Charles Babbage and Others. Dover.

Moskewicz, M. W., Madigan, C. F., Zhao, Y., Zhang, L., and Malik, S. (2001). Chaff: Engineering an efficient SAT solver. In *Proc. 38th Design Automation Conference*.

**Mott**, A., Job, J., Vlimant, J.-R., Lidar, D., and Spiropulu, M. (2017). Solving a Higgs optimization problem with quantum annealing for machine learning. *Nature*, 550, 375

**Motzkin**, T. S. and Schoenberg, I. J. (1954). The relaxation method for linear inequalities. *Canadian Journal of Mathematics*, 6, 393–404.

**Moutarlier**, P. and Chatila, R. (1989). Stochastic multisensory data fusion for mobile robot location and environment modeling. In *ISRR*-89.

**Mueller**, E. T. (2006). *Commonsense Reasoning*. Morgan Kaufmann.

**Muggleton**, S. H. and De Raedt, L. (1994). Inductive logic programming: Theory and methods. *J. Logic Programming*, 19/20, 629–679.

Müller, M. (2002). Computer Go. AIJ, 134, 145-179.

**Mumford**, D. and Shah, J. (1989). Optimal approximations by piece-wise smooth functions and associated variational problems. *Commun. Pure Appl. Math.*, 42, 577–685.

Mundy, J. and Zisserman, A. (Eds.). (1992). Geometric Invariance in Computer Vision. MIT Press.

**Munos**, R., Stepleton, T., Harutyunyan, A., and Bellemare, M. G. (2017). Safe and efficient off-policy reinforcement learning. In *NeurIPS* 29.

**Murphy**, K. (2002). *Dynamic Bayesian Networks: Representation, Inference and Learning*. Ph.D. thesis, UC Berkeley.

Murphy, K. (2012). *Machine Learning: A Probabilistic Perspective*. MIT Press.

Murphy, K. and Mian, I. S. (1999). Modelling gene expression data using Bayesian networks. Tech. rep., Computer Science Division, UC Berkeley.

Murphy, K. and Russell, S. J. (2001). Rao-Blackwellised particle filtering for dynamic Bayesian networks. In Doucet, A., de Freitas, J. F. G., and Gordon, N. J. (Eds.), Sequential Monte Carlo Methods in Practice. Springer-Verlag.

**Murphy**, K. and Weiss, Y. (2001). The factored frontier algorithm for approximate inference in DBNs. In *UAI-01*.

Murphy, R. (2000). Introduction to AI Robotics. MIT Press

**Murray**, L. M. (2013). Bayesian state-space modelling on high-performance hardware using LibBi. arXiv:1306.3277.

Murray, R. M. (2017). A Mathematical Introduction to Robotic Manipulation. CRC Press.

Murray-Rust, P., Rzepa, H. S., Williamson, J., and Willighagen, E. L. (2003). Chemical markup, XML and the world-wide web. 4. CML schema. *J. Chem. Inf. Comput. Sci.*, 43, 752–772.

**Murthy**, C. and Russell, J. R. (1990). A constructive proof of Higman's lemma. In *LICS-90*.

**Muscettola**, N. (2002). Computing the envelope for stepwise-constant resource allocations. In *CP-02*.

**Muscettola**, N., Nayak, P., Pell, B., and Williams, B. (1998). Remote agent: To boldly go where no AI system has gone before. *AIJ*, *103*, 5–48.

Muslea, I. (1999). Extraction patterns for information extraction tasks: A survey. In *Proc. AAAI-99 Workshop on Machine Learning for Information Extraction*.

**Muth**, J. T., Vogt, D. M., Truby, R. L., Mengüç, Y., Kolesky, D. B., Wood, R. J., and Lewis, J. A. (2014). Embedded 3D printing of strain sensors within highly stretchable elastomers. *Advanced Materials*, *26*, 6307–6312.

**Myerson**, R. (1981). Optimal auction design. *Mathematics of Operations Research*, 6, 58–73.

**Myerson**, R. (1986). Multistage games with communication. *Econometrica*, *54*, 323–358.

**Myerson**, R. (1991). *Game Theory: Analysis of Conflict*. Harvard University Press.

**Nair**, V. and Hinton, G. E. (2010). Rectified linear units improve restricted Boltzmann machines. In *ICML-10*.

Nalwa, V. S. (1993). A Guided Tour of Computer Vision. Addison-Wesley.

**Narayanan**, A., Shi, E., and Rubinstein, B. I. (2011). Link prediction by de-anonymization: How we won the Kaggle social network challenge. In *IJCNN-11*.

Narayanan, A. and Shmatikov, V. (2006). How to break anonymity of the Netflix prize dataset. arXiv:cs/0610105.

Nash, J. (1950). Equilibrium points in N-person games. *PNAS*, *36*, 48–49.

Nash, P. (1973). Optimal Allocation of Resources Between Research Projects. Ph.D. thesis, University of Cambridge.

**Nayak**, P. and Williams, B. (1997). Fast context switching in real-time propositional reasoning. In *AAAI-97*.

Neches, R., Swartout, W. R., and Moore, J. D. (1985). Enhanced maintenance and explanation of expert systems through explicit models of their development. *IEEE Transactions on Software Engineering*, SE-11, 1337–1351

**Nemhauser**, G. L., Wolsey, L. A., and Fisher, M. L. (1978). An analysis of approximations for maximizing submodular set functions I. *Mathematical Programming*, 14, 265–294.

Nesterov, Y. and Nemirovski, A. (1994). *Interior-Point Polynomial Methods in Convex Programming*. SIAM (Society for Industrial and Applied Mathematics)

**Newell**, A. (1982). The knowledge level. *AIJ*, *18*, 82–127

**Newell**, A. (1990). *Unified Theories of Cognition*. Harvard University Press.

**Newell**, A. and Ernst, G. (1965). The search for generality. In *Proc. IFIP Congress*.

Newell, A., Shaw, J. C., and Simon, H. A. (1957). Empirical explorations with the logic theory machine. *Proc. Western Joint Computer Conference*, 15, 218– 239. Reprinted in Feigenbaum and Feldman (1963).

**Newell**, A. and Simon, H. A. (1961). GPS, a program that simulates human thought. In Billing, H. (Ed.), *Lernende Automaten*. R. Oldenbourg.

Newell, A. and Simon, H. A. (1972). *Human Problem Solving*. Prentice-Hall.

**Newell**, A. and Simon, H. A. (1976). Computer science as empirical inquiry: Symbols and search. *CACM* 19 113–126

**Newton**, I. (1664–1671). Methodus fluxionum et serierum infinitarum. Unpublished notes.

**Ng**, A. Y. (2004). Feature selection,  $L_1$  vs.  $L_2$  regularization, and rotational invariance. In *ICML-04*.

**Ng**, A. Y. (2019). *Machine Learning Yearning*. www.mlyearning.org.

Ng, A. Y., Harada, D., and Russell, S. J. (1999). Policy invariance under reward transformations: Theory and application to reward shaping. In *ICML-99*.

**Ng**, A. Y. and Jordan, M. I. (2000). PEGASUS: A policy search method for large MDPs and POMDPs. In *UAI-00*.

Ng, A. Y. and Jordan, M. I. (2002). On discriminative vs. generative classifiers: A comparison of logistic regression and naive Bayes. In *NeurIPS 14*.

Ng, A. Y., Kim, H. J., Jordan, M. I., and Sastry, S. (2003). Autonomous helicopter flight via reinforcement learning. In *NeurIPS 16*.

Ng, A. Y. and Russell, S. J. (2000). Algorithms for inverse reinforcement learning. In *ICML-00*.

**Nicholson**, A. and Brady, J. M. (1992). The data association problem when monitoring robot vehicles using dynamic belief networks. In *ECAI-92*.

**Nielsen**, M. A. (2015). *Neural Networks and Deep Learning*. Determination Press.

**Nielsen**, T. and Jensen, F. (2003). Sensitivity analysis in influence diagrams. *IEEE Transactions on Systems, Man and Cybernetics*, 33, 223–234.

Niemelä, I., Simons, P., and Syrjänen, T. (2000). Smodels: A system for answer set programming. In Proc. 8th International Workshop on Non-Monotonic Reasonine.

**Nikolaidis**, S. and Shah, J. (2013). Human-robot cross-training: computational formulation, modeling and evaluation of a human team training strategy. In *HRI-13* 

**Niles**, I. and Pease, A. (2001). Towards a standard upper ontology. In *Proc. International Conference on Formal Ontology in Information Systems*.

- **Nilsson**, D. and Lauritzen, S. (2000). Evaluating influence diagrams using LIMIDs. In *UAI-00*.
- Nilsson, N. J. (1965). Learning Machines: Foundations of Trainable Pattern-Classifying Systems. McGraw-Hill.
- Nilsson, N. J. (1971). Problem-Solving Methods in Artificial Intelligence. McGraw-Hill.
- **Nilsson**, N. J. (1984). Shakey the robot. Technical note, SRI International.
- **Nilsson**, N. J. (1986). Probabilistic logic. *AIJ*, 28, 71–87
- **Nilsson**, N. J. (1995). Eye on the prize. *AIMag*, *16*, 9–17.
- **Nilsson**, N. J. (2009). The Quest for Artificial Intelligence: A History of Ideas and Achievements. Cambridge University Press.
- Nisan, N. (2007). Introduction to mechanism design (for computer scientists). In Nisan, N., Roughgarden, T., Tardos, E., and Vazirani, V. V. (Eds.), Algorithmic Game Theory. Cambridge University Press.
- Nisan, N., Roughgarden, T., Tardos, E., and Vazirani, V. (Eds.). (2007). *Algorithmic Game Theory*. Cambridge University Press.
- **Niv**, Y. (2009). Reinforcement learning in the brain. *Journal of Mathematical Psychology*, 53, 139–154.
- Nivre, J., De Marneffe, M.-C., Ginter, F., Goldberg, Y., Hajic, J., Manning, C., McDonald, R., Petrov, S., et al. (2016). Universal dependencies v1: A multilingual treebank collection. In Proc. International Conference on Language Resources and Evaluation.
- **Nodelman**, U., Shelton, C., and Koller, D. (2002). Continuous time Bayesian networks. In *UAI-02*.
- Noe, A. (2009). Out of Our Heads: Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness. Hill and Wang.
- Nordfors, D., Cerf, V., and Senges, M. (2018). Disrupting Unemployment. Amazon Digital Services.
- **Norvig**, P. (1988). Multiple simultaneous interpretations of ambiguous sentences. In *COGSCI-88*.
- Norvig, P. (1992). Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp. Morgan Kaufmann.
- Norvig, P. (2009). Natural language corpus data. In Segaran, T. and Hammerbacher, J. (Eds.), *Beautiful Data*. O'Reilly.
- Nowick, S. M., Dean, M. E., Dill, D. L., and Horowitz, M. (1993). The design of a high-performance cache controller: A case study in asynchronous synthesis. *Integration: The VLSI Journal*, 15, 241–262.
- **Och**, F. J. and Ney, H. (2003). A systematic comparison of various statistical alignment models. *Computational Linguistics*, 29, 19–51.
- **Och**, F. J. and Ney, H. (2004). The alignment template approach to statistical machine translation. *Computational Linguistics*, 30, 417–449.
- Och, F. J. and Ney, H. (2002). Discriminative training and maximum entropy models for statistical machine translation. In *COLING-02*.
- **Ogawa**, S., Lee, T.-M., Kay, A. R., and Tank, D. W. (1990). Brain magnetic resonance imaging with contrast dependent on blood oxygenation. *PNAS*, 87, 9868–9872.
- **Oh**, M.-S. and Berger, J. O. (1992). Adaptive importance sampling in Monte Carlo integration. *Journal of Statistical Computation and Simulation*, 41, 143–168.
- Oh, S., Russell, S. J., and Sastry, S. (2009). Markov chain Monte Carlo data association for multi-target tracking. *IEEE Transactions on Automatic Control*, 54, 481–497.

- **Oizumi**, M., Albantakis, L., and Tononi, G. (2014). From the phenomenology to the mechanisms of consciousness: Integrated information theory 3.0. *PLoS Computational Biology*, *10*, e1003588.
- **Olesen**, K. G. (1993). Causal probabilistic networks with both discrete and continuous variables. *PAMI*, *15*, 275–279.
- Oliver, N., Garg, A., and Horvitz, E. J. (2004). Layered representations for learning and inferring office activity from multiple sensory channels. *Computer Vision and Image Understanding*, 96, 163–180.
- **Oliver**, R. M. and Smith, J. Q. (Eds.). (1990). *Influence Diagrams, Belief Nets and Decision Analysis*. Wiley.
- **Omohundro**, S. (2008). The basic AI drives. In AGI-08 Workshop on the Sociocultural, Ethical and Futurological Implications of Artificial Intelligence.
- **O'Neil**, C. (2017). Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. Broadway Books.
- O'Neil, C. and Schutt, R. (2013). *Doing Data Science:* Straight Talk from the Frontline. O'Reilly.
- **O'Reilly**, U.-M. and Oppacher, F. (1994). Program search with a hierarchical variable length representation: Genetic programming, simulated annealing and hill climbing. In *Proc. Third Conference on Parallel Problem Solving from Nature*.
- **Osborne**, M. J. (2004). *An Introduction to Game The*ory. Oxford University Pres.
- Osborne, M. J. and Rubinstein, A. (1994). A Course in Game Theory. MIT Press.
- **Osherson**, D. N., Stob, M., and Weinstein, S. (1986). Systems That Learn: An Introduction to Learning Theory for Cognitive and Computer Scientists. MIT Press.
- **Ostrom**, E. (1990). *Governing the Commons*. Cambridge University Press.
- **Padgham**, L. and Winikoff, M. (2004). *Developing Intelligent Agent Systems: A Practical Guide*. Wiley.
- **Paige**, B. and Wood, F. (2014). A compilation target for probabilistic programming languages. In *ICML-14*.
- **Paige**, B., Wood, F., Doucet, A., and Teh, Y. W. (2015). Asynchronous anytime sequential Monte Carlo. In *NeurIPS* 27.
- **Palacios**, H. and Geffner, H. (2007). From conformant into classical planning: Efficient translations that may be complete too. In *ICAPS-07*.
- **Palmer**, S. (1999). Vision Science: Photons to Phenomenology. MIT Press.
- **Papadimitriou**, C. H. (1994). *Computational Complexity*. Addison-Wesley.
- **Papadimitriou**, C. H. and Tsitsiklis, J. N. (1987). The complexity of Markov decision processes. *Mathematics of Operations Research*, 12, 441–450.
- **Papadimitriou**, C. H. and Yannakakis, M. (1991). Shortest paths without a map. *Theoretical Computer Science*, 84, 127–150.
- **Papavassiliou**, V. and Russell, S. J. (1999). Convergence of reinforcement learning with general function approximators. In *IJCAI-99*.
- Parisi, G. (1988). Statistical Field Theory. Addison-Wesley.
- **Parisi**, M. M. G. and Zecchina, R. (2002). Analytic and algorithmic solution of random satisfiability problems. *Science*, 297, 812–815.
- **Park**, J. D. and Darwiche, A. (2004). Complexity results and approximation strategies for MAP explanations. *JAIR*, 21, 101–133.
- **Parker**, A., Nau, D. S., and Subrahmanian, V. S. (2005). Game-tree search with combinatorially large belief states. In *IJCAI-05*.

