

Computación
2002

CARAL.DOC

UNIVERSIDAD DE BUENOS AIRES

FACULTAD DE CIENCIAS EXACTAS Y NATURALES

1. DEPARTAMENTO: Computación
2. CUATRIMESTRE: Segundo de 2002
3. ASIGNATURA: Inteligencia Artificial
4. CARRERA: Licenciatura en Ciencias de la Computación
5. CARACTER DE LA MATERIA: Optativa
6. NUMERO DE CODIGO DE CARRERA: 18
7. NUMERO DE CODIGO DE MATERIA: C
8. PUNTAJE: 3
9. PLAN DE ESTUDIOS AÑO: 1993 - 1987
10. DURACION DE LA MATERIA: cuatrimestral
11. HORAS DE CLASE SEMANAL:
 - a) TEORICAS: 3 hs c) PRACTICAS: 3 hs
 - b) LABORATORIO: hs d) SEMINARIOS: hs
12. CARGA HORARIA TOTAL SEMANAL: 6 hs
13. ASIGNATURAS CORRELATIVAS: Paradigmas de programación
14. FORMA DE EVALUACION: Dos parciales, dos trabajos de implementación. Promocional.
15. PROGRAMA Y BIBLIOGRAFIA: Adjuntas a esta hoja.

Fecha: 27/05/2002



DOCENTE: Lic. Alvarez, José Angel

CARAL.DOC



Dr. Guillermo Duran
Director Adjunto
Depto. de Computación
F. C. E. y N. UBA

Inteligencia artificial – Programa y bibliografía

Objetivo: Realizar una introducción a los temas básicos de estudio de la Inteligencia artificial. Estos serán complementados por otras materias del área.

Docente: José Angel Alvarez

Correlatividades: Paradigmas de programación.

Puntos: 3

Días y horas: Martes y jueves de 19 a 22.

Contenidos

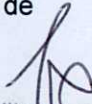
1. Breve introducción a la Inteligencia Artificial como disciplina científica. Noción de agente. La investigación teórica y empírica en IA.

I- Resolución de problemas

2. Introducción a la resolución de problemas. Tipos de problemas. Representación de problemas y tipos de búsqueda. Clases de representaciones de problemas. Definición y características de las principales familias de algoritmos de búsqueda típicos en IA.
3. Propiedades formales de los métodos heurísticos. Análisis de complejidad de los principales métodos de búsqueda según los métodos analíticos y empíricos. Transiciones de fase.
4. Representación y heurísticas. Descubrimiento de heurísticas. Búsqueda jerárquica. Abstracción y relajación de problemas. Teorema de Valtorta y generalizaciones.
5. Evaluación y selección de algoritmos. Comparación de algoritmos sobre modelos analíticos y prácticos. Criterios de selección. Comparación experimental de algoritmos. Portfolios de algoritmos. Teorema NFL y sus consecuencias.
6. Computaciones aproximadas, de "cualquier momento" (anytime) y flexibles. Transformación épsilon de espacio de estados. Recorte hacia delante (forward pruning). Satisfacción parcial de restricciones.

II- Representación de conocimiento y razonamiento

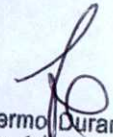
7. Introducción. Conceptos lógicos básicos. Lógica proposicional y de primer orden. Cálculo de situaciones.
8. Representación y construcción de Bases de Conocimiento. Ontología, teoría ontológica, conceptualización y compromiso ontológico. Formulación y formalización. Evaluación y comparación de teorías.
9. Razonamiento como inferencia deductiva. Diversas formas de implicación y razonamiento. Verificación de modelos vs. demostración de teoremas. Inferencia deductiva en lógica de primer orden. Modus Ponens Generalizado. Resolución y otros procedimientos de demostración. Completitud y correctitud.
10. Problemas de incompletitud, vaguedad e incertidumbre en el conocimiento y su formalización en diversas lógicas. Actualización de bases de conocimiento.
11. Evaluación y comparación de lenguajes de representación de conocimiento. Ingeniería Lógica.
12. Restricciones de la lógica de primer orden. Lógica descriptiva.
13. Abstracción. Teoría de la abstracción. Tipos. Aplicaciones a la demostración de teoremas. Problema de inconsistencia. Eficiencia.
14. Razonamiento basado en modelos. Compilación de conocimiento. Caso proposicional y de primer orden. Compilación exacta y aproximada.
15. Teoría económica de la racionalidad. El sentido común como aproximación y reducción de problemas de KR&R. Relevancia y razonamiento. Aprendizaje y razonamiento.


 Dr. Guillermo Duran
 Director Adjunto
 Depto. de Computación
 F. C. E. y N. UBA

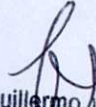
16. Introducción a la Ingeniería de Conocimiento (KE). Principales principios y métodos. Ontologías y métodos de resolución de problemas.

