

Curriculum Vitae
August 25, 2023

Oscar J. Romero, PhD

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Robotics Institute, Carnegie Mellon University
5000 Forbes Avenue, Pittsburgh, PA 15213

EDUCATION

- Ph.D.**, Software and Systems 2011
Technical University of Madrid, Dept. of Languages, Information Systems, and Software
Dissertation: Hybrid Architecture for Artificial Cognitive Systems which exhibit Emergent, Adaptive and Self-organizing Behavior (Cum Laude)
- Advanced Studies Diploma**, Computer Science and Artificial Intelligence 2007
Technical University of Madrid, Dept. of Languages, Information Systems, and Software
- B.Sc.**, Systems Engineering 2002
District University of Bogota, Dept. of Systems Engineering
Thesis: Intelligent Tutoring System for Mathematics that uses an Evolutionary Student Model

PRIMARY RESEARCH INTERESTS

Cognitive Modeling and Architectures; Artificial Intelligence; Conversational Agents; Intelligent Cognitive Assistants; Social Computing; Intelligent Tutoring Systems; Educational Virtual Environments; Mobile and Pervasive Computing; Hybrid Systems; Evolutionary Computation; Multi-Agent Systems; Computational Semantics; Software Engineering.

ACADEMIC PROFESSIONAL APPOINTMENTS

- Project Scientist**, Robotics Institute, Carnegie Mellon University, US 2019 - Present
Research Project Scientist, Machine Learning Dept., Carnegie Mellon University, US 2015 – 2019
Senior Research Programmer, Machine Learning Dept., Carnegie Mellon University 2014 – 2015
Postdoctoral Researcher, Psychology Dept., Carnegie Mellon University, US 2013 – 2014
Research Staff, HCI Madrid Lab, Technical University of Madrid, Spain 2011 – 2013
Instructor, Ibertech, Spain 2009 – 2011
Visiting Scholar/Researcher, Intelligent Systems Lab, Imperial College London, UK 2009
Lecturer, Konrad Lorenz University, Colombia 2003 – 2005

RESEARCH EXPERIENCE

Research Project Scientist, CMU, Pittsburgh

2019 - Present

Robotics Institute

Working with: Aaron Steinfeld, John Zimmerman, and Anthony Tomasic

- Conducting Data Analysis on user studies
- Architecting and building an adaptive conversational system to support people with/without disabilities that use transit information apps, by embracing universal design. We advance research on hybrid neuro-symbolic approaches for conversational design by merging both transformer neural language models and symbolic reasoning.

Projects:

- Tiramisu Transit

This work resulted in 2 publications (MobileCHI and SIGDIAL conferences). Currently working on a paper for AAAI.

Research Project Scientist & Senior Research Programmer, CMU, Pittsburgh

2014 - 2019

Machine Learning Department

Working with: Tom Mitchell and Justine Cassell

- Developed a novel cognitively-inspired middleware for Intelligent Personal Assistants
- Developed a Social Reasoner for Conversational Agents
- Showed that the Conversational Agent outperform Facebook's end-to-end-negotiator
- Initiated collaborations with Alex Rudnicky (CMU) to explore the development of socially-aware conversational agents with applications on negotiation.

Projects:

- InMind: the next generation of Intelligent Personal Assistants
- SARA: Socially-Aware Robotic Assistant
- SOGO: Social Intelligent Negotiation Dialogue System

This work resulted in 11 publications (8 published, 2 under review, 1 in preparation) - IJCAI, IVA, SIGDIAL, ICSE, and Procedia CS Journal. This work was funded by Yahoo \$10M gift

Postdoctoral Researcher, Carnegie Mellon University, Pittsburgh

2013 – 2014

Psychology Department

Advisor: Christian Lebiere

- Developed cognitive models to simulate social behavior in network science experiments
- Developed shared mental models for human-robot interaction in mission planning
- Demonstrated how a robot can learn to decompose missions by combining its own reasoning and previous experience with explanatory input received from humans

Project:

- RCTA: Robotics Collaborative Technology Alliance

This work resulted in 5 publications (AAAI, SBP-BRIMS, and MABS). Funded by DARPA.