- **Parker**, D. B. (1985). Learning logic. Technical report, Center for Computational Research in Economics and Management Science, MIT.
- **Parker**, L. E. (1996). On the design of behavior-based multi-robot teams. *J. Advanced Robotics*, 10, 547–578.
- **Parr**, R. and Russell, S. J. (1998). Reinforcement learning with hierarchies of machines. In *NeurIPS 10*.
- Parzen, E. (1962). On estimation of a probability density function and mode. *Annals of Mathematical Statistics*, 33, 1065–1076.
- **Pasca**, M. and Harabagiu, S. M. (2001). High performance question/answering. In *SIGIR-01*.
- Pasca, M., Lin, D., Bigham, J., Lifchits, A., and Jain, A. (2006). Organizing and searching the world wide web of facts—Step one: The one-million fact extraction challenge. In AAAI-06.
- **Paskin**, M. (2002). Maximum entropy probabilistic logic. Tech. report, UC Berkeley.
- **Pasula**, H., Marthi, B., Milch, B., Russell, S. J., and Shpitser, I. (2003). Identity uncertainty and citation matching. In *NeurIPS 15*.
- **Pasula**, H., Russell, S. J., Ostland, M., and Ritov, Y. (1999). Tracking many objects with many sensors. In *IJCAI-99*.
- **Patel-Schneider**, P. (2014). Analyzing schema.org. In *Proc. International Semantic Web Conference*.
- **Patrick**, B. G., Almulla, M., and Newborn, M. (1992). An upper bound on the time complexity of iterative-deepening-A\*. *AIJ*, *5*, 265–278.
- Paul, R. P. (1981). Robot Manipulators: Mathematics, Programming, and Control. MIT Press.
- Pauls, A. and Klein, D. (2009). K-best A\* parsing. In ACL-09
- Peano, G. (1889). Arithmetices principia, nova methodo exposita. Fratres Bocca, Turin.
- **Pearce**, J., Tambe, M., and Maheswaran, R. (2008). Solving multiagent networks using distributed constraint optimization. *AIMag*, 29, 47–62.
- **Pearl**, J. (1982a). Reverend Bayes on inference engines: A distributed hierarchical approach. In *AAAI*-
- **Pearl**, J. (1982b). The solution for the branching factor of the alpha—beta pruning algorithm and its optimality. *CACM*, 25, 559–564.
- Pearl, J. (1984). Heuristics: Intelligent Search Strategies for Computer Problem Solving. Addison-Wesley.
- **Pearl**, J. (1985). Bayesian networks: A model of self-activated memory for evidential reasoning. In *COGSCI-85*.
- **Pearl**, J. (1986). Fusion, propagation, and structuring in belief networks. *AIJ*, 29, 241–288.
- **Pearl**, J. (1987). Evidential reasoning using stochastic simulation of causal models. *AIJ*, 32, 247–257.
- **Pearl**, J. (1988). Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference. Morgan Kaufmann.
- **Pearl**, J. (2000). *Causality: Models, Reasoning, and Inference*. Cambridge University Press.
- Pearl, J. and McKenzie, D. (2018). The Book of Why. Basic Books.
- **Pearl**, J. and Verma, T. (1991). A theory of inferred causation. In *KR-91*.
- **Pearson**, K. (1895). Contributions to the mathematical theory of evolution, II: Skew variation in homogeneous material. *Phil. Trans. Roy. Soc.*, *186*, 343–414.
- **Pearson**, K. (1901). On lines and planes of closest fit to systems of points in space. *Philosophical Magazine*, 2, 559–572.

**Pease**, A. and Niles, I. (2002). IEEE standard upper ontology: A progress report. *Knowledge Engineering Review*, 17, 65–70.

**Pednault**, E. P. D. (1986). Formulating multiagent, dynamic-world problems in the classical planning framework. In *Reasoning About Actions and Plans: Proc. 1986 Workshop.* 

Pedregosa, F., Varoquaux, G., Gramfort, A., Michel, V., Thirion, B., Grisel, O., Blondel, M., Prettenhofer, P., Weiss, R., Dubourg, V., et al. (2011). Scikit-learn: Machine learning in Python. JMLR, 12, 2825–2830.

**Peirce**, C. S. (1870). Description of a notation for the logic of relatives, resulting from an amplification of the conceptions of Boole's calculus of logic. *Memoirs of the American Academy of Arts and Sciences*, 9, 317–378.

**Peirce**, C. S. (1883). A theory of probable inference. Note B. The logic of relatives. In Peirce, C. S. (Ed.), *Studies in Logic*, Little, Brown.

**Peirce**, C. S. (1909). Existential graphs. Unpublished manuscript; reprinted in (Buchler 1955).

**Peleg**, B. and Sudholter, P. (2002). *Introduction to the Theory of Cooperative Games* (2nd edition). Springer-Verlag.

**Pelikan**, M., Goldberg, D. E., and Cantu-Paz, E. (1999). BOA: The Bayesian optimization algorithm. In *GECCO-99*.

**Pemberton**, J. C. and Korf, R. E. (1992). Incremental planning on graphs with cycles. In *AIPS-92*.

**Penberthy**, J. S. and Weld, D. S. (1992). UCPOP: A sound, complete, partial order planner for ADL. In *KR-92*.

**Peng**, J. and Williams, R. J. (1993). Efficient learning and planning within the Dyna framework. *Adaptive Behavior*, 2, 437–454.

**Pennington**, J., Socher, R., and Manning, C. (2014). Glove: Global vectors for word representation. In *EMNLP-14*.

**Penrose**, R. (1989). *The Emperor's New Mind*. Oxford University Press.

**Penrose**, R. (1994). *Shadows of the Mind*. Oxford University Press.

**Peot**, M. and Smith, D. E. (1992). Conditional nonlinear planning. In *ICAPS-92*.

**Pereira**, F. and Schabes, Y. (1992). Inside-outside reestimation from partially bracketed corpora. In *ACL*-92

**Pereira**, F. and Warren, D. H. D. (1980). Definite clause grammars for language analysis: A survey of the formalism and a comparison with augmented transition networks. *AIJ*, *13*, 231–278.

**Peters**, J. and Schaal, S. (2008). Reinforcement learning of motor skills with policy gradients. *Neural Networks*, 21, 682–697.

Peters, J., Janzing, D., and Schölkopf, B. (2017). Elements of Causal Inference: Foundations and Learning Algorithms. MIT press.

Peters, M. E., Neumann, M., Iyyer, M., Gardner, M., Clark, C., Lee, K., and Zettlemoyer, L. (2018). Deep contextualized word representations. arXiv:1802.05365.

**Peterson**, C. and Anderson, J. R. (1987). A mean field theory learning algorithm for neural networks. *Complex Systems*, 1, 995–1019.

**Petosa**, N. and Balch, T. (2019). Multiplayer AlphaZero. arXiv:1910.13012.

**Pfeffer**, A. (2001). IBAL: A probabilistic rational programming language. In *IJCAI-01*.

**Pfeffer**, A., Koller, D., Milch, B., and Takusagawa, K. T. (1999). SPOOK: A system for probabilistic object-oriented knowledge representation. In *UAI-99*.

Pfeffer, A. (2016). Practical Probabilistic Programming. Manning.

**Pfeffer**, A. (2000). *Probabilistic Reasoning for Complex Systems*. Ph.D. thesis, Stanford University.

**Pfeffer**, A. (2007). The design and implementation of IBAL: A general-purpose probabilistic language. In Getoor, L. and Taskar, B. (Eds.), *Introduction to Statistical Relational Learning*. MIT Press.

**Pfeifer**, R., Bongard, J., Brooks, R. A., and Iwasawa, S. (2006). *How the Body Shapes the Way We Think: A New View of Intelligence*. Bradford.

**Pham**, H., Guan, M. Y., Zoph, B., Le, Q. V., and Dean, J. (2018). Efficient neural architecture search via parameter sharing. arXiv:1802.03268.

**Pineau**, J., Gordon, G., and Thrun, S. (2003). Point-based value iteration: An anytime algorithm for POMDPs. In *IJCAI-03*.

Pinedo, M. (2008). Scheduling: Theory, Algorithms, and Systems. Springer Verlag.

**Pinkas**, G. and Dechter, R. (1995). Improving connectionist energy minimization. *JAIR*, *3*, 223–248.

Pinker, S. (1995). Language acquisition. In Gleitman, L. R., Liberman, M., and Osherson, D. N. (Eds.), An Invitation to Cognitive Science (2nd edition). MIT Press.

Pinker, S. (2003). The Blank Slate: The Modern Denial of Human Nature, Penguin.

**Pinto**, D., McCallum, A., Wei, X., and Croft, W. B. (2003). Table extraction using conditional random fields. In *SIGIR-03*.

**Pinto**, L. and Gupta, A. (2016). Supersizing self-supervision: Learning to grasp from 50k tries and 700 robot hours. In *ICRA-16*.

Platt, J. (1999). Fast training of support vector machines using sequential minimal optimization. In Advances in Kernel Methods: Support Vector Learning. MIT Press.

**Plotkin**, G. (1972). Building-in equational theories. In Meltzer, B. and Michie, D. (Eds.), *Machine Intelligence 7*. Edinburgh University Press.

**Plummer**, M. (2003). JAGS: A program for analysis of Bayesian graphical models using Gibbs sampling. In *Proc. Third Int'l Workshop on Distributed Statistical Computine*.

**Pnueli**, A. (1977). The temporal logic of programs. In *FOCS-77*.

**Pohl**, I. (1971). Bi-directional search. In Meltzer, B. and Michie, D. (Eds.), *Machine Intelligence 6*. Edinburgh University Press.

**Pohl**, I. (1973). The avoidance of (relative) catastrophe, heuristic competence, genuine dynamic weighting and computational issues in heuristic problem solving. In *IJCAI-73*.

**Pohl**, I. (1977). Practical and theoretical considerations in heuristic search algorithms. In Elcock, E. W. and Michie, D. (Eds.), *Machine Intelligence 8*. Ellis Horwood.

**Pohl**, I. (1970). Heuristic search viewed as path finding in a graph. *AIJ*, *1*, 193–204.

**Poli**, R., Langdon, W., and McPhee, N. (2008). *A Field Guide to Genetic Programming*. Lulu.com.

**Pomerleau**, D. A. (1993). *Neural Network Perception for Mobile Robot Guidance*. Kluwer.

**Poole**, B., Lahiri, S., Raghu, M., Sohl-Dickstein, J., and Ganguli, S. (2017). Exponential expressivity in deep neural networks through transient chaos. In *NeurIPS* 29.

**Poole**, D. (1993). Probabilistic Horn abduction and Bayesian networks. *AIJ*, *64*, 81–129.

**Poole**, D. (2003). First-order probabilistic inference. In *IJCAI-03*.

**Poole**, D. and Mackworth, A. K. (2017). *Artificial Intelligence: Foundations of Computational Agents* (2 edition). Cambridge University Press.

**Poppe**, R. (2010). A survey on vision-based human action recognition. *Image Vision Comput.*, 28, 976–990.

**Popper**, K. R. (1959). *The Logic of Scientific Discovery*. Basic Books.

**Popper**, K. R. (1962). *Conjectures and Refutations: The Growth of Scientific Knowledge*. Basic Books.

**Portner**, P. and Partee, B. H. (2002). *Formal Semantics: The Essential Readings*. Wiley-Blackwell.

**Post**, E. L. (1921). Introduction to a general theory of elementary propositions. *American Journal of Mathematics*, 43, 163–185.

**Poulton**, C. and Watts, M. (2016). MIT and DARPA pack Lidar sensor onto single chip. *IEEE Spectrum*,

Poundstone, W. (1993). Prisoner's Dilemma. Anchor.

**Pourret**, O., Naïm, P., and Marcot, B. (2008). *Bayesian Networks: A Practical Guide to Applications*. Wiley.

**Pradhan**, M., Provan, G. M., Middleton, B., and Henrion, M. (1994). Knowledge engineering for large belief networks. In *UAI-94*.

**Prawitz**, D. (1960). An improved proof procedure. *Theoria*, 26, 102–139.

Press, W. H., Teukolsky, S. A., Vetterling, W. T., and Flannery, B. P. (2007). Numerical Recipes: The Art of Scientific Computing (3rd edition). Cambridge University Press

**Preston**, J. and Bishop, M. (2002). Views into the Chinese Room: New Essays on Searle and Artificial Intelligence. Oxford University Press.

**Prieditis**, A. E. (1993). Machine discovery of effective admissible heuristics. *Machine Learning*, *12*, 117–141.

**Prosser**, P. (1993). Hybrid algorithms for constraint satisfaction problems. *Computational Intelligence*, 9, 268–299.

**Pullum**, G. K. (1991). The Great Eskimo Vocabulary Hoax (and Other Irreverent Essays on the Study of Language). University of Chicago Press.

**Pullum**, G. K. (1996). Learnability, hyperlearning, and the poverty of the stimulus. In 22nd Annual Meeting of the Berkeley Linguistics Society.

**Puterman**, M. L. (1994). *Markov Decision Processes:* Discrete Stochastic Dynamic Programming. Wiley.

Puterman, M. L. and Shin, M. C. (1978). Modified policy iteration algorithms for discounted Markov decision problems. *Management Science*, 24, 1127–1137.

**Putnam**, H. (1963). 'Degree of confirmation' and inductive logic. In Schilpp, P. A. (Ed.), *The Philosophy of Rudolf Carnap*. Open Court.

**Quillian**, M. R. (1961). A design for an understanding machine. Paper presented at a colloquium: Semantic Problems in Natural Language, King's College, Cambridge, England.

**Quine**, W. V. (1953). Two dogmas of empiricism. In *From a Logical Point of View*. Harper and Row.

Quine, W. V. (1960). Word and Object. MIT Press.

Quine, W. V. (1982). *Methods of Logic* (4th edition). Harvard University Press.

**Quinlan**, J. R. (1979). Discovering rules from large collections of examples: A case study. In Michie, D. (Ed.), *Expert Systems in the Microelectronic Age*. Edinburgh University Press.

