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Citizenship: Spain, Colombia, Costa Rica

Languages: Spanish (native) , English (fluent), Greek (beginner)

Education

- Aug 1997–Jul 2004 Ph.D. in Mathematics and Cognitive Science, Indiana University
Bloomington, USA. Advisor: Larry Moss.
- Aug 1995–Aug 1997 M.Sc. in Mathematics, Universidad de los Andes, Bogotá, Colombia.
- Aug 1991–May 1995 B.S. in Systems Engineering and Computer Science
Universidad de los Andes, Bogotá, Colombia.

Employment

- Jul 2013–present Associate Professor, Universidad de los Andes, Colombia.
- Mar 2018–Dic 2022 Head, Department of Mathematics, Universidad de los Andes, Colombia.
- Jan 2012–Jun 2013 Assistant Professor, Universidad de los Andes, Colombia.
- Feb 2010–Nov 2011 Wissenschaftliche Mitarbeiterin, Institute of Cognitive Science (IKW),
University of Osnabrück, Germany.
- Jan 2006–Dec 2009 Assistant Professor, Universidad de los Andes, Colombia.
- Sep 2004–Nov 2005 Docent Universitair, Institute for Logic, Language and Computation (ILLC),
University of Amsterdam.
- Sep 2000–Jun 2004 Associate Instructor, Indiana University, Bloomington.
- Jun 1998–Jun 2000 Research Assistant (for Jon Barwise), Indiana University, Bloomington.
- Aug 1997–May 1998 Associate Instructor, Indiana University, Bloomington.
- 1997 Graduate Research Assistant (Project: AVISPA), Department of Systems
Engineering and Computation, Universidad de los Andes, Colombia.

Awards

- 2004 Outstanding Dissertation Award . Cognitive Science Program, Indiana University.
- 2001 Glenn Schober Memorial Travel Award. Indiana University.
- 2001 Rothrock Teaching Award for Associate Instructors (in recognition of outstanding performance in teaching mathematics). Indiana University.
- 2001 William Wilcox Memorial Award (in recognition of outstanding scholastic achievement in graduate studies). Indiana University.
- 1998–1999 Research Assistantship Grant. Advisor: Jon Barwise. Indiana University.

- 1998 James P. Williams Memorial Award (in recognition of outstanding scholastic achievement in the first year of graduate studies). Indiana University.
- 1996–1997 Mazda Foundation Fellowship, Bogotá, Colombia.

Teaching

- 2006–2010, and
2013– present *At Universidad de los Andes:*
- Introduction to the Theory of Computation, Graph Theory, Modal Logic, Logic I, Discrete Mathematics, Abstract Algebra I, Abstract Algebra II, Linear Algebra, Integral Calculus, Differential Calculus, Precalculus.
- 2010–2011 *At the Institute of Cognitive Science (IKW), University of Osnabrück:*
- Introduction to Modal Logic.
 - Topics in Modal Logic.
 - Introduction to Algebraic Logic (with Kai-Uwe Kühnberger).
 - Barwise and Goguen Views on Cognition (with Ulf Krümmack).
 - Cognitive Mechanisms of Mathematical Thinking (with Kai-Uwe Kühnberger, Ulf Krümmack and Helmar Gust) .
- 2004–2005 *At the ILLC, University of Amsterdam:*
- Introduction to Modal Logic.
 - Model Theory.
 - Recursion Theory (with Benedikt Löwe).
 - Caput Logic, Language and Information (with Benedikt Löwe and Barteld Kooi). Topic: Context-Dependent Reasoning.
 - Intersemestral Project Courses: Non-Wellfounded Sets (with Benedikt Löwe and Fabrice Nauze), Information Flow Theory.
- 1997–2004 *At Indiana University, Blomington:*
- *Co-instructor:* Hybrid Reasoning Systems (with Jon Barwise).
 - *Assistant:* Math and Logic for Cognitive Science (Prof. Larry Moss).
 - *Instructor:* Introduction to Finite Math II, Finite Mathematics, Math for Elementary School Teachers via Problem Solving, Brief Survey of Calculus, Basic Algebra.