Research Staff, Technical University of Madrid, Spain

2011 – 2013

Dept. of Languages, Information Systems, and Software

Advisor: Angelica de Antonio

- Developed an intelligent agent that guides user to navigate indoor buildings using VR
- Demonstrated how indoor navigation can be enhanced by considering path planning, user disabilities, spatial/time constraints, multimodal communication, perceptual saliency, etc.

Projects:

- MILES: Interaction Models Centered on Language, Space and Computational Semantics
- REHABILITA: Intelligent Personal Assistant for Medical Rehabilitation

This work was funded by the Ministry of Education of Spain.

Research Fellow, Imperial College London, UK

2009

Intelligent Systems and Networks Lab

Advisor: Yiannis Demiris

- Developed a multi-layered system for autonomous robots that exhibit intelligent behavior in decision-making, using bio-inspired computational techniques such as neural networks, artificial immune systems, and evolutionary computation.

This work was funded by a Research Visitor Award from the Technical University of Madrid

Research Associate, Konrad Lorenz University, Colombia

2003 - 2005

Systems Engineering Department

- Developed a hybrid architecture that blends machine learning and cognitive modeling.
- Showed that a hybrid approach compensates for weaknesses of individual techniques.

Projects:

- SAB: Simulation of Animal Behaviors using Machine Learning
- MARA: Multi-layered Autonomous Robotic Agent

This work resulted in 1 publication (Journal of Adaptive Behavior), and 2 patents. Funded by the Konrad Lorenz University.

Junior Researcher, Distrital University, Colombia

2000 – 2002

Systems Engineering Department

Advisor: Sergio A. Rojas

- Developed a Student Model for an Intelligent Tutoring System using Machine Learning and Computational Intelligence techniques.
- Demonstrated that learning was 37% more effective in students

This work resulted in 1 publication (IASTED), and 1 book.

TEACHING EXPERIENCE

Lecturer, Technical University of Madrid, Spain

Spring 2012, Fall 2012

Course: Software Architecture and Enterprise Web Applications

Responsibilities: Developed and delivered 90-minute lecture with interactive components, including mentefactos, pair-programming, and cooperation-competition strategies. 17 students.

Lecturer, Technical University of Madrid, Spain

Spring 2012, Fall 2012

Course: Bio-inspired Computing and Intelligent Systems

Responsibilities: Developed and delivered 90-minute lecture with interactive components, including mentefactos, pair-programming, and cooperation-competition strategies. 17 students

Instructor, Ibertech, Spain

2009 – 2012

Courses:

- Java Programming and Web Development
- SCRUM Master
- Object-Oriented Analysis and Design
- Software Architecture and Software Engineering

- IT Project Management
- Android and Mobile Technologies

Responsibilities: Design of tailored and customized material for specialized training offered to big IT companies. Delivered intensive courses of 8h/day 5d/week during 2-3 weeks consecutive. Use of multiple teaching strategies. 20-45 students.

Lecturer, Konrad Lorenz University, Colombia

2003 – 2005

Courses:

- Software Engineering & New Technologies
- Artificial Intelligence

Responsibilities: Developed and delivered 90-minute lecture with interactive components, including mentefactos, pair-programming, and cooperation-competition strategies. 25 students.