**Quinlan**, J. R. (1986). Induction of decision trees. *Machine Learning*, 1, 81–106.

**Quinlan**, J. R. (1993). *C4.5: Programs for Machine Learning*. Morgan Kaufmann.

- **Quinlan**, S. and Khatib, O. (1993). Elastic bands: Connecting path planning and control. In *ICRA-93*.
- **Quirk**, R., Greenbaum, S., Leech, G., and Svartvik, J. (1985). *A Comprehensive Grammar of the English Language*. Longman.
- **Rabani**, Y., Rabinovich, Y., and Sinclair, A. (1998). A computational view of population genetics. *Random Structures and Algorithms*, 12, 313–334.
- Rabiner, L. R. and Juang, B.-H. (1993). Fundamentals of Speech Recognition. Prentice-Hall.
- Radford, A., Metz, L., and Chintala, S. (2015). Unsupervised representation learning with deep convolutional generative adversarial networks. arXiv:1511.06434.
- **Radford**, A., Wu, J., Child, R., Luan, D., Amodei, D., and Sutskever, I. (2019). Language models are unsupervised multitask learners. *OpenAI Blog*, 1.
- Raffel, C., Shazeer, N., Roberts, A., Lee, K., Narang, S., Matena, M., Zhou, Y., Li, W., and Liu, P. J. (2019). Exploring the limits of transfer learning with a unified text-to-text transformer. arXiv:1910.10683.
- **Rafferty**, A. N., Brunskill, E., Griffiths, T. L., and Shafto, P. (2016). Faster teaching via POMDP planning. *Cognitive Science*, 40, 1290–1332.
- Rahwan, T., Michalak, T. P., Wooldridge, M., and Jennings, N. R. (2015). Coalition structure generation: A survey. *AIJ*, 229, 139–174.
- Raibert, M., Blankespoor, K., Nelson, G., and Playter, R. (2008). Bigdog, the rough-terrain quadruped robot. *IFAC Proceedings Volumes*, 41, 10822–10825.
- **Rajpurkar**, P., Zhang, J., Lopyrev, K., and Liang, P. (2016). Squad: 100,000+ questions for machine comprehension of text. In *EMNLP-16*.
- Ramsey, F. P. (1931). Truth and probability. In Braithwaite, R. B. (Ed.), *The Foundations of Mathematics and Other Logical Essays*. Harcourt Brace Jovanovich.
- Ramsundar, B. and Zadeh, R. B. (2018). TensorFlow for Deep Learning: From Linear Regression to Reinforcement Learning. O'Reilly.
- **Rao**, D. A. S. and Verweij, G. (2017). Sizing the prize: What's the real value of AI for your business and how can you capitalise? PwC.
- Raphael, B. (1976). The Thinking Computer: Mind Inside Matter. W. H. Freeman.
- **Raphson**, J. (1690). *Analysis aequationum universalis*. Apud Abelem Swalle, London.
- Raschka, S. (2015). Python Machine Learning. Packt.
- Rashevsky, N. (1936). Physico-mathematical aspects of excitation and conduction in nerves. In Cold Springs Harbor Symposia on Quantitative Biology. IV: Excitation Phenomena.
- Rashevsky, N. (1938). Mathematical Biophysics: Physico-Mathematical Foundations of Biology. University of Chicago Press.
- Rasmussen, C. E. and Williams, C. K. I. (2006). Gaussian Processes for Machine Learning. MIT Press.
- **Rassenti**, S., Smith, V., and Bulfin, R. (1982). A combinatorial auction mechanism for airport time slot allocation. *Bell Journal of Economics*, *13*, 402–417.
- **Ratliff**, N., Bagnell, J. A., and Zinkevich, M. (2006). Maximum margin planning. In *ICML-06*.
- **Ratliff**, N., Zucker, M., Bagnell, J. A., and Srinivasa, S. (2009). CHOMP: Gradient optimization techniques for efficient motion planning. In *ICRA-09*.
- **Ratnaparkhi**, A. (1996). A maximum entropy model for part-of-speech tagging. In *EMNLP-96*.
- **Ratner**, D. and Warmuth, M. (1986). Finding a shortest solution for the  $n \times n$  extension of the 15-puzzle is intractable. In *AAAI-86*.

- Rauch, H. E., Tung, F., and Striebel, C. T. (1965). Maximum likelihood estimates of linear dynamic systems. *AIAA Journal*, *3*, 1445–1450.
- **Rayward-Smith**, V., Osman, I., Reeves, C., and Smith, G. (Eds.). (1996). *Modern Heuristic Search Methods*. Wiley.
- **Real**, E., Aggarwal, A., Huang, Y., and Le, Q. V. (2018). Regularized evolution for image classifier architecture search. arXiv:1802.01548.
- **Rechenberg**, I. (1965). Cybernetic solution path of an experimental problem. Library translation, Royal Aircraft Establishment.
- **Regin**, J. (1994). A filtering algorithm for constraints of difference in CSPs. In *AAAI-94*.
- **Reid**, D. B. (1979). An algorithm for tracking multiple targets. *IEEE Trans. Automatic Control*, 24, 843–854.
- **Reif**, J. (1979). Complexity of the mover's problem and generalizations. In FOCS-79.
- **Reiter**, R. (1980). A logic for default reasoning. *AIJ*, *13*, 81–132.
- Reiter, R. (1991). The frame problem in the situation calculus: A simple solution (sometimes) and a completeness result for goal regression. In Lifschitz, V. (Ed.), Artificial Intelligence and Mathematical Theory of Computation: Papers in Honor of John McCarthy. Academic Press.
- **Reiter**, R. (2001). Knowledge in Action: Logical Foundations for Specifying and Implementing Dynamical Systems. MIT Press.
- **Renner**, G. and Ekart, A. (2003). Genetic algorithms in computer aided design. *Computer Aided Design*, 35, 709–726.
- Rényi, A. (1970). Probability Theory. Elsevier.
- **Resnick**, P. and Varian, H. R. (1997). Recommender systems. *CACM*, 40, 56–58.
- **Rezende**, D. J., Mohamed, S., and Wierstra, D. (2014). Stochastic backpropagation and approximate inference in deep generative models. In *ICML-14*.
- **Riazanov**, A. and Voronkov, A. (2002). The design and implementation of VAMPIRE. *AI Communications*, 15, 91–110.
- **Ribeiro**, M. T., Singh, S., and Guestrin, C. (2016). Why should I trust you?: Explaining the predictions of any classifier. In *KDD-16*.
- **Richardson**, M. and Domingos, P. (2006). Markov logic networks. *Machine Learning*, 62, 107–136.
- **Richter**, S. and Helmert, M. (2009). Preferred operators and deferred evaluation in satisficing planning. In *ICAPS-09*.
- Ridley, M. (2004). Evolution. Oxford Reader.
- **Riley**, J. and Samuelson, W. (1981). Optimal auctions. *American Economic Review*, 71, 381–392.
- **Riley**, P. (2019). Three pitfalls to avoid in machine learning. *Nature*, 572, 27–29.
- **Riloff**, E. (1993). Automatically constructing a dictionary for information extraction tasks. In *AAAI-93*.
- **Ringgaard**, M., Gupta, R., and Pereira, F. (2017). SLING: A framework for frame semantic parsing. arXiv:1710.07032.
- **Rintanen**, J. (1999). Improvements to the evaluation of quantified Boolean formulae. In *IJCAI-99*.
- **Rintanen**, J. (2007). Asymptotically optimal encodings of conformant planning in QBF. In *AAAI-07*.
- **Rintanen**, J. (2012). Planning as satisfiability: Heuristics. *AIJ*, 193, 45–86.
- **Rintanen**, J. (2016). Computational complexity in automated planning and scheduling. In *ICAPS-16*.
- **Ripley**, B. D. (1996). *Pattern Recognition and Neural Networks*. Cambridge University Press.

- **Rissanen**, J. (1984). Universal coding, information, prediction, and estimation. *IEEE Transactions on Information Theory*, *IT-30*, 629–636.
- Rissanen, J. (2007). Information and Complexity in Statistical Modeling. Springer.
- **Rivest**, R. (1987). Learning decision lists. *Machine Learning*, 2, 229–246.
- **Robbins**, H. (1952). Some aspects of the sequential design of experiments. *Bulletin of the American Mathematical Society*, 58, 527–535.
- **Robbins**, H. and Monro, S. (1951). A stochastic approximation method. *Annals of Mathematical Statistics*, 22, 400–407.
- **Roberts**, L. G. (1963). Machine perception of threedimensional solids. Technical report, MIT Lincoln Laboratory.
- **Robertson**, N. and Seymour, P. D. (1986). Graph minors. II. Algorithmic aspects of tree-width. *J. Algorithms*, 7, 309–322.
- **Robertson**, S. E. and Sparck Jones, K. (1976). Relevance weighting of search terms. *J. American Society for Information Science*, 27, 129–146.
- **Robins**, J. (1986). A new approach to causal inference in mortality studies with a sustained exposure period: Application to control of the healthy worker survivor effect. *Mathematical Modelling*, 7, 1393–1512.
- **Robinson**, A. and Voronkov, A. (Eds.). (2001). *Handbook of Automated Reasoning*. Elsevier.
- **Robinson**, J. A. (1965). A machine-oriented logic based on the resolution principle. *JACM*, *12*, 23–41.
- **Robinson**, S. (2002). Computer scientists find unexpected depths in airfare search problem. *SIAM News*, 35(6).
- **Roche**, E. and Schabes, Y. (Eds.). (1997). *Finite-State Language Processing*. Bradford Books.
- Rock, I. (1984). Perception. W. H. Freeman.
- **Rokicki**, T., Kociemba, H., Davidson, M., and Dethridge, J. (2014). The diameter of the Rubik's Cube group is twenty. *SIAM Review*, *56*, 645–670.
- **Rolf**, D. (2006). Improved bound for the PPSZ/Schöning-algorithm for 3-SAT. *Journal on Satisfiability, Boolean Modeling and Computation, 1,* 11, 122
- **Rolnick**, D., Donti, P. L., Kaack, L. H., *et al.* (2019). Tackling climate change with machine learning. arXiv:1906.05433.
- **Rolnick**, D. and Tegmark, M. (2018). The power of deeper networks for expressing natural functions. In *ICLR-18*.
- **Romanovskii**, I. (1962). Reduction of a game with complete memory to a matrix game. *Soviet Mathematics*, *3*, 678–681.
- Ros, G., Sellart, L., Materzynska, J., Vazquez, D., and Lopez, A. M. (2016). The SYNTHIA dataset: A large collection of synthetic images for semantic segmentation of urban scenes. In *CVPR-16*.
- Rosenblatt, F. (1957). The perceptron: A perceiving and recognizing automaton. Report, Project PARA, Cornell Aeronautical Laboratory.
- **Rosenblatt**, F. (1960). On the convergence of reinforcement procedures in simple perceptrons. Report, Cornell Aeronautical Laboratory.
- **Rosenblatt**, F. (1962). Principles of Neurodynamics: Perceptrons and the Theory of Brain Mechanisms.
- **Rosenblatt**, M. (1956). Remarks on some nonparametric estimates of a density function. *Annals of Mathematical Statistics*, 27, 832–837.
- **Rosenblueth**, A., Wiener, N., and Bigelow, J. (1943). Behavior, purpose, and teleology. *Philosophy of Science*, 10, 18–24.

Rosenschein, J. S. and Zlotkin, G. (1994). Rules of Encounter. MIT Press.

**Rosenschein**, S. J. (1985). Formal theories of knowledge in AI and robotics. *New Generation Computing*, *3*, 345–357.

**Ross**, G. (2012). Fisher and the millionaire: The statistician and the calculator. *Significance*, 9, 46–48.

Ross, S. (2015). A First Course in Probability (9th edition). Pearson.

**Ross**, S., Gordon, G., and Bagnell, D. (2011). A reduction of imitation learning and structured prediction to no-regret online learning. In *AISTATS-11*.

Rossi, F., van Beek, P., and Walsh, T. (2006). *Handbook of Constraint Processing*. Elsevier.

**Roth**, D. (1996). On the hardness of approximate reasoning. *AIJ*, 82, 273–302.

Roussel, P. (1975). Prolog: Manual de référence et d'utilization. Tech. rep., Groupe d'Intelligence Artificielle, Université d'Aix-Marseille.

Rowat, P. F. (1979). Representing the Spatial Experience and Solving Spatial Problems in a Simulated Robot Environment. Ph.D. thesis, University of British Columbia.

Roweis, S. T. and Ghahramani, Z. (1999). A unifying review of linear Gaussian models. *Neural Computation*, 11, 305–345.

Rowley, H., Baluja, S., and Kanade, T. (1998). Neural network-based face detection. *PAMI*, 20, 23–38.

**Roy**, N., Gordon, G., and Thrun, S. (2005). Finding approximate POMDP solutions through belief compression. *JAIR*, 23, 1–40.

**Rubin**, D. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology*, *66*, 688–701.

Rubin, D. (1988). Using the SIR algorithm to simulate posterior distributions. In Bernardo, J. M., de Groot, M. H., Lindley, D. V., and Smith, A. F. M. (Eds.), *Bayesian Statistics 3*. Oxford University Press.

**Rubinstein**, A. (1982). Perfect equilibrium in a bargaining model. *Econometrica*, 50, 97–109.

**Rubinstein**, A. (2003). Economics and psychology? The case of hyperbolic discounting. *International Economic Review*, 44, 1207–1216.

**Ruder**, S. (2018). NLP's ImageNet moment has arrived. *The Gradient*, July 8.

**Ruder**, S., Peters, M. E., Swayamdipta, S., and Wolf, T. (2019). Transfer learning in natural language processing. In *COLING-19*.

**Rumelhart**, D. E., Hinton, G. E., and Williams, R. J. (1986). Learning representations by back-propagating errors. *Nature*, *323*, 533–536.

Rumelhart, D. E. and McClelland, J. L. (Eds.). (1986). *Parallel Distributed Processing*. MIT Press.

**Rummery**, G. A. and Niranjan, M. (1994). On-line *Q*-learning using connectionist systems. Tech. rep., Cambridge University Engineering Department.

**Ruspini**, E. H., Lowrance, J. D., and Strat, T. M. (1992). Understanding evidential reasoning. *IJAR*, 6, 401–424.

Russakovsky, O., Deng, J., Su, H., Krause, J., Satheesh, S., Ma, S., Huang, Z., Karpathy, A., Khosla, A., Bernstein, M., Berg, A. C., and Fei-Fei, L. (2015). ImageNet large scale visual recognition challenge. *IJCV*. *115*. 211–252.

**Russell**, J. G. B. (1990). Is screening for abdominal aortic aneurysm worthwhile? *Clinical Radiology*, 41, 182–184.

**Russell**, S. J. (1985). The compleat guide to MRS. Report, Computer Science Department, Stanford University.

**Russell**, S. J. (1992). Efficient memory-bounded search methods. In *ECAI-92*.

**Russell**, S. J. (1998). Learning agents for uncertain environments. In *COLT-98*.

Russell, S. J. (1999). Expressive probability models in science. In *Proc. Second International Conference on Discovery Science*.

Russell, S. J. (2019). Human Compatible. Penguin.

**Russell**, S. J., Binder, J., Koller, D., and Kanazawa, K. (1995). Local learning in probabilistic networks with hidden variables. In *IJCAI-95*.

Russell, S. J. and Norvig, P. (2003). *Artificial Intelligence: A Modern Approach* (2nd edition). Prentice-Hall.

**Russell**, S. J. and Subramanian, D. (1995). Provably bounded-optimal agents. *JAIR*, *3*, 575–609.

Russell, S. J. and Wefald, E. H. (1989). On optimal game-tree search using rational meta-reasoning. In *IJCAI-89*.

Russell, S. J. and Wefald, E. H. (1991). Do the Right Thing: Studies in Limited Rationality. MIT Press.

**Russell**, S. J. and Wolfe, J. (2005). Efficient beliefstate AND-OR search, with applications to Kriegspiel. In *IJCAI-05*.

**Russell**, S. J. and Zimdars, A. (2003). Q-decomposition of reinforcement learning agents. In *ICML-03*.

Rustagi, J. S. (1976). Variational Methods in Statistics. Academic Press.