Bibliografía

- Allen, John A. y Minton, Steven. "Selecting the Right Heuristic Algorithm: Runtime Performance Predictors", Proceedings of the Canadian AI conference, 1996.
- Apt, Krzysztof R. "The Logic Programming Paradigm and Prolog". Unpublished tutorial, 2001.
- Areces, Carlos Eduardo. *Logic Engineering - The Case of Description and Hybrid Logics*. Institute for Logic, Language and Computation, Faculty of Science, University of Amsterdam, 2000.
- Areces, Carlos y de Rijke, Maarten. "Expressiveness Revisited". En E. Franconi, G. De Giacomo, R.M. MacGregor, W. Nutt, C. A. Welty (comps.): Proceedings of the International Workshop on Description Logics (DL'98), Trento, Italy, pp. 35-43, 1998.
- Bacchus, Fahiem. "A Uniform View of Backtracking". Unpublished manuscript, 2000.
- Baral, Chitta y Gelfond, Michael. "Knowledge Programming and Knowledge Representation". *Journal of Logic Programming*, 19, 20, 1994, pp. 73-148.
- Benjamins, V. Richard; Wielinga, Bob; Wielemaker, Jan y Fensel, Dieter. "Brokering Problem-Solving Knowledge on the Internet". En Fensel y Studer (comps.): Proceedings of EKAW-99, LNAI 1621, Springer Verlag, 1999, pp. 33-48.
- Benson, Scott y Nilsson, Nils J. "Reacting, Planning and Learning in an Autonomous Agent", *Machine Intelligence 14*, (eds. K. Furukawa, D. Michie y S. Muggleton), Oxford: The Clarendon Press, 1995. Draft version.
- Bistarelli, Stefano; Montanari, Ugo y Rossi, Francesca. "Constraint Solving over Semirings". Proc. IJCAI '95, Morgan Kaufmann, 1995.
- Bistarrelli, Stefano; Fargier, Helene; Montanari, Ugo; Rossi, Francesca; Schiex, Thomas y Verfaillie, Gerard. "Semiring-Based CSPs and Valued CSPs: Frameworks, Properties, and Comparison". *Constraints*, Vol. 4, No. 3, September, 1999.
- Bonet, Blai y Geffner, Héctor. "Planning as Heuristic Search", *Artificial Intelligence*, Special issue on Heuristic Search, 2001.
- Borgida, Alex. "On the relative expressiveness of description logics and predicate logics". *Artificial Intelligence*, 82, 1996, pp. 33-367.
- Bresina, John Lawrence. *Stochastic heuristic search and evaluation methods for constrained optimization*. Ph. D. Thesis, Graduate School- New Brunswick, Rutgers, The State University of New Jersey, 1998.
- Cadoli, Marco y Donini, Francesco. "A Survey on Knowledge Compilation". *AI Communications*, 1998.
- Cadoli, Marco y Schaerf, Marco. "A Survey on Complexity Results for Non-monotonic Logics". *Journal of Logic Programming*, 1993.
- Cadoli, Marco; Donini, Francesco y Schaerf, Marco. "Is Intractability of Non-Monotonic Reasoning a Real Drawback?". *Proceedings of the Twelfth National Conference on Artificial Intelligence (AAAI'94)*, 1994, pp. 946-951.
- Cadoli, Marco; Donini, Francesco y Schaerf, Marco. "Is Intractability of Non-Monotonic Reasoning a Real Drawback?". *Artificial Intelligence*, 88, pp. 215-251, 1996.
- Cadoli, Marco; Donini, Francesco M.; Liberatore, Paolo y Shaerf, Marco. "Preprocessing of Intractable Problems". *Information and Computation*, 2001.
- Caldwell, James L.; Gent, Ian P. y Underwood, Judith. "Search Algorithms in Type Theory". *Theoretical Computer Science*, Special Issue on Proof Search in Type-theoretic Languages, 1997.
- Cheeseman, Peter; Kanefsky, Bob y Taylor, William M. "Where the Really Hard Problems Are". En J. Mylopoulos y R. Reiter (comps.), *Proceedings of IJCAI-91*, San Mateo, CA., Morgan Kaufmann, 1991, pp. 331-337.
- Chen, Xinguang y van Beek, Peter. "Conflicted-Directed Backjumping Revisited". *Journal of Artificial Intelligence Research*, 14, 2001, pp. 53-81.
- Cheng, Jingde. "The Fundamental Role of Entailment in Knowledge Representation and Reasoning". *Journal of Computing and Information*, Vol. 2, No. 1, pp. 853-873, Special Issue: Proceedings of the 8th International Conference of Computing and Information, 1996.