RESEARCH GRANTS

- 2017 - 2018 *Middleware+: Cognitively-inspired Semantic Middleware*
 Role: Principal Investigator
 Funding Agency: Yahoo-OATH through the InMind project. \$100,000.
- March 2013 *CALIMACO: Support for the personalized visualization and exploration of document-based information, using virtual environments with advanced interaction mechanisms and multiple levels of adaptation.*
 Principal Investigator: Angelica de Antonio, Ph.D., Technical University of Madrid
 Funding agency: Ministry of Education of Spain, 300,000 Euros (Submitted)
 Role: Co-author. I wrote the grant with Angelica de Antonio and 3 other colleagues.
 Contribution: I proposed to build a cognitive system that supports H-C interaction.
- Nov 2012 *CLAID: Collaborative Learning Advisor: Intelligent Dashboard*
 Principal Investigator: Danuta Zakrzewska
 Funding Agency: Lifelong Learning Programme – Erasmus. \$350,000 (Submitted)
 Role: co-author: I wrote the grant with Danuta Zakrzewska and 4 other colleagues
- June 2012 *IRCC - Integrated Robust Cognitive Control*
 Principal Investigator: Ricardo Sanz, Ph.D., Technical University of Madrid, Spain
 Funding agency: Ministry of Education of Spain. 685,000 Euros (Submitted)
 Role: Co-author. I wrote the grant with Ricardo Sanz and other 10 colleagues.
 Contribution: I proposed to a bio-inspired module for robot control.
- June 2007 *MARA: Multi-layered Autonomous Robotic Agent*
 Role: Principal Investigator
 Funding agency: Konrad Lorenz University and COLCIENCIAS. Aprox. \$10,000

FELLOWSHIPS

ALBAN - Programme from European Commission

2007 - 2011

Role: Graduate Fellow (PhD studies)
 36,000 Euros

Imperial College London Role: Research Visitor (6 months) US \$15,000	2009
COLFUTURO Scholarship Role: Graduate Fellow (Master studies) US \$12,000	2005 – 2007
Distrital University of Bogota Role: Graduate Fellow (advanced studies) US \$10,000	2002

HONORS AND AWARDS

The Newell Award for Research Excellence (bestowed to the Tiramisu Team), Carnegie Mellon University. Award for pioneering work in crowd-sourced technology to enable inclusive community mobility. https://www.cs.cmu.edu/events/newell-award-winners	2022
Best Paper Award, Intelligent Virtual Agents Conference	2018
Travel Award, SBP-BRIMS Conference, US \$700	2014
Award for the InnoCentive Challenge # 9933054, Ideas for Annual Computational Cognition Competition, US \$1,500	2014
Cum Laude distinction, PhD dissertation	2011
Graduated with honors, B.Sc. dissertation	2002
RibieCol Award, Ibero-american Network of Educational Software	2001

PUBLICATIONS

Dissertations:

Romero, O. “Hybrid Architecture for Artificial Cognitive Systems which enact emergent, adaptive and self-organizing behavior” (original title: Arquitectura Híbrida para Sistemas Cognitivos Artificiales con Comportamiento Emergente, Adaptativo, y Auto-organizado), *Ph.D. Thesis*, Technical University of Madrid, Spain, **2011**.

Romero, O. “Hybrid Machine Learning Architecture for Virtual Agents” (original title: Arquitectura Híbrida de Machine Learning para Agentes Virtuales), *M.Sc. Thesis*, Technical University of Madrid, Spain, **2007**

Romero, O. “Analysis, Design and Implementation of an Intelligent Tutoring System for Teaching Arithmetic in Elementary School” (original title: Análisis, Diseño e Implementación de un Sistema Tutor Inteligente para la Enseñanza Asistida de la Aritmética en Educación Básica Primaria), *B.Sc. Thesis*, District University of Bogota, Colombia, **2002**

Published in peer-reviewed Journals

Huan, T., Azaria, A., **Romero, O.**, Bigham, J. “InstructableCrowd: Creating IF-THEN Rules for Smartphones via Conversations with the Crowd” *Human Computation Journal*, 1(1), 101-131,

Romero, O. "An evolutionary behavioral model for decision making" *Adaptive Behavior Journal*, 19(6), 451-475, **2012**.

Romero, O., De Antonio, A. "Multilayered Evolutionary Architecture for Behaviour Arbitration in Cognitive Agents" *Engineering Letters*, 15(2), 1-10, **2007**.