**Saad**, F. and Mansinghka, V. K. (2017). A probabilistic programming approach to probabilistic data analysis. In *NeurIPS* 29.

**Sabin**, D. and Freuder, E. C. (1994). Contradicting conventional wisdom in constraint satisfaction. In *ECAI-94*.

**Sabri**, K. E. (2015). Automated verification of role-based access control policies constraints using Prover9. arXiv:1503.07645.

**Sacerdoti**, E. D. (1974). Planning in a hierarchy of abstraction spaces. *AIJ*, 5, 115–135.

**Sacerdoti**, E. D. (1975). The nonlinear nature of plans. In *IJCAI-75*.

**Sacerdoti**, E. D. (1977). A Structure for Plans and Behavior. Elsevier.

**Sadeghi**, F. and Levine, S. (2016). CAD2RL: Real single-image flight without a single real image. arXiv:1611.04201.

Sadigh, D., Sastry, S., Seshia, S. A., and Dragan, A. D. (2016). Planning for autonomous cars that leverage effects on human actions. In *Proc. Robotics: Science and Systems*.

**Sadler**, M. and Regan, N. (2019). *Game Changer*. New in Chess.

**Sadri**, F. and Kowalski, R. (1995). Variants of the event calculus. In *ICLP-95*.

Sagae, K. and Lavie, A. (2006). A best-first probabilistic shift-reduce parser. In *COLING-06*.

**Sahami**, M., Hearst, M. A., and Saund, E. (1996). Applying the multiple cause mixture model to text categorization. In *ICML*-96.

Sahin, N. T., Pinker, S., Cash, S. S., Schomer, D., and Halgren, E. (2009). Sequential processing of lexical, grammatical, and phonological information within Broca's area. *Science*, 326, 445–449.

Sakuta, M. and Iida, H. (2002). AND/OR-tree search for solving problems with uncertainty: A case study using screen-shogi problems. *Trans. Inf. Proc. Society of Japan*, 43, 1–10.

Salomaa, A. (1969). Probabilistic and weighted grammars. *Information and Control*, 15, 529–544.

Samadi, M., Felner, A., and Schaeffer, J. (2008). Learning from multiple heuristics. In *AAAI-08*.

Samet, H. (2006). Foundations of Multidimensional and Metric Data Structures. Morgan Kaufmann.

**Sammut**, C., Hurst, S., Kedzier, D., and Michie, D. (1992). Learning to fly. In *ICML*-92.

**Samuel**, A. (1959). Some studies in machine learning using the game of checkers. *IBM Journal of Research and Development*, 3, 210–229.

**Samuel**, A. (1967). Some studies in machine learning using the game of checkers II—Recent progress. *IBM Journal of Research and Development*, 11, 601–617.

Sanchez-Lengeling, B., Wei, J. N., Lee, B. K., Gerkin, R. C., Aspuru-Guzik, A., and Wiltschko, A. B. (2019). Machine learning for scent: Learning generalizable perceptual representations of small molecules. arXiv:1910.10685.

Sandholm, T. (1999). Distributed rational decision making. In Weiß, G. (Ed.), *Multiagent Systems*. MIT Press

Sandholm, T., Larson, K., Andersson, M., Shehory, O., and Tohmé, F. (1999). Coalition structure generation with worst case guarantees. *AIJ*, *111*, 209–238.

**Sandholm**, T. (1993). An implementation of the contract net protocol based on marginal cost calculations. In *AAAI-93*.

Sang, T., Beame, P., and Kautz, H. (2005). Performing Bayesian inference by weighted model counting. In *AAAI-05*.

Sapir, E. (1921). Language: An Introduction to the Study of Speech. Harcourt Brace Jovanovich.

Sarawagi, S. (2007). Information extraction. *Foundations and Trends in Databases*, 1, 261–377.

**Sargent**, T. J. (1978). Estimation of dynamic labor demand schedules under rational expectations. *J. Political Economy*, 86, 1009–1044.

**Sartre**, J.-P. (1960). *Critique de la Raison dialectique*. Editions Gallimard.

**Satia**, J. K. and Lave, R. E. (1973). Markovian decision processes with probabilistic observation of states. *Management Science*, 20, 1–13.

Sato, T. and Kameya, Y. (1997). PRISM: A symbolic-statistical modeling language. In *IJCAI-97*.

**Saul**, L. K., Jaakkola, T., and Jordan, M. I. (1996). Mean field theory for sigmoid belief networks. *JAIR*, 4 61–76

**Saunders**, W., Sastry, G., Stuhlmüller, A., and Evans, O. (2018). Trial without error: Towards safe reinforcement learning via human intervention. In *AAMAS-18*.

Savage, L. J. (1954). The Foundations of Statistics. Wiley.

Savva, M., Kadian, A., Maksymets, O., Zhao, Y., Wijmans, E., Jain, B., Straub, J., Liu, J., Koltun, V., Malik, J., Parikh, D., and Batra, D. (2019). Habitat: A platform for embodied AI research. arXiv:1904.01201.

Sayre, K. (1993). Three more flaws in the computational model. Paper presented at the APA (Central Division) Annual Conference, Chicago, Illinois.

**Schaeffer**, J. (2008). One Jump Ahead: Computer Perfection at Checkers. Springer-Verlag.

Schaeffer, J., Burch, N., Bjornsson, Y., Kishimoto, A., Müller, M., Lake, R., Lu, P., and Sutphen, S. (2007). Checkers is solved. *Science*, *317*, 1518–1522.

Schank, R. C. and Abelson, R. P. (1977). Scripts, Plans, Goals, and Understanding. Lawrence Erlbaum.

**Schank**, R. C. and Riesbeck, C. (1981). *Inside Computer Understanding: Five Programs Plus Miniatures*. Lawrence Erlbaum.

**Schapire**, R. E. and Singer, Y. (2000). Boostexter: A boosting-based system for text categorization. *Machine Learning*, *39*, 135–168.

**Schapire**, R. E. (1990). The strength of weak learnability. *Machine Learning*, *5*, 197–227.

Schapire, R. E. (2003). The boosting approach to machine learning: An overview. In Denison, D. D., Hansen, M. H., Holmes, C., Mallick, B., and Yu, B. (Eds.), *Nonlinear Estimation and Classification*. Springer.

Scharre, P. (2018). Army of None. W. W. Norton.

**Schmid**, C. and Mohr, R. (1996). Combining grey-value invariants with local constraints for object recognition. In *CVPR-96*.

Schmidhuber, J. (2015). Deep learning in neural networks: An overview. *Neural Networks*, 61, 85–117.

**Schofield**, M. and Thielscher, M. (2015). Lifting model sampling for general game playing to incomplete-information models. In *AAAI-15*.

Schölkopf, B. and Smola, A. J. (2002). *Learning with Kernels*. MIT Press.

**Schöning**, T. (1999). A probabilistic algorithm for k-SAT and constraint satisfaction problems. In *FOCS-*

**Schoppers**, M. J. (1989). In defense of reaction plans as caches. *AIMag*, *10*, 51–60.

**Schraudolph**, N. N., Dayan, P., and Sejnowski, T. (1994). Temporal difference learning of position evaluation in the game of Go. In *NeurIPS* 6.

Schrittwieser, J., Antonoglou, I., Hubert, T., Simonyan, K., Sifre, L., Schmitt, S., Guez, A., Lockhart, E., Hassabis, D., Graepel, T., Lillicrap, T., and Silver, D. (2019). Mastering Atari, Go, chess and shogi by planning with a learned model. arXiv:1911.08265.

**Schröder**, E. (1877). *Der Operationskreis des Logikkalküls*. B. G. Teubner, Leipzig.

Schulman, J., Ho, J., Lee, A. X., Awwal, I., Bradlow, H., and Abbeel, P. (2013). Finding locally optimal, collision-free trajectories with sequential convex optimization. In *Proc. Robotics: Science and Systems*.

**Schulman**, J., Levine, S., Abbeel, P., Jordan, M. I., and Moritz, P. (2015a). Trust region policy optimization. In *ICML-15*.

**Schulman**, J., Levine, S., Moritz, P., Jordan, M., and Abbeel, P. (2015b). Trust region policy optimization. In *ICML-15*.

Schultz, W., Dayan, P., and Montague, P. R. (1997). A neural substrate of prediction and reward. *Science*, 275, 1593.

Schulz, D., Burgard, W., Fox, D., and Cremers, A. B. (2003). People tracking with mobile robots using sample-based joint probabilistic data association filters. *Int. J. Robotics Research*, 22, 99–116.

Schulz, S. (2004). System Description: E 0.81. In Proc. International Joint Conference on Automated Reasoning, Vol. 3097 of LNAI.

Schulz, S. (2013). System description: E 1.8. In *Proc. Int. Conf. on Logic for Programming Artificial Intelligence and Reasoning*.

Schütze, H. (1995). Ambiguity in Language Learning: Computational and Cognitive Models. Ph.D. thesis, Stanford University. Also published by CSLI Press, 1997

Schwartz, J. T., Scharir, M., and Hopcroft, J. (1987). *Planning, Geometry and Complexity of Robot Motion*. Ablex.

Schwartz, S. P. (Ed.). (1977). Naming, Necessity, and Natural Kinds. Cornell University Press.

**Scott**, D. and Krauss, P. (1966). Assigning probabilities to logical formulas. In Hintikka, J. and Suppes, P. (Eds.), *Aspects of Inductive Logic*. North-Holland.

**Searle**, J. R. (1980). Minds, brains, and programs. *BBS*, *3*, 417–457.

**Searle**, J. R. (1990). Is the brain's mind a computer program? *Scientific American*, 262, 26–31.

**Searle**, J. R. (1992). *The Rediscovery of the Mind*. MIT Press.

**Sedgewick**, R. and Wayne, K. (2011). *Algorithms*. Addison-Wesley.

**Sefidgar**, Y. S., Agarwal, P., and Cakmak, M. (2017). Situated tangible robot programming. In *HRI-17*.

Segaran, T. (2007). Programming Collective Intelligence: Building Smart Web 2.0 Applications. O'Reilly.

**Seipp**, J. and Röger, G. (2018). Fast downward stone soup 2018. IPC 2018 Classical Track.

**Seipp**, J., Sievers, S., Helmert, M., and Hutter, F. (2015). Automatic configuration of sequential planning portfolios. In *AAAI-15*.

Selman, B., Kautz, H., and Cohen, B. (1996). Local search strategies for satisfiability testing. In Johnson, D. S. and Trick, M. A. (Eds.), *Cliques, Coloring, and Satisfiability*. American Mathematical Society.

**Selman**, B. and Levesque, H. J. (1993). The complexity of path-based defeasible inheritance. *AIJ*, 62, 303–339.

**Selman**, B., Levesque, H. J., and Mitchell, D. (1992). A new method for solving hard satisfiability problems. In *AAAI-92*.

Seni, G. and Elder, J. F. (2010). Ensemble methods in data mining: Improving accuracy through combining predictions. *Synthesis Lectures on Data Mining and Knowledge Discovery*, 2, 1–126.

**Seo**, M., Kembhavi, A., Farhadi, A., and Hajishirzi, H. (2017). Bidirectional attention flow for machine comprehension. In *ICLR-17*.

**Shachter**, R. D. (1986). Evaluating influence diagrams. *Operations Research*, *34*, 871–882.

**Shachter**, R. D. (1998). Bayes-ball: The rational pastime (for determining irrelevance and requisite information in belief networks and influence diagrams). In *UAI-98*.

**Shachter**, R. D., D'Ambrosio, B., and Del Favero, B. A. (1990). Symbolic probabilistic inference in belief networks. In *AAAI-90*.

**Shachter**, R. D. and Kenley, C. R. (1989). Gaussian influence diagrams. *Management Science*, 35, 527–550

**Shachter**, R. D. and Peot, M. (1989). Simulation approaches to general probabilistic inference on belief networks. In *UAI-98*.

**Shafer**, G. (1976). A Mathematical Theory of Evidence. Princeton University Press.

**Shanahan**, M. (1997). *Solving the Frame Problem*. MIT Press.

Shanahan, M. (1999). The event calculus explained. In Wooldridge, M. J. and Veloso, M. (Eds.), *Artificial Intelligence Today*. Springer-Verlag.

**Shanahan**, M. (2015). *The Technological Singularity*. MIT Press.

**Shani**, G., Pineau, J., and Kaplow, R. (2013). A survey of point-based POMDP solvers. *Autonomous Agents and Multi-Agent Systems*, 27, 1–51.

**Shankar**, N. (1986). *Proof-Checking Metamathematics*. Ph.D. thesis, Computer Science Department, University of Texas at Austin.

**Shannon**, C. E. and Weaver, W. (1949). *The Mathematical Theory of Communication*. University of Illinois Press.

**Shannon**, C. E. (1950). Programming a computer for playing chess. *Philosophical Magazine*, 41, 256–275.

**Shapley**, L. S. (1953a). A value for *n*-person games. In Kuhn, H. W. and Tucker, A. W. (Eds.), *Contributions to the Theory of Games*. Princeton University Press.

**Shapley**, S. (1953b). Stochastic games. *PNAS*, *39*, 1095–1100.

**Sharan**, R. V. and Moir, T. J. (2016). An overview of applications and advancements in automatic sound recognition. *Neurocomputing*, 200, 22–34.

**Shatkay**, H. and Kaelbling, L. P. (1997). Learning topological maps with weak local odometric information. In *IJCAI-97*.

**Shazeer**, N., Mirhoseini, A., Maziarz, K., Davis, A., Le, Q. V., Hinton, G. E., and Dean, J. (2017). Outrageously large neural networks: The sparsely-gated mixture-of-experts layer. arXiv:1701.06538.

**Shelley**, M. (1818). Frankenstein: Or, the Modern Prometheus. Pickering and Chatto.

**Sheppard**, B. (2002). World-championship-caliber scrabble. *AIJ*, *134*, 241–275.

Shi, J. and Malik, J. (2000). Normalized cuts and image segmentation. *PAMI*, 22, 888–905.

**Shieber**, S. (1994). Lessons from a restricted Turing test. *CACM*, *37*, 70–78.

Shieber, S. (Ed.). (2004). The Turing Test. MIT Press.

Shimony, S. E. (1994). Finding MAPs for belief networks is NP-hard. *AIJ*, 68, 399–410.

**Shoham**, Y. (1993). Agent-oriented programming. *AIJ*, *60*, 51–92.

**Shoham**, Y. (1994). Artificial Intelligence Techniques in Prolog. Morgan Kaufmann.

**Shoham**, Y. and Leyton-Brown, K. (2009). *Multiagent Systems: Algorithmic, Game-Theoretic, and Logical Foundations*. Cambridge Univ. Press.

**Shoham**, Y., Powers, R., and Grenager, T. (2004). If multi-agent learning is the answer, what is the question? In *Proc. AAAI Fall Symposium on Artificial Multi-Agent Learning*.