Dr. Guillermo Duran
Director Adjunto
Depto. de Computación
F. C. E. y N. UBA

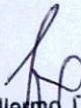
- Cohen, Paul R. *Empirical Methods for Artificial Intelligence*. MIT Press, Cambridge, 1995.
- Dantsin, Evgeny; Eiter, Thomas; Gottlob, Georg y Voronkov, Andrei. "Complexity and Expressive Power of Logic Programming". Technical Report INFSYS RR-1843-99-05, Institut für Informationssysteme, Technische Universität Wien, A-1040 Vienna, Austria, February 1999. ACM Computing Surveys, to appear.
- Davis, Ernest. "The Naive Physics Perplex". *AI Magazine*, 1999a.
- Davis, Ernest. "Guide to Axiomatizing Domains in First-Order Logic". Electronic Newsletter on Reasoning about Actions and Change, Issue 99002, March 8, 1999b.
- Dasgupta, Pallab; Chakrabarti, P.P. y De Sarkar, S.C. "Multiobjective Heuristic Search in AND/OR Graphs". *Journal of Algorithms*, 20, pp. 282-311, 1996.
- Dean, Thomas Dean y Kambhampati, Subbarao. "Planning and Scheduling". CRC Handbook of Computer Science and Engineering, 1995.
- Dechter, Rina y Frost, Daniel. "Backtracking algorithms for constraint satisfaction problems - a tutorial survey". ICS Technical Report, September 17, 1999.
- Dechter, Rina y Frost, Daniel. "Backjump-based backtracking for constraint satisfaction problems". *Artificial Intelligence*, 136, 2002, pp. 147-188.
- Dechter, Rina y Pearl, Judea. "Network-based heuristics for constraint-satisfaction problems", en Kanal, L. y Kumar, V. (comps.). *Search in Artificial Intelligence*. Berlín, Springer-Verlag, 1988.
- Dechter, Rina y Rossi, Francesca. "Constraint Satisfaction". Encyclopedia of Cognitive Science, March 2000.
- Dechter, Rina y van Beek, Peter. "Local and Global Relational Consistency". *Theoretical Computer Science*, 173: 283-308, 1997.
- del Val, Alvaro. "An Analysis of Approximate Knowledge Compilation". IJCAI'95, Proceedings of the Fourteenth International Joint Conference on Artificial Intelligence, 830-836. Montreal, 1995.
- del Val, Alvaro. "Approximate Knowledge Compilation: The First Order Case". AAAI'96, Proceedings of the Thirteenth National American Conference on Artificial Intelligence, 498-503. Portland, Oregon, 1996.
- del Val, Alvaro. "Belief Revision and Non-Monotonic Reasoning: Syntactic, Semantic, Foundational and Coherence Approaches". *Journal of Applied Non-Classical Logics*, 7(1997), pp. 213-240.
- Doyle, Jon. "How to Frame It", CMU Computer Science Lecture Notes, 1986.
- Doyle, Jon. "Rationality and its Roles in Reasoning". *Computational Intelligence*, Vol. 8, No. 2 (May 1992), pp. 376-409.
- Doyle, Jon y Patil, Ramesh S. "Two Theses of Knowledge Representation – Language Restrictions, Taxonomic Classification, and the Utility of Representation Services". *Artificial Intelligence*, Vol. 48, No. 3, 1991, pp. 261-297.
- Eiter, Thomas y Gottlob, Georg. "The Complexity of Logic-Based Abduction". *Journal of the ACM*, 42 (1), pp. 3-42, 1995.
- Eiter, Thomas; Gottlob, Georg y Leone, Nicola. "Abduction from Logic Programs: Semantics and Complexity". *Theoretical Computer Science*, 189 (1-2), pp. 129-177, 1997.
- Fagin, Ronald; Halpern, Joseph Y. y Vardi, Moshe Y. "What is an inference rule?". *Journal of Symbolic Logic*, 57, 3, 1992, pp. 1018-1045.
- Fensel, Dieter y Motta, Enrico. "Structured Development of Problem Solving Methods". IEEE Transactions on Knowledge and Data Engineering, 2000.
- Fensel, Dieter y Straatman, Remco. "Problem-Solving Methods: Making Assumptions for Efficiency Reasons". En N. Shadbolt et al. (comps.): *Advances in Knowledge Acquisition, Proceedings of the 9th European Knowledge Acquisition Workshop EKAW-96*, Nottingham, England, May 14-17 1996, Lecture Notes in Artificial Intelligence (LNAI), Springer-Verlag, Berlín, 1996.
- Fernández López, M. "Overview of Methodologies For Building Ontologies". En V. Richard Benjamins et al. (comp.): *Proceedings of the IJCAI-99 Workshop on Ontologies and Problem-Solving Methods: Lessons Learned and Future Trends (KRR5)*, Stockholm, Sweden, August 2, 1999, CEUR Publications, Vol. 18, Amsterdam, 1999.
- Fitting, Melvin. *First-Order Logic and Automated Theorem Proving*. Nueva York, Springer, 1990.
- Frank, Jeremy; Cheeseman, Peter y Stutz, John. "When Gravity Fails: Local Search Topology". *Journal of Artificial Intelligence Research*, 7 (1997), pp. 249-281.