Published in peer-reviewed Conferences and Workshops

Romero, O.; Zimmerman, J.; Steinfeld, A.; and Tomasic, A. "Synergistic Integration of Large Language Models and Cognitive Architectures for Robust AI: An Exploratory Analysis", in *AAAI 2023 Fall Symposium on Cognitive Architectures and Generative Models*, **2023**

Tomasic, A.; **Romero, O.**; Zimmerman, J.; and Steinfeld, A.; "Propositional Reasoning via Neural Transformer Language Models", in *Proceedings of the International Workshop on Neuro-Symbolic Reasoning and Learning - NeSy*, **2022**.

Romero, O.; Wang, A.; Zimmerman, J.; Steinfeld, A.; and Tomasic, A. "A Task-Oriented Dialogue Architecture via Transformer Neural Language Models and Symbolic Injection", in *Proceedings of SIGDIAL conference*, **2021**.

Romero, O., Haig, A., Kirabo, L., Yank, Q., Zimmerman, J. Tomasic, A., Steinfeld, A. "A Long-Term Evaluation of Adaptive Interface Design for Mobile Transit Information ", in *Proceedings of the ACM International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI)*, **2020**.

Romero, O., "Dynamic Service Composition Orchestrated by Cognitive Agents in Mobile Pervasive Computing", in *Proceedings of the IEEE International Conference on Services (SERVICES)*, **2019**

Romero, O., "Cognitively-inspired Agent-based Service Composition for Mobile & Pervasive Computing", in *Proceedings of the International Conference on Artificial Intelligence and Mobile Services (AIMS)*, **2019**

Romero, O., Dangi, A., Akoju, S. "NLSC: Unrestricted Natural Language-based Service Composition through Sentence Embeddings" in *Proceedings of the Conference on Services Computing (SCC)*, (p. 8), **2019**

Romero, O. "CogArch-ADL: "Toward a Formal Description of a Reference Architecture for the Common Model of Cognition" *Procedia Computer Science Journal, Post-proceedings of the 9th Annual International Conference on Biologically Inspired Cognitive Architecture*, 788-796, **2018**

Lieto, A., Kennedy, W., Lebiere, L., **Romero, O.**, Taatgen, N., West, R. "Higher-level Knowledge, Rational and Social Levels Constraints of the Common Model of the Mind" *Procedia Computer Science Journal, Post-proceedings of the 9th Annual International Conference on Biologically Inspired Cognitive Architecture*. **2018**

Kralik, J., Hang, J., Rosenbloom, P., Jackson, P., Epstein, S., **Romero, O.**, et. al. "Metacognition for a Common Model of Cognition" *Procedia Computer Science Journal, Post-proceedings of the 9th Annual International Conference on Biologically Inspired Cognitive Architecture*. **2018**

Zhao, R., **Romero, O.**, Rudnicky, A. "SOGO: A Social Intelligent Negotiation Dialogue System" *In Proceedings of Intelligent Virtual Agents (IVA)*, p(9), **2018 [Best Paper Award]**

Romero, O., Akoju, S. "An Efficient Mobile-based Middleware Architecture for Building Robust, High-performance Apps" *In Proceedings of IEEE International Conference on Software Architecture (ICSA)*, (p. 4), **2018**

Romero, O., Zhao, R., Cassell, J. "Cognitive-Inspired Conversational-Strategy Reasoner for Socially-Aware Agents" *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, (p. 7), **2017**

Tomazini, L., **Romero, O.**, Hruschka, E. "An Architectural Approach for Developing Intelligent Personal Assistants Supported by NELL" *In XIV Encontro Nacional de Inteligencia Artificial e Computacion*, (p. 12), **2017**

Oh, J., Lebiere, C., Hebert, M., Stentz, A., **Romero, O.**, et. al. "Integrated Intelligence for Human-Robot Teams" *In Proceedings of International Symposium on Experimental Robotics*, (p. 14), **2016**

Matsuyama, Y., Bhardwaj, A., Zhao, R., **Romero, O.**, Anand, A. and Cassell, J. "Socially-Aware Animated Intelligent Personal Assistant Agent" *In Proceedings of Special Interest Group on Discourse and Dialogue (SIGDIAL)*, (p. 4), **2016**