**Shortliffe**, E. H. (1976). *Computer-Based Medical Consultations: MYCIN*. Elsevier.

**Siciliano**, B. and Khatib, O. (Eds.). (2016). *Springer Handbook of Robotics* (2nd edition). Springer-Verlag.

**Sigaud**, O. and Buffet, O. (2010). *Markov Decision Processes in Artificial Intelligence*. Wiley.

**Sigmund**, K. (2017). Exact Thinking in Demented Times. Basic Books.

Silberstein, M., Weissbrod, O., Otten, L., Tzemach, A., Anisenia, A., Shtark, O., Tuberg, D., Galfrin, E., Gannon, I., Shalata, A., Borochowitz, Z. U., Dechter, R., Thompson, E., and Geiger, D. (2013). A system for exact and approximate genetic linkage analysis of SNP data in large pedigrees. *Bioinformatics*, 29, 197–205.

**Silva**, R., Melo, F. S., and Veloso, M. (2015). Towards table tennis with a quadrotor autonomous learning robot and onboard vision. In *IROS-15*.

**Silver**, D. and Veness, J. (2011). Monte-Carlo planning in large POMDPs. In *NeurIPS 23*.

Silver, D., Huang, A., Maddison, C. J., Guez, A., and Hassabis, D. (2016). Mastering the game of Go with deep neural networks and tree search. *Nature*, 529, 484–489

Silver, D., Hubert, T., Schrittwieser, J., Antonoglou, I., Lai, M., Guez, A., Lanctot, M., Sifre, L., Kumaran, D., Graepel, T., et al. (2018). A general reinforcement learning algorithm that masters chess, shogi, and Go through self-play. Science, 362, 1140–1144.

Silver, D., Schrittwieser, J., Simonyan, K., Antonoglou, I., Huang, A., Guez, A., Hubert, T., Baker, L., Lai, M., Bolton, A., Chen, Y., Lillicrap, T., Hui, F., Sifre, L., van den Driessche, G., Graepel, T., and Hassabis, D. (2017). Mastering the game of Go without human knowledge. *Nature*, 550, 354–359.

**Silverman**, B. W. (1986). *Density Estimation for Statistics and Data Analysis*. Chapman and Hall.

- Silverstein, C., Henzinger, M., Marais, H., and Moricz, M. (1998). Analysis of a very large AltaVista query log. Tech. rep., Digital Systems Research Center.
- **Simmons**, R. and Koenig, S. (1995). Probabilistic robot navigation in partially observable environments. In *IJCAI-95*.
- **Simon**, D. (2006). *Optimal State Estimation: Kalman*, *H Infinity, and Nonlinear Approaches*. Wiley.
- Simon, H. A. (1947). Administrative Behavior. Macmillan.
- Simon, H. A. (1963). Experiments with a heuristic compiler. *JACM*, 10, 493–506.
- **Simon**, H. A. and Newell, A. (1958). Heuristic problem solving: The next advance in operations research. *Operations Research*, *6*, 1–10.
- **Simon**, J. C. and Dubois, O. (1989). Number of solutions to satisfiability instances—Applications to knowledge bases. *AIJ*, *3*, 53–65.
- Simonis, H. (2005). Sudoku as a constraint problem. In CP-05 Workshop on Modeling and Reformulating Constraint Satisfaction Problems.
- Singer, P. W. (2009). Wired for War. Penguin Press.
- Singh, P., Lin, T., Mueller, E. T., Lim, G., Perkins, T., and Zhu, W. L. (2002). Open mind common sense: Knowledge acquisition from the general public. In Proc. First International Conference on Ontologies, Databases, and Applications of Semantics for Large Scale Information Systems.
- **Sisbot**, E. A., Marin-Urias, L. F., Alami, R., and Simeon, T. (2007). A human aware mobile robot motion planner. *IEEE Transactions on Robotics*, 23, 874–883
- **Siskind**, J. M. and Pearlmutter, B. A. (2016). Efficient implementation of a higher-order language with built-in AD. arXiv:1611.03416.
- **Sistla**, A. P. and Godefroid, P. (2004). Symmetry and reduced symmetry in model checking. *ACM Trans. Program. Lang. Syst.*, 26, 702–734.
- **Sittler**, R. W. (1964). An optimal data association problem in surveillance theory. *IEEE Transactions on Military Electronics*, 8, 125–139.
- Skolem, T. (1920). Logisch-kombinatorische Untersuchungen über die Erfüllbarkeit oder Beweisbarkeit mathematischer Sätze nebst einem Theoreme über die dichte Mengen. Videnskapsselskapets skrifter, I. Matematisk-naturvidenskabelig klasse, 4, 1–36.
- **Skolem**, T. (1928). Über die mathematische Logik. *Norsk matematisk tidsskrift*, 10, 125–142.
- **Slagle**, J. R. (1963). A heuristic program that solves symbolic integration problems in freshman calculus. *JACM*, *10*.
- Slate, D. J. and Atkin, L. R. (1977). CHESS 4.5— Northwestern University chess program. In Frey, P. W. (Ed.), *Chess Skill in Man and Machine*. Springer-Verlag.
- **Slater**, E. (1950). Statistics for the chess computer and the factor of mobility. In *Symposium on Information Theory*. Ministry of Supply.
- **Slocum**, J. and Sonneveld, D. (2006). *The 15 Puzzle*. Slocum Puzzle Foundation.
- **Smallwood**, R. D. and Sondik, E. J. (1973). The optimal control of partially observable Markov processes over a finite horizon. *Operations Research*, 21, 1071–1088
- Smith, B. (2004). Ontology. In Floridi, L. (Ed.), The Blackwell Guide to the Philosophy of Computing and Information. Wiley-Blackwell.
- Smith, B., Ashburner, M., Rosse, C., et al. (2007). The OBO Foundry: Coordinated evolution of ontologies to support biomedical data integration. *Nature Biotechnology*, 25, 1251–1255.

- Smith, D. E., Genesereth, M. R., and Ginsberg, M. L. (1986). Controlling recursive inference. *AIJ*, 30, 343–389.
- **Smith**, D. A. and Eisner, J. (2008). Dependency parsing by belief propagation. In *EMNLP-08*.
- Smith, D. E. and Weld, D. S. (1998). Conformant Graphplan. In *AAAI-98*.
- Smith, J. Q. (1988). *Decision Analysis*. Chapman and Hall.
- Smith, J. E. and Winkler, R. L. (2006). The optimizer's curse: Skepticism and postdecision surprise in decision analysis. *Management Science*, 52, 311–322.
- Smith, J. M. (1982). Evolution and the Theory of Games. Cambridge University Press.
- Smith, J. M. and Szathmáry, E. (1999). The Origins of Life: From the Birth of Life to the Origin of Language. Oxford University Press.
- Smith, M. K., Welty, C., and McGuinness, D. (2004). OWL web ontology language guide. Tech. rep., W3C.
- Smith, R. G. (1980). A Framework for Distributed Problem Solving. UMI Research Press.
- Smith, R. C. and Cheeseman, P. (1986). On the representation and estimation of spatial uncertainty. *Int. J. Robotics Research*, 5, 56–68.
- **Smith**, S. J. J., Nau, D. S., and Throop, T. A. (1998). Success in spades: Using AI planning techniques to win the world championship of computer bridge. In *AAAI-98*
- Smith, W. E. (1956). Various optimizers for singlestage production. *Naval Research Logistics Quarterly*, 3 50-66
- **Smolensky**, P. (1988). On the proper treatment of connectionism. *BBS*, 2, 1–74.
- Smolensky, P. and Prince, A. (1993). Optimality theory: Constraint interaction in generative grammar. Tech. rep., Department of Computer Science, University of Colorado at Boulder.
- Smullyan, R. M. (1995). First-Order Logic. Dover.
- Smyth, P., Heckerman, D., and Jordan, M. I. (1997). Probabilistic independence networks for hidden Markov probability models. *Neural Computation*, 9, 227–269.
- **Snoek**, J., Larochelle, H., and Adams, R. P. (2013). Practical Bayesian optimization of machine learning algorithms. In *NeurIPS* 25.
- **Solomonoff**, R. J. (1964). A formal theory of inductive inference. *Information and Control*, 7, 1–22, 224–254.
- **Solomonoff**, R. J. (2009). Algorithmic probability—theory and applications. In Emmert-Streib, F. and Dehmer, M. (Eds.), *Information Theory and Statitical Learning*. Springer.
- **Sondik**, E. J. (1971). *The Optimal Control of Partially Observable Markov Decision Processes*. Ph.D. thesis, Stanford University.
- Sosic, R. and Gu, J. (1994). Efficient local search with conflict minimization: A case study of the n-queens problem. *IEEE Transactions on Knowledge and Data Engineering*, 6, 661–668.
- Sowa, J. (1999). Knowledge Representation: Logical, Philosophical, and Computational Foundations. Blackwell.
- **Spaan**, M. T. J. and Vlassis, N. (2005). Perseus: Randomized point-based value iteration for POMDPs. *JAIR*, *24*, 195–220.
- **Sparrow**, R. (2004). The Turing triage test. *Ethics and Information Technology*, 6, 203–213.
- **Spiegelhalter**, D. J., Dawid, A. P., Lauritzen, S., and Cowell, R. (1993). Bayesian analysis in expert systems. *Statistical Science*, *8*, 219–282.

- **Spirtes**, P., Glymour, C., and Scheines, R. (1993). *Causation, Prediction, and Search*. Springer-Verlag.
- **Spitkovsky**, V. I., Alshawi, H., and Jurafsky, D. (2010a). From baby steps to leapfrog: How less is more in unsupervised dependency parsing. In *NAACL HIT*
- **Spitkovsky**, V. I., Jurafsky, D., and Alshawi, H. (2010b). Profiting from mark-up: Hyper-text annotations for guided parsing. In *ACL-10*.
- **Srivas**, M. and Bickford, M. (1990). Formal verification of a pipelined microprocessor. *IEEE Software*, 7, 52–64.
- **Srivastava**, N., Hinton, G. E., Krizhevsky, A., Sutskever, I., and Salakhutdinov, R. (2014a). Dropout: A simple way to prevent neural networks from overfitting. *JMLR*, *15*, 1929–1958.
- **Srivastava**, S., Russell, S. J., and Ruan, P. (2014b). First-order open-universe POMDPs. In *UAI-14*.
- Staab, S. (2004). Handbook on Ontologies. Springer.
- **Stallman**, R. M. and Sussman, G. J. (1977). Forward reasoning and dependency-directed backtracking in a system for computer-aided circuit analysis. *AIJ*, 9, 135–196.
- Stanfill, C. and Waltz, D. (1986). Toward memory-based reasoning. *CACM*, 29, 1213–1228.
- **Stanislawska**, K., Krawiec, K., and Vihma, T. (2015). Genetic programming for estimation of heat flux between the atmosphere and sea ice in polar regions. In *GECCO-15*.
- Stefik, M. (1995). Introduction to Knowledge Systems. Morgan Kaufmann.
- Steiner, D. F., MacDonald, R., Liu, Y., Truszkowski, P., Hipp, J. D., Gammage, C., Thng, F., Peng, L., and Stumpe, M. C. (2018). Impact of deep learning assistance on the histopathologic review of lymph nodes for metastatic breast cancer. *Am. J. Surgical Pathology*, 42, 1636–1646.
- **Steinruecken**, C., Smith, E., Janz, D., Lloyd, J., and Ghahramani, Z. (2019). The Automatic Statistician. In Hutter, F., Kotthoff, L., and Vanschoren, J. (Eds.), *Automated Machine Learning*. Springer.
- **Stergiou**, K. and Walsh, T. (1999). The difference all-difference makes. In *IJCAI*-99.
- **Stickel**, M. E. (1992). A Prolog technology theorem prover: a new exposition and implementation in Prolog. *Theoretical Computer Science*, 104, 109–128.
- Stiller, L. (1992). KQNKRR. J. International Computer Chess Association, 15, 16–18.
- Stiller, L. (1996). Multilinear algebra and chess endgames. In Nowakowski, R. J. (Ed.), *Games of No Chance, MSRI*, 29, 1996. Mathematical Sciences Research Institute.
- **Stockman**, G. (1979). A minimax algorithm better than alpha-beta? *AIJ*, *12*, 179–196.
- **Stoffel**, K., Taylor, M., and Hendler, J. (1997). Efficient management of very large ontologies. In *AAAI-97*.
- **Stone**, M. (1974). Cross-validatory choice and assessment of statistical predictions. *J. Royal Statistical Society*, *36*, 111–133.
- Stone, P. (2000). Layered Learning in Multi-Agent Systems: A Winning Approach to Robotic Soccer. MIT Press.
- Stone, P. (2003). Multiagent competitions and research: Lessons from RoboCup and TAC. In Lima, P. U. and Rojas, P. (Eds.), RoboCup-2002: Robot Soccer World Cup VI. Springer Verlag.
- Stone, P. (2016). What's hot at RoboCup. In AAAI-16.

- Stone, P., Brooks, R. A., Brynjolfsson, E., Calo, R., Etzioni, O., Hager, G., Hirschberg, J., Kalyanakrishnan, S., Kamar, E., Kraus, S., *et al.* (2016). Artificial intelligence and life in 2030. Tech. rep., Stanford University One Hundred Year Study on Artificial Intelligence: Report of the 2015-2016 Study Panel.
- Stone, P., Kaminka, G., and Rosenschein, J. S. (2009). Leading a best-response teammate in an ad hoc team. In AAMAS Workshop in Agent Mediated Electronic Commerce.
- **Stone**, P., Sutton, R. S., and Kuhlmann, G. (2005). Reinforcement learning for robocup soccer keepaway. *Adaptive Behavior*, *13*, 165–188.
- **Storvik**, G. (2002). Particle filters for state-space models with the presence of unknown static parameters. *IEEE Transactions on Signal Processing*, 50, 281–289.
- **Strachey**, C. (1952). Logical or non-mathematical programmes. In *Proc. 1952 ACM National Meeting*.
- **Stratonovich**, R. L. (1959). Optimum nonlinear systems which bring about a separation of a signal with constant parameters from noise. *Radiofizika*, 2, 892–901.
- **Stratonovich**, R. L. (1965). On value of information. *Izvestiya of USSR Academy of Sciences, Technical Cybernetics*, 5, 3–12.
- **Sturtevant**, N. R. and Bulitko, V. (2016). Scrubbing during learning in real-time heuristic search. *JAIR*, *57*, 307–343.
- **Subramanian**, D. and Wang, E. (1994). Constraint-based kinematic synthesis. In *Proc. International Conference on Qualitative Reasoning*.
- Suk, H.-I., Sin, B.-K., and Lee, S.-W. (2010). Hand gesture recognition based on dynamic Bayesian network framework. *Pattern Recognition*, 43, 3059–3072.
- Sun, Y., Wang, S., Li, Y., Feng, S., Tian, H., Wu, H., and Wang, H. (2019). ERNIE 2.0: A continual pre-training framework for language understanding. arXiv:1907.12412.
- Sussman, G. J. (1975). A Computer Model of Skill Acquisition. Elsevier.
- Sutcliffe, G. (2016). The CADE ATP system competition CASC. *AIMag*, *37*, 99–101.
- Sutcliffe, G. and Suttner, C. (1998). The TPTP Problem Library: CNF Release v1.2.1. *JAR*, 21, 177–203.
- Sutcliffe, G., Schulz, S., Claessen, K., and Gelder, A. V. (2006). Using the TPTP language for writing derivations and finite interpretations. In *Proc. International Joint Conference on Automated Reasoning*.
- **Sutherland**, I. (1963). Sketchpad: A man-machine graphical communication system. In *Proc. Spring Joint Computer Conference*.
- **Sutskever**, I., Vinyals, O., and Le, Q. V. (2015). Sequence to sequence learning with neural networks. In *NeurIPS 27*.
- Sutton, C. and McCallum, A. (2007). An introduction to conditional random fields for relational learning. In Getoor, L. and Taskar, B. (Eds.), *Introduction to Statistical Relational Learning*. MIT Press.
- **Sutton**, R. S. (1988). Learning to predict by the methods of temporal differences. *Machine Learning*, 3, 9–44
- Sutton, R. S., McAllester, D. A., Singh, S., and Mansour, Y. (2000). Policy gradient methods for reinforcement learning with function approximation. In *NeurIPS 12*.
- **Sutton**, R. S. (1990). Integrated architectures for learning, planning, and reacting based on approximating dynamic programming. In *ICML-90*.
- **Sutton**, R. S. and Barto, A. G. (2018). *Reinforcement Learning: An Introduction* (2nd edition). MIT Press.