 Dr. Guillermo Durán
 Director Adjunto
 Depto. de Computación
 F. C. E. y N. UBA

- Franklin, Stan y Graesser, Art. Is it an Agent, or just a Program?: A Taxonomy for Autonomous Agents. Proceedings of the Third International Workshop on Agent Theories, Architectures, and Languages, Springer-Verlag, 1996.
- Freuder, Eugene C. y Wallace, Richard J. "Partial Constraint Satisfaction". Proceedings 11th International Joint Conference on Artificial Intelligence (IJCAI'89), Detroit, 1989, pp. 278-283.
- Fridman Noy, Natalya y McGuinness, Deborah L. "Ontology Development 101: A Guide to Creating Your First Ontology". SMI Technical Report SMI-2001-0880, 2001.
- Gabbay, Dov M. "Classical vs non-classical logics: The universality of classical logic". Technical Report MPI-I-93-230, Max-Planck-Institut für Informatik, Saarbrücken, Germany, August 1993.
- Gabbay, Dov M.. "Classical vs. Non-classical Logic". En D. Gabbay, C. J. Hogger, J. A. Robinson, and J. Siekmann, editors, *Handbook of Logic in Artificial Intelligence and Logic Programming*, Vol. 2, Oxford University Press, 1994.
- Gat, Erann. "News From the Trenches: An Overview of Unmanned Spacecraft for AI Researchers". AAAI Spring Symposium on Planning with Incomplete Information for Robot Problems, 1996.
- Genesereth, Michael R. y Nilsson, Nils J. *Logical Foundations of Artificial Intelligence*. Morgan Kaufmann, Palo Alto, 1987.
- Gent, Ian P.; Grant, Stuart A.; MacIntyre, Ewan; Prosser, Patrick; Shaw, Paul; Smith, Barbara M. y Walsh, Toby. "How Not To Do It". University of Leeds, School of Computer Studies, Research Report Series, Report 97.27, May 1997.
- Gent, Ian P.; Prosser, Patrick y Walsh, Toby. "The Constrainedness of Search". Research Reports of the APES Group, APES-12-1999, 1999.
- Ginsberg, Matthew L. "The Computational Value of Nonmonotonic Reasoning". KR-91, 1991.
- Ginsberg, Matthew L. "Epistemological and Heuristic Adequacy Revisited". *ACM Computing Surveys*, 1995.
- Ginsberg, Matthew L. "Do Computers Need Common Sense?". KR-96, 1996.
- Giunchiglia, Fausto y Walsh, Toby. "The use of abstraction in Automatic Inference". DAI Research paper n 454, AI Dept., Univ. Edinburgh, 1990.
- Giunchiglia, Fausto y Walsh, Toby. "A Theory of Abstraction". *Artificial Intelligence*, 56 (2-3), pp. 323-390, 1992a.
- Giunchiglia, Fausto y Walsh, Toby. "An Abstract Proof Checker". Proceedings of 2nd International Symposium on Artificial Intelligence and Maths, Fort Lauderdale, 1992b.
- Giunchiglia, Fausto y Walsh, Toby. "The Inevitability of Inconsistent Abstract Spaces". *Journal of Automated Reasoning*, 11 (1), 23-42, 1993.
- Giunchiglia, Fausto; Sebastiani, Roberto; Villafiorita, Adolfo y Walsh, Toby. "A general purpose reasoner for abstraction". Advances in Artificial Intelligence, 11th Biennial Conference of the Canadian society for Computational Studies of Intelligence, AI '96, Subseries of Lecture Notes in Computer Science, pp. 323-335, May 1996a.
- Giunchiglia F., Pecchiari P., Talcott C. "Reasoning Theories: Towards an Architecture for Open Mechanized Reasoning Systems". Proc. of the First International Workshop on Frontiers of Combining Systems (FroCoS'96), Munich, Germany, March 1996b.
- Gogic, Goran; Kautz, Henry; Papadimitriou, Christos y Selman, Bart. "The Comparative Linguistics of Knowledge Representation". Proceedings of the 14th International Joint Conference on Artificial Intelligence (IJCAI-95), Montreal, Canada, 1995.
- Gomes, Carla P. y Selman, Bart. "Practical Aspects of Algorithm Portfolio Design". Proc. of the Thirteenth Conference On Uncertainty in Artificial Intelligence (UAI-97), Providence, RI, 1997.
- Gomes, Carla P. y Selman, Bart. "Algorithm Portfolios". *Artificial Intelligence*, 126 (2001), pp. 43-62.
- Gómez Pérez, Asunción y Benjamins, V. Richard. "Overview of Knowledge Sharing and Reuse Components: Ontologies and Problem-Solving Methods". En V. Richard Benjamins et al. (comp.): Proceedings of the IJCAI-99 Workshop on Ontologies and Problem-Solving Methods: Lessons Learned and Future Trends (KRR5), Stockholm, Sweden, August 2, 1999, CEUR Publications, Vol. 18, Amsterdam, 1999.
- Goyal, Nita y Shoham, Yoav. "Reasoning Precisely with Vague Concepts". *Proceedings of the Eleventh National Conference on Artificial Intelligence (AAAI-93)*, Washington D.C., July 11-15, 1993, pp. 426-431.