Oh, J., Lebiere, C., Hebert, M., Stentz, A., **Romero, O.**, et. al. "Toward Mobile Robots Reasoning Like Humans" *In Proceedings of Assoc. for the Advancement of Artificial Intelligence (AAAI)*, (p. 9), **2015**

Lebiere, C., Bothell, D., Morrison, D., Oltramari, A., Martin, A., **Romero, O.**, Thomson, R., Vinokurov, J. "Strong CogSci: Guidance from Cognitive Science On the Design of a Test of Artificial Intelligence" *In Proc. of AAAI 2015 Workshop: Beyond the Turing Test*, (p. 2), **2015**

Romero, O., Lebiere, C. "Cognitive Modeling of Behavioral Experiments in Network Science Using ACT-R Architecture" *In Proc. of Multi-Agent-Based Simulation (MABS)*, (p. 13), **2014**

Romero, O., Lebiere, C. "Simulating Network Behavioral Dynamics by using a Multi-agent approach driven by ACT-R Cognitive Architecture" *In Proceedings of SBP-BRIMS*, (p. 7), **2014**

Romero, O. and De Antonio, A. "Evolving the way of doing the right thing" *In Proceedings of IEEE World Congress on Computational Intelligence (WCCI)*, (p. 8), **2012**

Romero, O. "Self-Organized and Evolvable Cognitive Architecture for Intelligent Agents and Multi-agent Systems" *Second International Conference on Computer Engineering and Applications (ICCEA)*, **2010**

Romero, O. "Self-Organizing Cognitive Architecture" *Proceedings of the Fourth International Conference on Bioinspired Optimization Methods and their Applications (BIOMA)*, **2010**

Romero, O. and De Antonio, A. "Modulation of multi-level evolutionary strategies for artificial cognition" *In Proceedings of Genetic and Evolutionary Computation Conference (GECCO)*, (p. 9), **2009**

Romero, O. and De Antonio, A. "Hybridization of cognitive models using evolutionary strategies" *In Proceedings of IEEE Congress on Evolutionary Computation (CEC)*, (p. 6), **2009**

Romero, O. and De Antonio, A. "Hybrid Behaviour Orchestration in a Multilayered Cognitive Architecture using an Evolutionary Approach" *In Proceedings of IEEE Congress on Evolutionary Computation (CEC)*, (p. 6). **2008**

Romero, O. and De Antonio, A. "Bio-inspired Cognitive Architecture for Adaptive Agents based on an Evolutionary Approach" *In Proceedings of Adaptive Learning Agents and Multi-Agent Systems (ALAMAS-AAMAS)*, p(8), **2008**

Romero, O. and De Antonio, A. "Analysis of Emergent Properties in a Hybrid Bio-inspired Architecture for Cognitive Agents" *In Proceedings of Innovations in Hybrid Intelligent Systems*, (p. 8). **2007**

Rojas, S., Ramirez, J., **Romero, O.** "Intelligent Tutoring System using an Evolutionary Student Model" *In Proceedings of IASTED - Artificial Intelligence and Applications* (p. 6), **2002**

Books

Romero, O. "Sistema Tutor Inteligente para la Enseñanza de las Matemáticas: Un enfoque evolutivo como soporte a la enseñanza personalizada" (Spanish Edition), EAE Eds. Spain, ISBN-13: 978-3659053955, **2012**

Romero, O. "Arquitectura Cognitiva Artificial Bio-inspirada - I: Una propuesta de Diseño Evolutivo para Mentes Artificiales (Spanish Edition)", EAE Eds. Spain, ISBN-13: 978-3659036439, **2011**

Romero, O. "Arquitectura Cognitiva Artificial Bio-inspirada - II: Una propuesta de Diseño Evolutivo para Mentes Artificiales (Spanish Ed.)", EAE Eds. Spain, ISBN-13: 978-3659037504, **2011**