- **Swade**, D. (2000). *Difference Engine: Charles Babbage And The Quest To Build The First Computer*. Diane Publishing Co.
- **Sweeney**, L. (2000). Simple demographics often identify people uniquely. *Health (San Francisco)*, 671, 1–24
- Sweeney, L. (2002a). Achieving k-anonymity privacy protection using generalization and suppression. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, 10, 571–588.
- Sweeney, L. (2002b). k-anonymity: A model for protecting privacy. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, 10, 557–570
- **Swerling**, P. (1959). First order error propagation in a stagewise smoothing procedure for satellite observations. *J. Astronautical Sciences*, *6*, 46–52.
- Swift, T. and Warren, D. S. (1994). Analysis of SLG-WAM evaluation of definite programs. In *Logic Programming: Proc. 1994 International Symposium*.
- **Szegedy**, C., Zaremba, W., Sutskever, I., Bruna, J., Erhan, D., Goodfellow, I., and Fergus, R. (2013). Intriguing properties of neural networks. arXiv:1312.6199.
- Szeliski, R. (2011). Computer Vision: Algorithms and Applications. Springer-Verlag.
- Szepesvari, C. (2010). Algorithms for reinforcement learning. Synthesis Lectures on Artificial Intelligence and Machine Learning, 4, 1–103.
- **Tadepalli**, P., Givan, R., and Driessens, K. (2004). Relational reinforcement learning: An overview. In *ICML-04*.
- Tait, P. G. (1880). Note on the theory of the "15 puzzle". *Proc. Royal Society of Edinburgh*, 10, 664–665.
- Tamaki, H. and Sato, T. (1986). OLD resolution with tabulation. In *ICLP-86*.
- **Tan**, P., Steinbach, M., Karpatne, A., and Kumar, V. (2019). *Introduction to Data Mining* (2nd edition). Pearson
- **Tang**, E. (2018). A quantum-inspired classical algorithm for recommendation systems. arXiv:1807.04271.
- **Tarski**, A. (1935). Die Wahrheitsbegriff in den formalisierten Sprachen. *Studia Philosophica*, 1, 261–405.
- **Tarski**, A. (1941). *Introduction to Logic and to the Methodology of Deductive Sciences*. Dover.
- **Tarski**, A. (1956). *Logic, Semantics, Metamathematics: Papers from 1923 to 1938*. Oxford University Press
- Tash, J. K. and Russell, S. J. (1994). Control strategies for a stochastic planner. In AAAI-94.
- Tassa, Y., Doron, Y., Muldal, A., Erez, T., Li, Y., Casas, D. d. L., Budden, D., Abdolmaleki, A., Merel, J., Lefrancq, A., *et al.* (2018). Deepmind control suite. arXiv:1801.00690.
- **Tate**, A. (1975a). Interacting goals and their use. In *IJCAI-75*.
- **Tate**, A. (1975b). *Using Goal Structure to Direct Search in a Problem Solver*. Ph.D. thesis, University of Edinburgh.
- **Tate**, A. (1977). Generating project networks. In *IJCAI-77*.
- **Tate**, A. and Whiter, A. M. (1984). Planning with multiple resource constraints and an application to a naval planning problem. In *Proc. First Conference on AI Applications*.
- **Tatman**, J. A. and Shachter, R. D. (1990). Dynamic programming and influence diagrams. *IEEE Transactions on Systems, Man and Cybernetics*, 20, 365–379.
- Tattersall, C. (1911). A Thousand End-Games: A Collection of Chess Positions That Can be Won or Drawn by the Best Play. British Chess Magazine.

- **Taylor**, A. D. and Zwicker, W. S. (1999). *Simple Games: Desirability Relations, Trading, Pseudoweightings*. Princeton University Press.
- **Taylor**, G., Stensrud, B., Eitelman, S., and Dunham, C. (2007). Towards automating airspace management. In *Proc. Computational Intelligence for Security and Defense Applications (CISDA) Conference*.
- **Taylor**, P. (2009). *Text-to-Speech Synthesis*. Cambridge University Press.
- **Tedrake**, R., Zhang, T. W., and Seung, H. S. (2004). Stochastic policy gradient reinforcement learning on a simple 3D biped. In *IROS-04*.
- **Tellex**, S., Kollar, T., Dickerson, S., Walter, M. R., Banerjee, A., Teller, S., and Roy, N. (2011). Understanding natural language commands for robotic navigation and mobile manipulation. In *AAAI-11*.
- **Tenenbaum**, J. B., Griffiths, T. L., and Niyogi, S. (2007). Intuitive theories as grammars for causal inference. In Gopnik, A. and Schulz, L. (Eds.), *Causal Learning: Psychology, Philosophy, and Computation*. Oxford University Press.
- **Tesauro**, G. (1990). Neurogammon: A neural-network backgammon program. In *IJCNN-90*.
- **Tesauro**, G. (1992). Practical issues in temporal difference learning. *Machine Learning*, 8, 257–277.
- **Tesauro**, G. (1995). Temporal difference learning and TD-Gammon. *CACM*, *38*, 58–68.
- **Tesauro**, G. and Galperin, G. R. (1997). On-line policy improvement using Monte-Carlo search. In *NeurIPS* 9.
- **Tetlock**, P. E. (2017). Expert Political Judgment: How Good Is It? How Can We Know? Princeton University Prace
- **Teyssier**, M. and Koller, D. (2005). Ordering-based search: A simple and effective algorithm for learning Bayesian networks. In *UAI-05*.
- **Thaler**, R. (1992). *The Winner's Curse: Paradoxes and Anomalies of Economic Life.* Princeton University
- **Thaler**, R. and Sunstein, C. (2009). *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Penguin.
- **Thayer**, J. T., Dionne, A., and Ruml, W. (2011). Learning inadmissible heuristics during search. In *ICAPS-11*.
- **Theocharous**, G., Murphy, K., and Kaelbling, L. P. (2004). Representing hierarchical POMDPs as DBNs for multi-scale robot localization. In *ICRA-04*.
- **Thiele**, T. (1880). Om anvendelse af mindste kvadraters methode i nogle tilfælde, hvor en komplikation af visse slags uensartede tilfældige fejlkilder giver fejlene en 'systematisk' karakter. *Vidensk. Selsk. Skr. 5. Rk., naturvid. og mat. Afd.*, 12, 381–408.
- **Thielscher**, M. (1999). From situation calculus to fluent calculus: State update axioms as a solution to the inferential frame problem. *AIJ*, 111, 277–299.
- **Thomas**, P. S., da Silva, B. C., Barto, A. G., and Brunskill, E. (2017). On ensuring that intelligent machines are well-behaved. arXiv:1708.05448.
- **Thomaz**, A., Hoffman, G., Cakmak, M., *et al.* (2016). Computational human-robot interaction. *Foundations and Trends in Robotics*, *4*, 105–223.
- **Thompson**, K. (1986). Retrograde analysis of certain endgames. *J. International Computer Chess Association*, 9, 131–139.
- **Thompson**, K. (1996). 6-piece endgames. *J. International Computer Chess Association*, 19, 215–226.
- **Thompson**, W. R. (1933). On the likelihood that one unknown probability exceeds another in view of the evidence of two samples. *Biometrika*, 25, 285–294.
- Thorndike, E. (1911). Animal Intelligence. Macmillan.

- **Thornton**, C., Hutter, F., Hoos, H. H., and Leyton-Brown, K. (2013). Auto-WEKA: Combined selection and hyperparameter optimization of classification algorithms. In *KDD-13*.
- **Thrun**, S., Burgard, W., and Fox, D. (2005). *Probabilistic Robotics*. MIT Press.
- **Thrun**, S., Fox, D., and Burgard, W. (1998). A probabilistic approach to concurrent mapping and localization for mobile robots. *Machine Learning*, *31*, 29–53.
- **Thrun**, S. (2006). Stanley, the robot that won the DARPA Grand Challenge. *J. Field Robotics*, 23, 661–692.
- **Thrun**, S. and Pratt, L. (2012). *Learning to Learn*. Springer.
- **Thurstone**, L. L. (1927). A law of comparative judgment. *Psychological Review*, *34*, 273–286.
- **Tian**, J., Paz, A., and Pearl, J. (1998). Finding a minimal *d*-separator. Tech. rep., UCLA Department of Computer Science.
- **Tikhonov**, A. N. (1963). Solution of incorrectly formulated problems and the regularization method. *Soviet Math. Dokl.*, *5*, 1035–1038.
- **Tipping**, M. E. and Bishop, C. M. (1999). Probabilistic principal component analysis. *J. Royal Statistical Society*, *61*, 611–622.
- **Titterington**, D. M., Smith, A. F. M., and Makov, U. E. (1985). *Statistical Analysis of Finite Mixture Distributions*. Wiley.
- **Toma**, P. (1977). SYSTRAN as a multilingual machine translation system. In *Proc. Third European Congress on Information Systems and Networks: Overcoming the Language Barrier*.
- **Tomasi**, C. and Kanade, T. (1992). Shape and motion from image streams under orthography: A factorization method. *IJCV*, 9, 137–154.
- **Topol**, E. (2019). Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. Basic Books.
- **Torralba**, A., Fergus, R., and Weiss, Y. (2008). Small codes and large image databases for recognition. In
- **Torralba**, A., Linares López, C., and Borrajo, D. (2016). Abstraction heuristics for symbolic bidirectional search. In *IJCAI-16*.
- **Tramèr**, F., Zhang, F., Juels, A., Reiter, M. K., and Ristenpart, T. (2016). Stealing machine learning models via prediction APIs. In *USENIX Security Symposium*.
- **Tran**, D., Hoffman, M., Saurous, R. A., Brevdo, E., Murphy, K., and Blei, D. M. (2017). Deep probabilistic programming. In *ICLR-17*.
- **Trappenberg**, T. (2010). Fundamentals of Computational Neuroscience (2nd edition). Oxford University Press.
- Tsang, E. (1993). Foundations of Constraint Satisfaction. Academic Press.
- **Tshitoyan**, V., Dagdelen, J., Weston, L., Dunn, A., Rong, Z., Kononova, O., Persson, K. A., Ceder, G., and Jain, A. (2019). Unsupervised word embeddings capture latent knowledge from materials science literature. *Nature*, 571, 95.
- Tsitsiklis, J. N. and Van Roy, B. (1997). An analysis of temporal-difference learning with function approximation. *IEEE Transactions on Automatic Control*, 42, 674–690.
- **Tukey**, J. W. (1977). Exploratory Data Analysis. Addison-Wesley.
- **Tumer**, K. and Wolpert, D. (2000). Collective intelligence and Braess' paradox. In *AAAI-00*.
- **Turian**, J., Ratinov, L., and Bengio, Y. (2010). Word representations: a simple and general method for semi-supervised learning. In *ACL-10*.

- **Turing**, A. (1936). On computable numbers, with an application to the Entscheidungsproblem. *Proc. London Mathematical Society*, 2nd series, 42, 230–265.
- **Turing**, A. (1948). Intelligent machinery. Tech. rep., National Physical Laboratory. reprinted in (Ince, 1992).
- **Turing**, A. (1950). Computing machinery and intelligence. *Mind*, *59*, 433–460.
- **Turing**, A., Strachey, C., Bates, M. A., and Bowden, B. V. (1953). Digital computers applied to games. In Bowden, B. V. (Ed.), *Faster than Thought*. Pitman.
- **Turing**, A. (1947). Lecture to the London Mathematical Society on 20 February 1947.
- **Turing**, A. (1996). Intelligent machinery, a heretical theory. *Philosophia Mathematica*, 4, 256–260. Originally written c. 1951.
- **Tversky**, A. and Kahneman, D. (1982). Causal schemata in judgements under uncertainty. In Kahneman, D., Slovic, P., and Tversky, A. (Eds.), *Judgement Under Uncertainty: Heuristics and Biases*. Cambridge University Press.
- **Tygar**, J. D. (2011). Adversarial machine learning. *IEEE Internet Computing*, 15, 4–6.
- **Ullman**, J. D. (1985). Implementation of logical query languages for databases. *ACM Transactions on Database Systems*, 10, 289–321.
- **Ullman**, S. (1979). *The Interpretation of Visual Motion*. MIT Press.
- **Urmson**, C. and Whittaker, W. (2008). Self-driving cars and the Urban Challenge. *IEEE Intelligent Systems*, 23, 66–68.
- **Valiant**, L. (1984). A theory of the learnable. *CACM*, 27, 1134–1142.
- Vallati, M., Chrpa, L., and Kitchin, D. E. (2015). Portfolio-based planning: State of the art, common practice and open challenges. *AI Commun.*, 28(4), 717–733.
- van Beek, P. (2006). Backtracking search algorithms. In Rossi, F., van Beek, P., and Walsh, T. (Eds.), *Handbook of Constraint Programming*. Elsevier.
- van Beek, P. and Chen, X. (1999). CPlan: A constraint programming approach to planning. In AAAI-99.
- **van Beek**, P. and Manchak, D. (1996). The design and experimental analysis of algorithms for temporal reasoning. *JAIR*, 4, 1–18.
- van Bentham, J. and ter Meulen, A. (1997). *Handbook of Logic and Language*. MIT Press.
- van den Oord, A., Dieleman, S., and Schrauwen, B. (2014). Deep content-based music recommendation. In *NeurIPS 26*.
- van den Oord, A., Dieleman, S., Zen, H., Simonyan, K., Vinyals, O., Graves, A., Kalchbrenner, N., Senior, A., and Kavukcuoglu, K. (2016a). WaveNet: A generative model for raw audio. arXiv:1609.03499.
- van den Oord, A., Kalchbrenner, N., and Kavukcuoglu, K. (2016b). Pixel recurrent neural networks. arXiv:1601.06759.
- van Harmelen, F., Lifschitz, V., and Porter, B. (2007). *The Handbook of Knowledge Representation*. Elsevier.
- van Heijenoort, J. (Ed.). (1967). From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931. Harvard University Press.
- Van Hentenryck, P., Saraswat, V., and Deville, Y. (1998). Design, implementation, and evaluation of the constraint language cc(FD). J. Logic Programming, 37, 139–164.
- van Hoeve, W.-J. (2001). The alldifferent constraint: a survey. In 6th Annual Workshop of the ERCIM Working Group on Constraints.