- Guarino, Nicola. "The Ontological Level". En Casati, R.; Smith, B. y White, G. (comps.): *Philosophy and Cognitive Sciences*, Viena, Hölder-Pichler-Tempsky, 1994.
- Guarino, Nicola. "Formal Ontology, Conceptual Analysis and Knowledge Representation". *International Journal of Human and Computer Studies*, 43 (5/6), 1995, pp. 625-640.
- Guarino, Nicola. "Formal Ontology and Information Systems". En Guarino, N. (comp.): *Formal Ontology in Information Systems*, Proceedings of FOIS '98, Trento, Italy, 6-8 June 1998, IOS Press, Amsterdam, 1998, pp. 3-15.
- Guarino, Nicola y Giaretta, Pierdaniele. "Ontologies and Knowledge Bases: Towards a Terminological Clarification". En N. Mars (ed.) *Towards Very Large Knowledge Bases: Knowledge Building and Knowledge Sharing*. IOS Press, Amsterdam, 1995, pp. 25-32.
- Halpern, Joseph Y. y Vardi, Moshe Y. "Model Checking vs. Theorem Proving: A Manifesto". En Lifschitz, V. (comp.): *Artificial Intelligence and Mathematical Theory of Computation* (Papers in Honor of John McCarthy), Academic Press, Nueva York, 1991, pp. 151-176.
- Hansen, Eric A. y Ziberstein, Shlomo. "LAO*: A heuristic search algorithm that finds solutions with loops". *Artificial Intelligence*, 129 (2001a), pp. 35-62.
- Hansen, Eric A. y Zilberstein, Shlomo. "Monitoring and control of anytime algorithms: A dynamic programming approach". *Artificial Intelligence*, 126 (2001b), pp. 139-157.
- Hansson, Othar; Mayer, Andrew y Valtorta, Marco. "A New Result on the Complexity of Heuristic Estimates for the A* Algorithm". *Artificial Intelligence*, 55, 1 (May 1992), 129-143.
- Haslum, Patrik y Geffner, Héctor. "Admissible Heuristics for Optimal Planning", Proc. 5th Int. Conf. on AI Planning and Scheduling (AIPS 2000), Colorado, 4/2000, AAAI Press, pp. 140-149.
- Hodgson, J.P.E. "Automatic Generation of Heuristics", en R.B. Banerji (comp.): *Formal Techniques in Artificial Intelligence – A Sourcebook*, Elsevier, N.Y., North-Holland, 1990, pp. 123-171.
- Hogg, Tad. "Exploiting Problem Structure as a Search Heuristic". Technical Report, Xerox PARC, Palo Alto, CA (1995); *International Journal of Modern Physics C*, 9, 1998, pp. 13-29.
- Hogg, Tad; Huberman, Bernardo A. y Williams, Colin, P. "Phase transitions and the search problem", *Artificial Intelligence*, 81, 1996, pp. 1-15.
- Holte, R.C.; Drummond, C.; Pérez, M.B.; Zimmer, R.M. y MacDonald, A.J. "Searching With Abstractions: A Unifying Framework and New High-Performance Algorithm". Proceedings of the 10th Canadian Conference on Artificial Intelligence (AI'94), Morgan Kaufman, 1994, pp. 263-270.
- Holte, R.C.; Perez, M.B.; Zimmer, R.M. y MacDonald, A.J. "Hierarchical A*: Searching Abstraction Hierarchies Efficiently". Technical Report TR-95-18, 1995a; Pre-publication version of AAAI '96, 1996, pp. 530-535.
- Holte, R.C.; Pérez, M.B.; Zimmer, R.M. y MacDonald, A.J. "The Tradeoff Between Speed and Optimality in Hierarchical Search". Technical Report TR-95-19, 1995b.
- Holte, R.C.; Mkadmi, T.; Zimmer, R.M. y MacDonald, A.J. "Speeding Up Problem Solving by Abstraction: A Graph Oriented Approach". *Artificial Intelligence*, Vol. 85, 1996, pp. 321-361.
- Hooker, J.N. "Needed: An empirical science of algorithms". *Operations Research*, 42 (1994), pp. 201-212.
- Hooker, J. N. "Testing Heuristics: We Have It All Wrong". *Journal of Heuristics*, 1 (1996), pp. 33-42.
- Horrocks, Ian y Tobies, Stephan. "Reasoning with axioms: Theory and practice". Proc. of the 7th Int. Conf. on the Principles of Knowledge Representation and Reasoning (KR'2000), pages 285-296, 2000.
- Horvitz, Eric Joel. *Computation and Action Under Bounded Resources*. Ph. D. Thesis, Stanford University, 1990.
- Horvitz, Eric Joel. "Principles and applications of continual computation". *Artificial Intelligence*, 126 (2001), pp. 159-196.
- Horvitz, Eric y Zilberstein, Shlomo. "Computational tradeoffs under bounded resources". *Artificial Intelligence*, 126 (2001), pp. 1-4.
- Hustadt, Ullrich. *Resolution-Based Decision Procedures For Subclasses of First-Order Logic*. Ph. D. Dissertation, Technischen Fakultät, Unveristät des Saarlandes, 1999.
- Immerman, Neil. "Descriptive and Computational Complexity". En Hartmanis, J. (comp.): *Computational Complexity Theory*, Lecture Notes for AMS Short Course on Computation Complexity Theory, Proc. Symp. in Applied Math. 38, American Mathematical Society, 1989, pp. 75-91.