In Preparation

Zhao, R., **Romero, O.**, Rudnický, A. "Learning to blend social and task goals in conversational agents through self-play" *Target conference: NAACL conference*, **2020**

Preprints

Romero, O. "Architectural Middleware that Supports Building High-performance, Scalable, Ubiquitous, Intelligent Personal Assistants". arXiv:1906.02068 [cs.SE]. **2019**

Romero, O., Akoju, A. "Adroitness: An Android-based Middleware for Fast Development of High-performance Apps". arXiv:1906.02061 [cs.SE]. **2019**

Local Manuscripts (in Spanish)

Romero, O. “La Inteligencia Artificial En La Educacion: Sistema Tutor Inteligente Para La Enseñanza De La Aritmetica Mediante Un Modelo Del Estudiante Evolutivo” (English translation: Artificial Intelligence in Education: Intelligent Tutoring System for Teaching Arithmetic through an Evolutionary Student Model) *Revista Internacional Magisterio Educacion y Pedagogia, Colombia*, 5(23), **2003**

Romero, O., Ramírez, J., Rojas, S. ^[SEP] “Animales Artificiales con Sistemas Clasificadores Y Algoritmos Geneticos” (English Translation: Artificial Animals using Classifier Systems and Genetic Algorithms), *Revista Ingeniería, Colombia*, 7(51), **2002**

Romero, O., Ramírez, J., Rojas, S. “Sistema Tutor Inteligente Adaptativo Para La Enseñanza De Matematicas Basicas” (English translation: Intelligent Tutoring System for teaching Mathematics at elementary school), *Revista Científica, Colombia*, 4(77), **2002**

PATENTS AND DISCLOSURES OF INVENTION

Cassell, J., **Romero, O.**, Zhao, R., Matsuyama, Y. “Social Reasoner”, CMU Invention Disclosure 2018-032, **2017**.

Romero, O. “Cognitive Model for Software Agents” (*Modelo Cognitivo para Agentes Software Basado en Comportamientos Híbridos que Integran Módulos de Procesamiento Simbólico y Sub-simbólico*). Patent issuer and number: Colombia, **CO 13-28-431**. Date Issued Apr 13, **2011**

Romero, O. “Prey-Predator Environment Simulator based on bio-inspired techniques” (*Sistema de Simulación de un Ambiente Presa-Depredador que Evalúa Tecnicas de Inteligencia Artificial Bio-inspiradas*). Patent issuer and number: Colombia, **CO 13-24-183**. Patent date Issued Nov 19, **2009**

MENTORING EXPERIENCE

Mentor of 4 students working on building a conversational system for transit.	2022
Mentor of 3 students working on building a conversational system for transit.	2021
Mentor of 4 students working on building a conversational system for transit.	2020
Mentor of 8 students for an independent study on conversational interfaces.	2020
Mentor and Supervisor of 2 Research Programmers with Master degree, CMU	2016 – 2019
Mentor of 4 summer internship students, Carnegie Mellon University (2 students from Turkey and 2 students from Brazil)	2015 – 2017
Co-advisor of Master Dissertation titled “Indoor Augmented Reality: user positioning in mobile devices with applications in rehabilitation and guiding”, Technical University of Madrid	2012 - 2013

PROFESSIONAL SERVICES

Topic Editor of “Socially Intelligent Conversational Agents Co-Evolving with Humans” , Frontiers in Robotics and AI Journal	2022
Reviewer of CMLH Fellowships in Digital Health Applications , Center for Machine Learning and Health, Carnegie Mellon University	2021
Program Committee Member , Autonomous Agents and Multi-agent Systems (AAMAS)	2019-2020
Program Committee Member , International Joint Conference on AI (IJCAI)	2019
Editorial Board Member , Intern. Journal of Robotics and Automation Technology	2018
Program Committee Member , IEEE Services Workshop on Edge Computing for Autonomous Things	2018
Reviewer , Applied Soft Computing Journal	2018
Reviewer , Multimodal Technologies and Interaction Journal	201
Reviewer , Journal of Cognitive Science	2018
PhD dissertation committee , Technical University of Madrid (thesis: Modeling the Visualization and Exploration of Document Collections with User and Purpose-based Adaptation)	2016
Organizer , Joint Virtual Reality Conference	2012