- van Hoeve, W.-J. and Katriel, I. (2006). Global constraints. In Rossi, F., van Beek, P., and Walsh, T. (Eds.), *Handbook of Constraint Processing*. Elsevier.
- van Lambalgen, M. and Hamm, F. (2005). *The Proper Treatment of Events*. Wiley-Blackwell.
- van Nunen, J. A. E. E. (1976). A set of successive approximation methods for discounted Markovian decision problems. *Zeitschrift fur Operations Research, Serie A. 20. 203–208*.
- **Van Roy**, P. L. (1990). Can logic programming execute as fast as imperative programming? Report, Computer Science Division, UC Berkeley.
- Vapnik, V. N. (1998). Statistical Learning Theory. Wiley.
- Vapnik, V. N. and Chervonenkis, A. Y. (1971). On the uniform convergence of relative frequencies of events to their probabilities. *Theory of Probability and Its Applications*, 16, 264–280.
- Vardi, M. Y. (1996). An automata-theoretic approach to linear temporal logic. In Moller, F. and Birtwistle, G. (Eds.), *Logics for Concurrency*. Springer.
- Varian, H. R. (1995). Economic mechanism design for computerized agents. In *USENIX Workshop on Electronic Commerce*.
- Vasilache, N., Johnson, J., Mathieu, M., Chintala, S., Piantino, S., and LeCun, Y. (2014). Fast convolutional nets with fbfft: A GPU performance evaluation. arXiv:1412.7580.
- Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, L., and Polosukhin, I. (2018). Attention is all you need. In *NeurIPS 30*.
- Veach, E. and Guibas, L. J. (1995). Optimally combining sampling techniques for Monte Carlo rendering. In Proc. 22rd Annual Conference on Computer Graphics and Interactive Techniques (SIGGRAPH).
- **Venkatesh**, S. (2012). *The Theory of Probability: Explorations and Applications*. Cambridge University
- **Vere**, S. A. (1983). Planning in time: Windows and durations for activities and goals. *PAMI*, 5, 246–267.
- **Verma**, S. and Rubin, J. (2018). Fairness definitions explained. In 2018 IEEE/ACM International Workshop on Software Fairness.
- **Verma**, V., Gordon, G., Simmons, R., and Thrun, S. (2004). Particle filters for rover fault diagnosis. *IEEE Robotics and Automation Magazine*, *June*.
- Vinge, V. (1993). The coming technological singularity: How to survive in the post-human era. In Proc. Vision-21: Interdisciplinary Science and Engineering in the Era of Cyberspace. NASA.
- Vinyals, O., Babuschkin, I., Czarnecki, W. M., Mathieu, M., Dudzik, A., Chung, J., Choi, D. H., Powell, R., Ewalds, T., Georgiev, P., Hassabis, D., Apps, C., and Silver, D. (2019). Grandmaster level in StarCraft II using multi-agent reinforcement learning. *Nature*, 575, 350–354.
- Vinyals, O., Ewalds, T., Bartunov, S., and Georgiev, P. (2017a). StarCraft II: A new challenge for reinforcement learning. arXiv:1708.04782.
- Vinyals, O., Toshev, A., Bengio, S., and Erhan, D. (2017b). Show and tell: Lessons learned from the 2015 MSCOCO image captioning challenge. *PAMI*, 39, 652–663.
- Viola, P. and Jones, M. (2004). Robust real-time face detection. *IJCV*, 57, 137–154.
- Visser, U., Ribeiro, F., Ohashi, T., and Dellaert, F. (Eds.). (2008). *RoboCup 2007: Robot Soccer World Cup XI*. Springer.
- Viterbi, A. J. (1967). Error bounds for convolutional codes and an asymptotically optimum decoding algorithm. *IEEE Transactions on Information Theory*, 13, 260–269.

**Vlassis**, N. (2008). A Concise Introduction to Multiagent Systems and Distributed Artificial Intelligence. Morgan & Claypool.

von Mises, R. (1928). Wahrscheinlichkeit, Statistik und Wahrheit. J. Springer.

von Neumann, J. (1928). Zur Theorie der Gesellschaftsspiele. *Mathematische Annalen*, 100, 295–320.

von Neumann, J. and Morgenstern, O. (1944). *Theory of Games and Economic Behavior* (first edition). Princeton University Press.

von Winterfeldt, D. and Edwards, W. (1986). *Decision Analysis and Behavioral Research*. Cambridge University Press.

Vossen, T., Ball, M., Lotem, A., and Nau, D. S. (2001). Applying integer programming to AI planning. *Knowledge Engineering Review*, 16, 85–100.

Wainwright, M. and Jordan, M. I. (2008). Graphical models, exponential families, and variational inference. Foundations and Trends in Machine Learning, 1, 1–305.

Walker, G. (1931). On periodicity in series of related terms. *Proc. Roy. Soc.*, A, 131, 518–532.

**Walker**, R. J. (1960). An enumerative technique for a class of combinatorial problems. In *Proc. Sympos. Appl. Math.*, Vol. 10.

**Wallace**, A. R. (1858). On the tendency of varieties to depart indefinitely from the original type. *Proc. Linnean Society of London*, *3*, 53–62.

Walpole, R. E., Myers, R. H., Myers, S. L., and Ye, K. E. (2016). *Probability and Statistics for Engineers and Scientists* (9th edition). Pearson.

Walsh, T. (2015). Turing's red flag. arXiv:1510.09033.

Waltz, D. (1975). Understanding line drawings of scenes with shadows. In Winston, P. H. (Ed.), *The Psychology of Computer Vision*. McGraw-Hill.

Wang, A., Pruksachatkun, Y., Nangia, N., Singh, A., Michael, J., Hill, F., Levy, O., and Bowman, S. R. (2019). SuperGLUE: A stickier benchmark for general-purpose language understanding systems. arXiv:1905.00537.

Wang, A., Singh, A., Michael, J., Hill, F., Levy, O., and Bowman, S. (2018a). GLUE: A multi-task benchmark and analysis platform for natural language understanding. arXiv:1804.07461.

Wang, J., Zhu, T., Li, H., Hsueh, C.-H., and Wu, I.-C. (2018b). Belief-state Monte Carlo tree search for phantom Go. *IEEE Transactions on Games*, 10, 139–154.

**Wanner**, E. (1974). On Remembering, Forgetting and Understanding Sentences. Mouton.

**Warren**, D. H. D. (1974). WARPLAN: A System for Generating Plans. Department of Computational Logic Memo, University of Edinburgh.

Warren, D. H. D. (1983). An abstract Prolog instruction set. Technical note, SRI International.

Wasserman, L. (2004). All of Statistics. Springer.

Watkins, C. J. (1989). *Models of Delayed Reinforcement Learning*. Ph.D. thesis, Psychology Department, Cambridge University.

Watson, J. D. and Crick, F. (1953). A structure for deoxyribose nucleic acid. *Nature*, 171, 737.

**Wattenberg**, M., Viégas, F., and Johnson, I. (2016). How to use t-SNE effectively. *Distill*, 1.

**Waugh**, K., Schnizlein, D., Bowling, M., and Szafron, D. (2009). Abstraction pathologies in extensive games. In *AAMAS-09*.

**Weibull**, J. (1995). *Evolutionary Game Theory*. MIT Press.

Weidenbach, C. (2001). SPASS: Combining superposition, sorts and splitting. In Robinson, A. and Voronkov, A. (Eds.), *Handbook of Automated Reasoning*. MIT Press.

Weiss, G. (2000a). Multiagent Systems. MIT Press.

**Weiss**, Y. (2000b). Correctness of local probability propagation in graphical models with loops. *Neural Computation*, 12, 1–41.

**Weiss**, Y. and Freeman, W. (2001). Correctness of belief propagation in Gaussian graphical models of arbitrary topology. *Neural Computation*, *13*, 2173–2200.

**Weizenbaum**, J. (1976). *Computer Power and Human Reason*. W. H. Freeman.

**Weld**, D. S. (1994). An introduction to least commitment planning. *AIMag*, *15*, 27–61.

**Weld**, D. S. (1999). Recent advances in AI planning. *AIMag*, 20, 93–122.

**Weld**, D. S., Anderson, C. R., and Smith, D. E. (1998). Extending Graphplan to handle uncertainty and sensing actions. In *AAAI-98*.

**Weld**, D. S. and de Kleer, J. (1990). *Readings in Qualitative Reasoning about Physical Systems*. Morgan Kaufmann

**Weld**, D. S. and Etzioni, O. (1994). The first law of robotics: A call to arms. In *AAAI-94*.

Wellman, M. P. (1985). Reasoning about preference models. Technical report, Laboratory for Computer Science. MIT.

Wellman, M. P. (1988). Formulation of Tradeoffs in Planning under Uncertainty. Ph.D. thesis, MIT.

Wellman, M. P. (1990a). Fundamental concepts of qualitative probabilistic networks. *AIJ*, 44, 257–303.

**Wellman**, M. P. (1990b). The STRIPS assumption for planning under uncertainty. In *AAAI-90*.

**Wellman**, M. P., Breese, J. S., and Goldman, R. (1992). From knowledge bases to decision models. *Knowledge Engineering Review*, 7, 35–53.

**Wellman**, M. P. and Doyle, J. (1992). Modular utility representation for decision-theoretic planning. In *ICAPS*-92.

Wellman, M. P., Wurman, P., O'Malley, K., Bangera, R., Lin, S., Reeves, D., and Walsh, W. (2001). Designing the market game for a trading agent competition. *IEEE Internet Computing*, 5, 43–51.

**Werbos**, P. (1974). *Beyond Regression: New Tools for Prediction and Analysis in the Behavioral Sciences*. Ph.D. thesis, Harvard University.

**Werbos**, P. (1990). Backpropagation through time: What it does and how to do it. *Proc. IEEE*, 78, 1550–1560.

Werbos, P. (1992). Approximate dynamic programming for real-time control and neural modeling. In White, D. A. and Sofge, D. A. (Eds.), Handbook of Intelligent Control: Neural, Fuzzy, and Adaptive Approaches. Van Nostrand Reinhold.

**Werbos**, P. (1977). Advanced forecasting methods for global crisis warning and models of intelligence. *General Systems Yearbook*, 22, 25–38.

**Wesley**, M. A. and Lozano-Perez, T. (1979). An algorithm for planning collision-free paths among polyhedral objects. *CACM*, 22, 560–570.

West, D. M. (2018). The Future of Work: Robots, AI, and Automation. Brookings Institution Press.

**West**, S. M., Whittaker, M., and Crawford, K. (2019). Discriminating systems: Gender, race and power in AI. Tech. rep., AI Now Institute.

**Wexler**, Y. and Meek, C. (2009). MAS: A multiplicative approximation scheme for probabilistic inference. In *NeurIPS 21*.

**Wheatstone**, C. (1838). On some remarkable, and hitherto unresolved, phenomena of binocular vision. *Phil. Trans. Roy. Soc.*, 2, 371–394.

White, C., Neiswanger, W., and Savani, Y. (2019). BANANAS: Bayesian optimization with neural architectures for neural architecture search. arXiv:1910.11858.

Whitehead, A. N. and Russell, B. (1910). *Principia Mathematica*. Cambridge University Press.

Whittle, P. (1979). Discussion of Dr Gittins' paper. J. Royal Statistical Society, 41, 165.

**Whorf**, B. (1956). *Language*, *Thought*, *and Reality*. MIT Press.

Widrow, B. (1962). Generalization and information storage in networks of ADALINE "neurons". In Yovits, M. C., Jacobi, G. T., and Goldstein, G. D. (Eds.), Self-Organizing Systems. Spartan.

**Widrow**, B. and Hoff, M. E. (1960). Adaptive switching circuits. In *IRE WESCON Convention Record*.

**Wiedijk**, F. (2003). Comparing mathematical provers. In *Proc. 2nd Int. Conf. on Mathematical Knowledge Management.* 

**Wiegley**, J., Goldberg, K., Peshkin, M., and Brokowski, M. (1996). A complete algorithm for designing passive fences to orient parts. In *ICRA-96*.

**Wiener**, N. (1942). The extrapolation, interpolation, and smoothing of stationary time series. Tech. rep., Research Project DIC-6037, MIT.

Wiener, N. (1948). Cybernetics. Wiley.

**Wiener**, N. (1950). *The Human Use of Human Beings*. Houghton Mifflin.

**Wiener**, N. (1960). Some moral and technical consequences of automation. *Science*, 131, 1355–1358.

Wiener, N. (1964). God & Golem, Inc: A Comment on Certain Points Where Cybernetics Impinges on Religion. MIT Press.

Wilensky, R. (1978). *Understanding Goal-Based Sto*ries. Ph.D. thesis, Yale University.

Wilkins, D. E. (1988). Practical Planning: Extending the AI Planning Paradigm. Morgan Kaufmann.

Wilkins, D. E. (1990). Can AI planners solve practical problems? *Computational Intelligence*, 6, 232–246.

Wilks, Y. (2010). Close Engagements With Artificial Companions: Key Social, Psychological, Ethical and Design Issues. John Benjamins.

Wilks, Y. (2019). Artificial Intelligence: Modern Magic or Dangerous Future. Icon.

**Williams**, A., Nangia, N., and Bowman, S. (2018). A broad-coverage challenge corpus for sentence understanding through inference. In *NAACL HLT*.

Williams, B., Ingham, M., Chung, S., and Elliott, P. (2003). Model-based programming of intelligent embedded systems and robotic space explorers. *Proc. IEEE*, 91(212–237).

**Williams**, R. J. (1992). Simple statistical gradient-following algorithms for connectionist reinforcement learning. *Machine Learning*, 8, 229–256.

**Williams**, R. J. and Zipser, D. (1989). A learning algorithm for continually running fully recurrent neural networks. *Neural Computation*, 1, 270–280.

Williams, R. J. and Baird, L. C. I. (1993). Tight performance bounds on greedy policies based on imperfect value functions. Tech. rep., College of Computer Science, Northeastern University.

Wilson, D. H. (2011). Robopocalypse. Doubleday.