- Immerman, Neil. "Descriptive Complexity: a Logician's Approach to Computation". *Notices of the American Mathematical Society* 42(10) (1995), pp. 1127-1133.
- Jennings, Nicholas R.; Sycara, Katia y Wooldridge, Michael. "A Roadmap of Agent Research and Development". *Int. Journal of Autonomous Agents and Multi-Agent Systems*, 1(1), 1998, pp. 7-38.
- Jiménez, P. y Torras, C.: "An efficient algorithm for searching implicit AND/OR graphs with cycles". *Artificial Intelligence*, 124 (2000), pp. 1-30.
- Johnson, D.S. "A theoretician's guide to the experimental analysis of algorithms". *AAAI-96*, 1996.
- Kaindl, Hermann y Kainz, Gerhard. "Bidirectional Heuristic Search Reconsidered". *Journal of Artificial Intelligence Research* 7 (1997), pp. 283-317.
- Kaindl, Hermann y Kainz, Gerhard. "Guidelines for the Experimental Comparison of Search Algorithms". Siemens AG Österreich, 1998.
- Kainz, Gerhard y Kaindl, Hermann. "Towards a Standardized Comparison of Search Algorithms", Siemens AG Österreich, 1998.
- Khardon, Roni. "Translating between Horn Representations and their Characteristic Models". *Journal of AI Research*, 3 (1995), pp. 349-372.
- Khardon, Roni y Roth, Dan. "Reasoning with Models". *Artificial Intelligence*, 87, 1996, pp. 187-213.
- Khardon, Roni y Roth, Dan. "Defaults and Relevance in Model Based Reasoning". *Artificial Intelligence*, Vol. 97, No. 1-2, 1997a, pp. 169-193.
- Khardon, Roni y Roth, Dan. "Learning to Reason". *Journal of the ACM*, Vol. 44, No. 5, 1997b, pp. 697-725
- Klir, George J. y Yuan, Bo. *Fuzzy Sets and Fuzzy Logic. Theory and Applications*, Prentice-Hall, New Jersey, 1995.
- Knoblock, Craig Alan. *Automatically Generating Abstractions for Problem Solving*. Ph.D. Thesis, School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, 1991.
- Kondrak, G. y van Beek, P. "A theoretical evaluation of selected backtracking algorithms". *Artificial Intelligence*, 89, 1997, pp. 365-387.
- Korf, Richard E. "Artificial Intelligence Search Algorithms". Atallah, M.J. (comp.): *CRC Handbook of Algorithms and Theory of computation*, CRC Press, Boca Raton, FL, 1998, pp. 36-1 a 36-20.
- Korf, Richard E. y Reid, Michael. "Complexity Analysis of Admissible Heuristic Search". *Proceedings of the National Conference on Artificial Intelligence (AAAI-98)*, Madison, WI, July 1998, pp. 305-310.
- Kowalski, Robert. "Logic Without Model Theory". En Gabbay, D. M. (comp.): *What is a Logical System?*. Clarendon Press, Oxford, 1994.
- Kumar, Vipin. "Algorithms for Constraint Satisfaction Problems: A Survey". *AI Magazine*, Volume 13, Number 1, 32-44, 1992.
- Levesque, Hector J. "Knowledge Representation and Reasoning". *Ann. Rev. Comput. Sci.*, 1, 1986, pp. 255-87.
- Levesque, Hector; Pirri, Fiora y Reiter, Ray. "Foundations for the Situation Calculus". *Computer and Information Science*, Vol. 3 (1998).
- Lifschitz, Vladimir. "Foundations of Logic Programming". En *Principles of Knowledge Representation*, CSLI Publications, 1996, pp. 69-127.
- Lutz, Carsten. "Complexity of Terminological Reasoning Revisited". *Proceedings of the 6th International Conference on Logic for Programming and Automated Reasoning LPAR '99*, Lecture Notes in Artificial Intelligence, Springer-Verlag, 1999.
- Lutz, Carsten. "NExpTime-complete Description Logics with Concrete". LTCS-Report 00-01, LuFG Theoretical Computer Science, RWTH Aachen, Germany, 2000.
- McCarthy, John. "Epistemological problems of Artificial Intelligence". *IJCAI-77*, 1977.
- McCarthy, John. "Lisp - Notes on its past and future - 1980", 1980 Lisp Conference, Stanford.
- McCarthy, John. "History of Lisp". En Wexelblat, Richard L. (comp.): *History of Programming Languages*, ACM Monograph Series, Ca. IV, pp. 173-197, 1981.
- McCarthy, John. "Artificial Intelligence, Logic and Formalizing Common Sense". En Thomason, Richmond (comp.): *Philosophical Logic and Artificial Intelligence*, Dordrecht, Kluwer Academic, 1989.
- McCarthy, John. "From here to human-level AI". KR-96, 1996a.