Service and other Professional Activities

- 2013–2014 EXTERNAL RESEARCHER:
THALIS research programme (National Technical University of Athens - NTUA).
- 2007–present REVIEWING FOR JOURNALS:
Logique et Analyse (2024), Polish Journal of Aesthetics (2021), Integración (2014), Erkenntnis (2011), Topics in Cognitive Science (2011), Journal of Logic Language and Information (2008), Revista Ingeniería y Ciencia (2008), Journal of Philosophical Logic (2007), Lecturas Matemáticas (2007), Re-

- vista Colombiana de Matemáticas (2007).
- 2008 – present CO-EDITOR of the journal *Lecturas Matemáticas*, Colombia (2008–2010, and 2012–present).
- 2007 – present PROGRAMME COMMITTEE MEMBER:
- Fourteenth Latin American Workshop on New Methods of Reasoning (LANMR 2022)
 - 6th, 7th, 8th. 9th Conference on Artificial General Intelligence (AGI-2013, AGI-2014, AGI 2015, AGI-2016, AGI-2017, AGI-2020)
 - 25th Workshop on Logic, Language, Information, and Computation (WoLLIC 2018)
 - Workshop on Computational Creativity, Concept Invention, and General Intelligence (C3GI at IJCAI 2013)
 - Formalizing Mechanisms for Artificial General Intelligence and Cognition (FormalMAGIC at IJCAI 2013)
 - Workshop on Computational Creativity, Concept Invention, and General Intelligence (C3GI at ECAI 2012)
 - IX Argentine Symposium on Artificial Intelligence (ASAI 2007)
- 2003 – present ORGANIZING COMMITTEE MEMBER:
- 25th Workshop on Logic, Language, Information, and Computation (WoLLIC 2018)
 - 15th Latin American Symposium on Mathematical Logic (XV SLALM, 2012)
 - Second North American Summer School in Logic, Language and Information (NASSLLI 2003)
- 2008 – present EXTERNAL REFEREE:
- 24th Workshop on Logic, Language, Information, and Computation (WoLLIC 2017),
 - 12th Mexican International Conference on Artificial Intelligence (MICAI 2013),
 - Workshop on Logic and the Simulation of Interaction and Reasoning (AISB 2008 - Aberdeen, Scotland)
- 2008 – present LOCAL ORGANIZER:
- Summer Course “Programación funcional, teoría y práctica” offered in 2021 by the Math Department, Universidad de los Andes. Instructor: Jorge Ricardo Cuellar (Siemens AG).
 - Summer Course “Model-checking Probabilístico” offered in 2017 by the Math Department, Universidad de los Andes. Instructor: Jorge Ricardo Cuellar (Siemens AG).
 - Summer Course “Temas Contemporáneos en Criptografía” offered in 2016 by the Math Department, Universidad de los Andes. Instructor: Jorge Ricardo Cuellar (Siemens AG).
 - Summer course “Programación Funcional y sus Aplicaciones” offered in 2015 by the Math Department, Universidad de los Andes.

- Instructor: Jorge Ricardo Cuellar (Siemens AG).
 – Short course “Métodos Formales en Modelos de Computación y Sistemas”
 offered in 2008 by the Math Department, Universidad de los Andes.
 Instructor: Jorge Ricardo Cuellar (Siemens AG).
- 2001 ORGANIZER:
 Student Session of the First North American Summer School in Logic, Lan-
 guage and Information (NASSLLI 2001).
- 1999 CO-ADVISOR (with Jon Barwise) of a Summer Research Experience for Un-
 dergraduates (REU) project.

Affiliations

Member of the Association of Symbolic Logic (ASL), the Association for Logic, language and Information (FoLLI), and Sociedad Colombiana de Matemáticas.

Students

Master Theses

3. Laura Gamboa (2021). Dynamical operators on models with evidence.
2. Sergio Tello (2008). Traducción entre dos lenguajes coalgebraicos para el funtor de distribuciones.
1. Yanjing Wang (2006). Indexed Semantics and its applications in modelling unawareness. ILLC Master of Logic Thesis, CO-ADVISED with Frank Veltman.

Bachelor Theses

17. Jesús Manuel Ospino (2023). Gramáticas y lenguajes estocásticos: resultados clásicos y un desarrollo reciente.
16. Juan Diego Cháves (2020). Meta-teoremas sobre grafos: El teorema de Courcelle.
15. Laura Gamboa (2019) Conjuntos aproximados y su relación con algunas lógicas modales.
14. Nelson Sánchez (2018) Lógicas multi-variables, lógica difusa, y sus aplicaciones en inteligencia artificial.
13. Johannes Talero (2016). Un acercamiento a los fenómenos de redes sociales mediante lógica modal.
12. Santiago Cerón (2016). Kleene’s Second Recursion Theorem: overview, implementation, and applications to computer virology.
11. Felipe González (2014). Algoritmos de clustering en grafos estáticos y retos en grafos dinámicos.
10. Laura Guzmán (2013). Teorema ergódico de la entropía y aplicaciones dentro de los marcos cuantitativos y cualitativos de la teoría de la información. CO-ADVISED with Adolfo Quiróz.
9. David Ayala (2013). Conjuntos y definiciones circulares.
8. Pablo González (2012). Inquisitive semantics and the modeling of adversative connectors.
7. Mario Arrieta (2010). Análisis de combinatoria y teoría de grafos aplicados al ensamblaje de genomas bacterianos. CO-ADVISED with Carlos Montenegro