**Wilson**, R. A. and Keil, F. C. (Eds.). (1999). *The MIT Encyclopedia of the Cognitive Sciences*. MIT Press.

**Wilson**, R. (2004). *Four Colors Suffice*. Princeton University Press.

- Wilt, C. M. and Ruml, W. (2014). Speedy versus greedy search. In Seventh Annual Symposium on Combinatorial Search.
- Wilt, C. M. and Ruml, W. (2016). Effective heuristics for suboptimal best-first search. *JAIR*, *57*, 273–306.
- **Wingate**, D. and Seppi, K. D. (2005). Prioritization methods for accelerating MDP solvers. *JMLR*, 6, 851–881.
- **Wingate**, D., Stuhlmüller, A., and Goodman, N. D. (2011). Lightweight implementations of probabilistic programming languages via transformational compilation. In *AISTATS-11*.
- **Winograd**, S. and Cowan, J. D. (1963). *Reliable Computation in the Presence of Noise*. MIT Press.
- **Winograd**, T. (1972). Understanding natural language. *Cognitive Psychology*, *3*, 1–191.
- **Winston**, P. H. (1970). Learning structural descriptions from examples. Technical report, Department of Electrical Engineering and Computer Science, MIT.
- Wintermute, S., Xu, J., and Laird, J. (2007). SORTS: A human-level approach to real-time strategy AI. In *Proc. Third Artificial Intelligence and Interactive Digital Entertainment Conference*.
- Winternitz, L. (2017). Autonomous navigation above the GNSS constellations and beyond: GPS navigation for the magnetospheric multiscale mission and SEX-TANT pulsar navigation demonstration. Tech. rep., NASA Goddard Space Flight Center.
- Witten, I. H. (1977). An adaptive optimal controller for discrete-time Markov environments. *Information and Control*, 34, 286–295.
- Witten, I. H. and Bell, T. C. (1991). The zero-frequency problem: Estimating the probabilities of novel events in adaptive text compression. *IEEE Transactions on Information Theory*, 37, 1085–1094.
- Witten, I. H. and Frank, E. (2016). *Data Mining: Practical Machine Learning Tools and Techniques* (4th edition). Morgan Kaufmann.
- Witten, I. H., Moffat, A., and Bell, T. C. (1999). Managing Gigabytes: Compressing and Indexing Documents and Images (2nd edition). Morgan Kaufmann.
- Wittgenstein, L. (1922). Tractatus Logico-Philosophicus (2nd edition). Routledge and Kegan Paul. Reprinted 1971, edited by D. F. Pears and B. F.
- Wittgenstein, L. (1953). *Philosophical Investigations*. Macmillan.
- Wojciechowski, W. S. and Wojcik, A. S. (1983). Automated design of multiple-valued logic circuits by automated theorem proving techniques. *IEEE Transactions on Computers*, C-32, 785–798.
- **Wolfe**, J. and Russell, S. J. (2007). Exploiting belief state structure in graph search. In *ICAPS Workshop on Planning in Games*.
- **Wolpert**, D. (2013). Ubiquity symposium: Evolutionary computation and the processes of life: what the no free lunch theorems really mean: how to improve search algorithms. *Ubiquity*, *December*, 1–15.
- **Wolpert**, D. and Macready, W. G. (1997). No free lunch theorems for optimization. *IEEE Trans. Evolutionary Computation*, *1*(1), 67–82.
- Wong, C., Houlsby, N., Lu, Y., and Gesmundo, A. (2019). Transfer learning with neural AutoML. In *NeurIPS 31*.
- **Woods**, W. A. (1973). Progress in natural language understanding: An application to lunar geology. In *AFIPS Conference Proceedings*.
- Woods, W. A. (1975). What's in a link? Foundations for semantic networks. In Bobrow, D. G. and Collins, A. M. (Eds.), Representation and Understanding: Studies in Cognitive Science. Academic Press.

- **Wooldridge**, M. (2009). An Introduction to MultiAgent Systems (2nd edition). Wiley.
- Wooldridge, M. and Rao, A. (Eds.). (1999). Foundations of Rational Agency. Kluwer.
- **Wos**, L., Carson, D., and Robinson, G. (1964). The unit preference strategy in theorem proving. In *Proc. Fall Joint Computer Conference*.
- **Wos**, L., Carson, D., and Robinson, G. (1965). Efficiency and completeness of the set-of-support strategy in theorem proving. *JACM*, *12*, 536–541.
- **Wos**, L., Overbeek, R., Lusk, E., and Boyle, J. (1992). *Automated Reasoning: Introduction and Applications* (2nd edition). McGraw-Hill.
- **Wos**, L. and Robinson, G. (1968). Paramodulation and set of support. In *Proc. IRIA Symposium on Automatic Demonstration*.
- **Wos**, L., Robinson, G., Carson, D., and Shalla, L. (1967). The concept of demodulation in theorem proving. *JACM*, *14*, 698–704.
- Wos, L. and Winker, S. (1983). Open questions solved with the assistance of AURA. In Bledsoe, W. W. and Loveland, D. (Eds.), Automated Theorem Proving: After 25 Years. American Mathematical Society.
- **Wos**, L. and Pieper, G. (2003). Automated Reasoning and the Discovery of Missing and Elegant Proofs. Rinton Press.
- Wray, R. E. and Jones, R. M. (2005). An introduction to Soar as an agent architecture. In Sun, R. (Ed.), Cognition and Multi-Agent Interaction: From Cognitive Modeling to Social Simulation. Cambridge University Press.
- Wright, S. (1921). Correlation and causation. *J. Agricultural Research*, 20, 557–585.
- **Wright**, S. (1931). Evolution in Mendelian populations. *Genetics*, 16, 97–159.
- Wright, S. (1934). The method of path coefficients. *Annals of Mathematical Statistics*, 5, 161–215.
- **Wu**, F. and Weld, D. S. (2008). Automatically refining the Wikipedia infobox ontology. In *17th World Wide Web Conference (WWW2008)*.
- **Wu**, Y., Li, L., and Russell, S. J. (2016a). SWIFT: Compiled inference for probabilistic programming languages. In *IJCAI-16*.
- Wu, Y., Schuster, M., Chen, Z., Le, Q. V., Norouzi, M., Macherey, W., Krikun, M., Cao, Y., Gao, Q., Macherey, K., et al. (2016b). Google's neural machine translation system: Bridging the gap between human and machine translation. arXiv:1609.08144.
- **Wu**, Y. and He, K. (2018). Group normalization. arXiv:1803.08494.
- **Xiong**, W., Wu, L., Alleva, F., Droppo, J., Huang, X., and Stolcke, A. (2017). The Microsoft 2017 conversational speech recognition system. arXiv:1708.06073.
- **Yampolskiy**, R. V. (2018). *Artificial Intelligence Safety and Security*. Chapman and Hall/CRC.
- Yang, G., Lin, Y., and Bhattacharya, P. (2010). A driver fatigue recognition model based on information fusion and dynamic Bayesian network. *Inf. Sci.*, 180, 1942–1954.
- Yang, X.-S. (2009). Firefly algorithms for multimodal optimization. In *International Symposium on Stochastic Algorithms*.
- Yang, X.-S. and Deb, S. (2014). Cuckoo search: Recent advances and applications. *Neural Computing and Applications*, 24, 169–174.
- Yang, Z., Dai, Z., Yang, Y., Carbonell, J. G., Salakhutdinov, R., and Le, Q. V. (2019). XLNet: Generalized autoregressive pretraining for language understanding. arXiv:1906.08237.
- Yarowsky, D. (1995). Unsupervised word sense disambiguation rivaling supervised methods. In ACL-95.

- Ye, Y. (2011). The simplex and policy-iteration methods are strongly polynomial for the Markov decision problem with a fixed discount rate. *Mathematics of Operations Research*, 36, 593–784.
- Yedidia, J., Freeman, W., and Weiss, Y. (2005). Constructing free-energy approximations and generalized belief propagation algorithms. *IEEE Transactions on Information Theory*, 51, 2282–2312.
- Yeo, H.-S., Minami, R., Rodriguez, K., Shaker, G., and Quigley, A. (2018). Exploring tangible interactions with radar sensing. *Proc. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 2, 1–25.
- **Ying**, C., Kumar, S., Chen, D., Wang, T., and Cheng, Y. (2018). Image classification at supercomputer scale. arXiv:1811.06992.
- **Yip**, K. M.-K. (1991). KAM: A System for Intelligently Guiding Numerical Experimentation by Computer. MIT Press.
- Yngve, V. (1955). A model and an hypothesis for language structure. In Locke, W. N. and Booth, A. D. (Eds.), *Machine Translation of Languages*. MIT Press.
- **Yob**, G. (1975). Hunt the wumpus! *Creative Computing*, *Sep/Oct*.
- Yoshikawa, T. (1990). Foundations of Robotics: Analysis and Control. MIT Press.
- You, Y., Pan, X., Wang, Z., and Lu, C. (2017). Virtual to real reinforcement learning for autonomous driving. arXiv:1704.03952.
- **Young**, H. P. (2004). *Strategic Learning and Its Limits*. Oxford University Press.
- Young, S., Gašić, M., Thompson, B., and Williams, J. (2013). POMDP-based statistical spoken dialog systems: A review. *Proc. IEEE*, 101, 1160–1179.
- **Younger**, D. H. (1967). Recognition and parsing of context-free languages in time  $n^3$ . *Information and Control*, 10, 189–208.
- Yu, D. and Deng, L. (2016). Automatic Speech Recognition. Springer-Verlag.
- Yu, H.-F., Lo, H.-Y., Hsieh, H.-P., and Lou, J.-K. (2011). Feature engineering and classifier ensemble for KDD Cup 2010. In *Proc. KDD Cup 2010 Workshap*.
- Yu, K., Sciuto, C., Jaggi, M., Musat, C., and Salzmann, M. (2019). Evaluating the search phase of neural architecture search. arXiv:1902.08142.
- Yudkowsky, E. (2008). Artificial intelligence as a positive and negative factor in global risk. In Bostrom, N. and Cirkovic, M. (Eds.), Global Catastrophic Risk. Oxford University Press.
- Yule, G. U. (1927). On a method of investigating periodicities in disturbed series, with special reference to Wolfer's sunspot numbers. *Phil. Trans. Roy. Soc.*, *A*, 226, 267–298.
- **Zadeh**, L. A. (1965). Fuzzy sets. *Information and Control*, 8, 338–353.
- **Zadeh**, L. A. (1978). Fuzzy sets as a basis for a theory of possibility. *Fuzzy Sets and Systems*, 1, 3–28.
- Zaritskii, V. S., Svetnik, V. B., and Shimelevich, L. I. (1975). Monte-Carlo technique in problems of optimal information processing. *Automation and Remote Control*, 36, 2015–22.
- **Zeckhauser**, R. and Shepard, D. (1976). Where now for saving lives? *Law and Contemporary Problems*, 40, 5–45.
- **Zeeberg**, A. (2017). D.I.Y. artificial intelligence comes to a Japanese family farm. *New Yorker*, August 10.
- **Zelle**, J. and Mooney, R. (1996). Learning to parse database queries using inductive logic programming. In *AAAI-96*.
- **Zemel**, R., Wu, Y., Swersky, K., Pitassi, T., and Dwork, C. (2013). Learning fair representations. In *ICML-13*.

- **Zemelman**, B. V., Lee, G. A., Ng, M., and Miesenböck, G. (2002). Selective photostimulation of genetically chARGed neurons. *Neuron*, *33*, 15–22.
- **Zermelo**, E. (1913). Uber Eine Anwendung der Mengenlehre auf die Theorie des Schachspiels. In *Proc. Fifth International Congress of Mathematicians*.
- **Zermelo**, E. (1976). An application of set theory to the theory of chess-playing. *Firbush News*, 6, 37–42. English translation of (Zermelo 1913).
- **Zettlemoyer**, L. and Collins, M. (2005). Learning to map sentences to logical form: Structured classification with probabilistic categorial grammars. In *UAI-*05
- **Zhang**, C., Bengio, S., Hardt, M., Recht, B., and Vinyals, O. (2016). Understanding deep learning requires rethinking generalization. arXiv:1611.03530.
- Zhang, H. and Stickel, M. E. (1996). An efficient algorithm for unit-propagation. In *Proc. Fourth International Symposium on Artificial Intelligence and Mathematics*
- Zhang, L., Pavlovic, V., Cantor, C. R., and Kasif, S. (2003). Human-mouse gene identification by comparative evidence integration and evolutionary analysis. *Genome Research*, 13, 1190–1202.
- **Zhang**, N. L. and Poole, D. (1994). A simple approach to Bayesian network computations. In *Proc.* 10th Canadian Conference on Artificial Intelligence.
- Zhang, S., Yao, L., and Sun, A. (2017). Deep learning based recommender system: A survey and new perspectives. arXiv:1707.07435.
- Zhang, X., Zhao, J., and LeCun, Y. (2016). Characterlevel convolutional networks for text classification. In *NeurIPS* 28.

- Zhang, Y., Pezeshki, M., Brakel, P., Zhang, S., Laurent, C., Bengio, Y., and Courville, A. (2017). Towards end-to-end speech recognition with deep convolutional neural networks. arXiv:1701.02720.
- **Zhao**, K. and Huang, L. (2015). Type-driven incremental semantic parsing with polymorphism. In *NAACL HLT*.
- **Zhou**, K., Doyle, J., and Glover, K. (1995). *Robust and Optimal Control*. Pearson.
- **Zhou**, R. and Hansen, E. (2002). Memory-bounded A\* graph search. In *Proc. 15th International FLAIRS Conference*.
- **Zhou**, R. and Hansen, E. (2006). Breadth-first heuristic search. *AIJ*, *170*, 385–408.
- **Zhu**, B., Jiao, J., and Tse, D. (2019). Deconstructing generative adversarial networks. arXiv:1901.09465.
- **Zhu**, D. J. and Latombe, J.-C. (1991). New heuristic algorithms for efficient hierarchical path planning. *IEEE Transactions on Robotics and Automation*, 7, 9–20
- **Zhu**, J.-Y., Park, T., Isola, P., and Efros, A. (2017). Unpaired image-to-image translation using cycleconsistent adversarial networks. In *ICCV-17*.
- **Zhu**, M., Zhang, Y., Chen, W., Zhang, M., and Zhu, J. (2013). Fast and accurate shift-reduce constituent parsing. In *ACL-13*.
- **Ziebart**, B. D., Maas, A. L., Dey, A. K., and Bagnell, J. A. (2008). Navigate like a cabbie: Probabilistic reasoning from observed context-aware behavior. In *Proc. 10th Int. Conf. on Ubiquitous Computing*.

- **Ziebart**, B. D., Ratliff, N., Gallagher, G., Mertz, C., Peterson, K., Bagnell, J. A., Hebert, M., Dey, A. K., and Srinivasa, S. (2009). Planning-based prediction for pedestrians. In *IROS-09*.
- **Zimmermann**, H.-J. (Ed.). (1999). *Practical Applications of Fuzzy Technologies*. Kluwer.
- **Zimmermann**, H.-J. (2001). Fuzzy Set Theory—And Its Applications (4th edition). Kluwer.
- Zinkevich, M., Johanson, M., Bowling, M., and Piccione, C. (2008). Regret minimization in games with incomplete information. In *NeurIPS 20*.
- **Zipf**, G. (1935). *The Psychobiology of Language*. Houghton Mifflin.
- **Zipf**, G. (1949). *Human Behavior and the Principle of Least Effort*. Addison-Wesley.
- **Zobrist**, A. L. (1970). Feature Extraction and Representation for Pattern Recognition and the Game of Go. Ph.D. thesis, University of Wisconsin.
- **Zollmann**, A., Venugopal, A., Och, F. J., and Ponte, J. (2008). A systematic comparison of phrase-based, hierarchical and syntax-augmented statistical MT. In *COLING-08*.
- **Zoph**, B. and Le, Q. V. (2016). Neural architecture search with reinforcement learning. arXiv:1611.01578.
- **Zuse**, K. (1945). The Plankalkül. Report, Gesellschaft für Mathematik und Datenverarbeitung.
- **Zweig**, G. and Russell, S. J. (1998). Speech recognition with dynamic Bayesian networks. In *AAAI-98*.