 Dr. Guillermo Duran
 Director Adjunto
 Depto. de Computación
 F. C. E. y N. UBA

- McCarthy, John. "Concepts of logical AI". Computer Science Department, Stanford University, 1996b.
- McCarthy, John. What is Artificial Intelligence?, Department of Computer Science, Stanford University, 2000.
- McCarthy, John y Hayes, Patrick J. "Some Philosophical Problems from the Standpoint of Artificial Intelligence". *Machine Intelligence*, 4, 1969.
- Michalewicz, Zbigniew y Fogel, David B. *How to Solve It: Modern Heuristics*. Springer-Verlag, Berlín, 2000.
- Minton, Steven. "Automatically Configuring Constraint Satisfaction Programs: A Case Study", *Constraints*, Vol. 1, No. 1, 1996.
- Minton, Steven; Johnston, Mark D.; Philips, Andrew B. y Laird, Philip. "Minimizing Conflicts: A Heuristic Repair Method for Constraint-Satisfaction and Scheduling Problems". *Artificial Intelligence*, Volume 58, 1992, pp. 161-205; Freuder, E.C. y Mackworth, A.K. (comps.): *Constraint-based Reasoning*, MIT Press, 1994.
- Motta, Enrico y Zdrahal, Zdenek. A library of problem-solving components based on the integration of the search paradigm with task and method ontologies". *International Journal of Human-Computer Studies*, 49 (4), pp. 437-470, 1998.
- Muscettola, Nicola, Nayak, P. Pandurang, Pell, Barney y Williams, Brian C. "Remote Agent: to boldly go where no AI system has gone before", *Artificial Intelligence*, 103 (1998), pp. 5-47.
- Nebel, Bernhard. "Artificial Intelligence: A Computational Perspective". En Brewka, G. (comp.): *Principles of Knowledge Representation*, Studies in Logic, language and Information, CSLI Publications, 1996, pp. 237-266
- Nienhuys-Cheng, Shan-Hwei y de Wolf, Ronald. *Foundations of Inductive Logic Programming*. Springer, Berlín, 1997.
- Orsvärn, Klas. "Principles for Libraries of Task Decomposition Methods - Conclusions from a Case-study". Proceedings of European Knowledge Acquisition Workshop EKAW '96, Lectures Notes in Artificial Intelligence 1076, pp. 48-65, Springer-Verlag, May 1996a.
- Orsvärn, Klas. *Knowledge Modelling with Libraries of Task Decomposition Methods*. PhD Thesis, The Royal Institute of Technology (KTH), Department of Computer and System Sciences, June 1996b.
- Pearl, Judea. *Heuristics - Intelligent Search Strategies for Computer Problem Solving*. Addison-Wesley, Reading, 1984.
- Pearl, Judea. *Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference*. Morgan Kaufmann, San Francisco, 1988.
- Pell, Barney; Bernard, Douglas E.; Chien, Steven A.; Gat, Erann; Muscettola, Nicola; Nayak, P. Pandurang; Wagner, Michael D. y Williams, Brian C. "A Remote Agent Prototype for Spacecraft Autonomy", Proceedings of the SPIE Conference on Optical Science, Engineering, and Instrumentation, 1996.
- Radcliffe, Nicholas J. y Surry, Patrick D. "Fundamental Limitations on Search Algorithms: Evolutionary Computing in Perspective". En J. van Leeuwen (comp.): *Computer Science Today: Recent Trends and Developments*, Springer-Verlag LNCS 1000, pp. 275-291, 1995.
- Rich, Elaine y Knight, Kevin. *Artificial Intelligence*, McGraw-Hill, Nueva York, 1991.
- Rossi, Francesca; Petrie, Charles y Dhar, Vasant. "On the Equivalence of Constraint Satisfaction Problems". *Proceedings of the 9th ECAI (1990)* 550-556.
- Russell, Stuart. "Rationality and Intelligence". *Artificial Intelligence*, 94, pp. 57-77, 1997.
- Russell, Stuart y Norvig, Peter. *Artificial Intelligence - A modern approach*. Prentice-Hall, 1995.
- Schaeffer, Jonathan y Plaat, Aske. "Unifying Single-Agent and Two-Player Search", en H. Hamilton (ed.): *AI '00: Advances in Artificial Intelligence*, 13th biennial Canadian Society for Computational Studies of Intelligence (CSCSI) Conference, Springer-Verlag, 2000, pp. 1-12.
- Schaerf, Marco y Cadoli, Marco. "Tractable Reasoning via Approximation". *Artificial Intelligence*, 1995.
- Selman, Bart y Kautz, Henry. "Knowledge Compilation and Theory Approximation". *Journal of the ACM*, 43 (2), pp. 193-224, March 1996.
- Selman, Bart; Brooks, Rodney A.; Dean, Thomas; Horvitz, Eric; Mitchell, Tom M. y Nilsson, Nils J. "Challenge Problems for Artificial Intelligence". Proceedings of AAAI-96, Thirteenth National