6. Juan Camilo Salazar (2009). Análisis del modelo de mundos pequeños de Kleinberg.
5. Mónica Lozano (2009). Análisis de conceptos formales: construcción, caracterización, reducción y una propuesta de aplicación al problema de segmentar la aorta para la extracción del eje central de las coronarias en imágenes TAC.
4. Alejandro Ordoñez (2008). Una aplicación de la lógica modal a la teoría de equilibrio general: el caso de una economía de intercambio puro con dos agentes modelado a través de CTL.
3. Camilo Rengifo (2008). Avances recientes en lógica modal y topología.
2. Nicolás Cardozo (2008). Estudio de relaciones entre la teoría de autómatas, la lógica de segundo orden y el μ - cálculo.
1. Adriana Palacio (1998). El razonamiento por defecto aplicado al manejo de restricciones (*with honors*). CO-ADVISED with Olga Mariño.

Presentations

12. *Algorithmic Aspects of Theory Blending*. 12th International Conference on Artificial Intelligence and Symbolic Computation (AISC 2014), Seville, December 2014.
11. *Aproximaciones lógicas a la noción de información*. Coloquio del Departamento de Matemáticas, Universidad de los Andes, September 2012.
10. *Towards a domain-independent computational framework for theory-blending* (trabajo conjunto con T. Besold, A. Abdel-Fattah, H. Gust, U. Krumnack, M. Schmidt, and K-U. Kühnberger). Advances in Cognitive Systems, 2011 Fall Symposium, AAAI, Arlington Virginia, Noviembre 2011. Póster.
9. *Inferencia lógica a partir de información distribuida*. Seminario de Lógica, Universidad de los Andes, Abril 2008.
8. *Modelaje matemático de aspectos sociales y cognitivos del razonamiento*. Presentación para el encuentro de exalumnos *Volver a Los Andes*, Universidad de los Andes, Junio 2006.
7. *Razonamiento aproximativo y contextual basado en representaciones heterogéneas*. Coloquio del Departamento de Matemáticas, Universidad de los Andes, Marzo 2006.
6. *A heterogenous framework for modeling formal and content-based common-sense reasoning*, Workshop of the Calculemus Project, Amsterdam, Junio 2005. Invitada.
5. *Logic, Information, and Commonsense Reasoning*. IU Math Department Graduate Student Seminar, Bloomington, Indiana, 2002.
4. *Some Closure Properties of Circular Finite Definitions*. Indiana University Logic Seminar, Bloomington, Indiana, 2001.
3. *Towards a model of heterogeneous commonsense reasoning*. 8th Workshop on Logic, Language, Information and Computation (WOLLIC 2001), Brasilia, Agosto 2001.
2. *Jon Barwise on Information Flow, Situated Languages and Situated Reasoning*. Seminar in memory of Jon Barwise, sponsored by the Mathematics Department of Indiana University. Spring Semester 2000.
1. *On Polarized Partitions and the Axiom of Choice*. Indiana University Logic Seminar, Bloomington, Indiana, Spring Semester 2000.