- Conference on Artificial Intelligence, Portland, Oregon, August 1996. AAAI Press, Menlo Park, California, pp. 1340-1345, 1996.
- Smith, Barbara M. "A tutorial on Constraint Programming". University of Leeds, School of Computer Studies, Research Report Series, Report 95.14, April 1995.
- Steele, Guy L. *Common Lisp the Language*. Digital Press, 1990, 2a. ed.
- Steele, Guy L. Jr. y Gabriel, Richard P. "The Evolution of Lisp", *ACM Sigplan Notices*, 28(3), 1993, 231-270.
- Stewart, Bradley S. y White, Chelsea C. III. "Multiobjective A*". *Journal of the ACM*, 38, 4, 1991, pp. 775-814.
- Studer, Rudi; Benjamins, V. Richard y Fensel, Dieter. "Knowledge Engineering: Principles and Methods". *Data & Knowledge Engineering*, 25 (1-2), pp. 161-197, 1998.
- ten Teije, Annette y van Harmelen, Frank. "Describing Problem Solving Methods using Anytime Performance profiles". En V. Richard Benjamins et al. (comp.): *Proceedings of the IJCAI-99 Workshop on Ontologies and Problem-Solving Methods: Lessons Learned and Future Trends (KRR5)*, Stockholm, Sweden, August 2, 1999, CEUR Publications, Vol. 18, Amsterdam, 1999.
- Uschold, Mike y Gruninger, Michael. "Ontologies: Principles, Methods and Applications". *Knowledge Engineering Review*, Volume 11 Number 2, June 1996.
- van Harmelen, Frank y Fensel, Dieter. "Formal Methods in Knowledge Engineering". *Knowledge Engineering Review*, Vol. 10 (4), 1995.
- van Harmelen, Frank y ten Teije, Annette. "Characterising Problem Solving Methods by gradual requirements: overcoming the yes/no distinction". *Proceedings of KEML-98, 8th Workshop Knowledge Engineering: Methods & Language*, 1998.
- Weld, Daniel S. "Recent Advances in AI Planning", *AI Magazine*, 1999.
- Williams, Brian C. y Nayak, P. Pandurang. "Immobile Robots: AI in the New Millennium". *AI Magazine*, Fall 1996.
- Williams, Colin y Hogg, Tad. "The Typicality of Phase Transitions in Search". Xerox Palo Alto Research Center, 1993.
- Wooldridge, Michael y Jennings, Nicholas R. "Intelligent Agents: Theory and Practice". *The Knowledge Engineering Review*, 10(2), 1995, pp. 115-152.
- Zhang, Weixiong. *State-Space Search: Algorithms, Complexity, Extensions, and Applications*. N.Y., Springer, 1999.
- Zilberstein, Shlomo y Russell, Stuart. "Optimal composition of real-time systems". *Artificial Intelligence*, 82 (1-2), pp. 181-213, 1996.

Com 2002

11

...

...