Publications

Articles and Book Chapters

13. **Martinez, M.**, Abdel-Fattah, A., Krumnack, U., Gomez-Ramirez D., Smaill, A., Besold, T.R., Pease A., Schmidt, M., Guhe M., & Kühnberger K-U. (2017). Theory Blending; extended algorithmic aspects and examples. *Annals of Mathematics and Artificial Intelligence*, 80, 65-89.
12. **Martinez, M.**, Krumnack, U., Smaill, A., Besold, T.R., Abdel-Fattah, A., Schmidt, M., Gust, H., Kühnberger K-U., Guhe, M. & Pease A.(2014). Algorithmic Aspects of Theory Blending. In Aranda-Corral G. A., Martin-Mateos F. J. & Calmet J. (Eds.), *Artificial Intelligence and Symbolic Computation*, LNCS (LNAI), Volume 8884, 178-190, Springer.
11. Stefaneas, P., Vandoulakis, I., **Martinez, M.** and Foundalis, H. (2014). Collective Discovery Events: Web-based Mathematical Problem-solving with Codelets. In T. Besold, K-U. Kühnberger, M. Schorlemmer, & A. Smaill (Eds.), *Computational Creativity Research: Towards Creative Machines*. Studies in Computational Cognition. Atlantis - Springer.
10. **Martinez, M.** & Sequoiah-Grayson, S. (2014, with major updates 2018 and 2023). Logic and Information. Invited entry in the *Stanford Encyclopedia of Philosophy (SEP)*, Stanford (CSLI).
9. Stefaneas, P., Vandoulakis, I., Foundalis, H and **Martinez, M.**, (2012). Web-Based Mathematical Problem-solving with Codelets. In T. Besold, K-U. Kühnberger, M. Schorlemmer, & A. Smaill (Eds.), *Proceedings of the Workshop “Computational Creativity, Concept Invention, and General Intelligence”*. PICS (Publications of the Institute of Cognitive Science), Volume 1-2012, 41-44.
8. **Martinez, M.**, Besold, T.R., Abdel-Fattah, A., Gust, H., Schmidt, M., Krumnack, U., & Kühnberger K-U. (2012). Theory Blending as a Framework for Creativity in Systems for General Intelligence. In P. Wang & B. Goertzel (Eds.), *Theoretical Foundations of AGI*. Atlantis Press.
7. **Martinez, M.**, Besold, T.R., Abdel-Fattah, A., Kühnberger K-U., Gust, H., Schmidt, M., & Krumnack, U. (2011). Towards a Domain-independent Computational Framework for Theory-Blending. *Advances in Cognitive Systems*. In *AAAI Technical Report of the AAAI Fall 2011 Symposium on Advances in Cognitive Systems*, pages 210–217.
6. Guhe, M., Pease, A., Smaill, A., **Martinez, M.**, Schmidt, M., Gust, H., Kühnberger, K-U., & Krumnack, U. (2011). A Computational Account of Conceptual Blending in Basic Mathematics. *Cognitive Systems Research*, 12 (3-4), 249-265. Special Issue on Complex Cognition. doi: 10.1016/j.cogsys.2011.01.004
5. Gust, H., Krumnack, U., **Martinez, M.**, Abdel-Fattah, A., Schmidt, M., & Kühnberger K-U. (2011). Rationality and General Intelligence In J. Schmidhuber, K.R. Thórisson, & M. Looks(Eds.), *Artificial General Intelligence*, LNCS (LNAI), Volume 6830, 174-183, Springer.
4. van Benthem, J. & **Martinez, M.** (2008). The Stories of Logic and Information. In J. van Benthem & P. Adriaans (Eds.), *Handbook of the Philosophy of Information*. Amsterdam: Elsevier.
3. Foundalis, H. & **Martinez, M.** (2007). A generalization of Hebbian learning in perceptual and conceptual categorization. In S. Vosniadou, D. Kayser, & A. Protopapas (Eds.), *Proceedings of the European Cognitive Science Society Conference 2007*, New York, NY: Lawrence Erlbaum

Associates, Inc.

2. **Martinez, M.** (2003). Towards a Model of Heterogeneous Commonsense Reasoning, *Matemática Contemporánea*, 24, 141-168. Special issue with selected extended papers from the 8th Workshop on Logic, Language, Information and Computation – WoLLIC’2001.
1. **Martinez, M.** (2001). Some Closure Properties of Finite Definitions. *Studia Logica*, 68, 43-68.

Books edited

1. Moss, L., de Queiroz, R. & **Martinez, M.** (2018). *Logic, Language, Information, and Computation 25th International Workshop, WoLLIC 2018, Bogota, Colombia, July 24-27, 2018, Proceedings*. Lecture Notes in Computer Science, (LNCS, volume 1094).

Theses

3. **Martinez, M.** (2004). *Commonsense Reasoning via Product State Spaces* (Doctoral dissertation). Available from: Dissertation Express database. (UMI No. 3141609)
2. **Martinez, M.** (1997). *Algebraic and Topological Structure of the Space of Products* (unpublished master thesis). Universidad de los Andes, Colombia
1. **Martinez, M.** (1995). *Encadenamiento hacia atrás en la red RETE* (unpublished undergraduate thesis). Universidad de los Andes, Colombia.

Abstracts

1. Guhe, M., Pease, M., Smail, A., **Martinez, M.**, Schmidt, M., Gust, H., Kühnberger K-U., & Krumnack U. (2010). Conceptual Blending of Fractions and Real Numbers in Mathematical Discovery. In J. Haack & H. Wiese (eds), *Proceedings of KogWis 2010, the 10th Biannual Meeting of the German Society for Cognitive Science*, 109–110. Universitätsverlag Potsdam.