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery, (ACM)	2019
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PRESENTATIONS

Oral Presentations:

Romero, O. A Long-Term Evaluation of Adaptive Interface Design for Mobile Transit Information, *MobileHCI*, **2020**

Romero, O. CogArch-ADL: Toward a Formal Description of a Reference Architecture for the Common Model of Cognition. *AAAI Fall Symposium on the Common Model of Cognition*, **2018**.

Lieto, A., Kennedy, W., Lebiere, L., **Romero, O.**, Taatgen, N., West, R. "Higher-level Knowledge, Rational and Social Levels Constraints of the Common Model of the Mind" *AAAI Fall Symposium on the Common Model of Cognition*, **2018**

Kralik, J., Hang, J., Rosenbloom, P., Jackson, P., Epstein, S., **Romero, O.** "Metacognition for a

Common Model of Cognition" *AAAI Fall Symposium on the Common Model of Cognition*. **2018**

Romero, O. Cognitive-Inspired Conversational-Strategy Reasoner for Socially-Aware Agents, *IJCAI Conference*, **2017**

Romero, O. Cognitive Modeling of Behavioral Experiments in Network Science, *AAMAS Conference*, **2014**

Romero, O., Simulating Network Behavioral Dynamics by using a cognitively constrained Multi-agent approach, *SBP-BRIMS Conference*, **2014**

Romero, O., Evolving the way of doing the right thing, *CEC Conference*, **2012**

Romero, O., Modulation of multi-level evolutionary strategies for artificial cognition, *GECCO Conference*, **2009**

Romero, O., Hybridization of cognitive models using evolutionary strategies, *CEC Conference*, **2009**

Romero, O., Analysis of Emergent Properties in a Hybrid Bio-inspired Architecture for Cognitive Agents, *HAIIS Conference*, **2007**

Poster Presentations:

Romero, O., Propositional Reasoning via Neural Transformer Language Models, *NeSy Workshop*, **2022**.

Romero, O. A. A Task-Oriented Dialogue Architecture via Transformer Neural Language Models and Symbolic Injection, *SIGDIAL*, **2021**.

Romero, O. Cognitive-Inspired Conversational-Strategy Reasoner for Socially-Aware Agents, *IJCAI Conference*, **2017**

Romero, O., Hybridization of cognitive models using evolutionary strategies, *CEC Conf.*, **2009**

Romero, O. Hybrid Behaviour Orchestration in a Multilayered Cognitive Architecture using an Evolutionary Approach, *WCCI Conference*, **2008**

Romero, O., Bio-inspired Cognitive Architecture for Adaptive Agents based on an Evolutionary Approach, *AAMAS Conference*, **2008**

Romero, O., Analysis of Emergent Properties in a Hybrid Bio-inspired Architecture for Cognitive Agents, *HAIIS Conference*, **2007**

INVITED TALKS

Romero, O. "A New Methodology for Assessing Intelligence Levels in Artificial Cognitive Systems", *InnoCentive Challenge # 9933054, Ideas for Annual Computational Cognition Competition*, Montreal, Canada, **2014**.

Romero, O. “Cognitive Architecture for Intelligent Agents”, Arquisoft Seminars, Distrital University of Bogota, **2010**

MEDIA COVERAGE

SARA Project, Carnegie Mellon University

- **MIT Technology Review**, Chatbots with Social Skills Will Convince You to Buy Something, 2016
- **Science Friday**, Are Digital Assistants Smart Enough to Do Their Jobs?, 2016
- **Popular Science**, S.A.R.A. Seeks To Give Artificial Intelligence People Skills, 2016.
- **CNET**, The Advent of Virtual Humans, 2016
- **CNBC**, Best of World Economic Forum in Tianjin, 2016
- **CCTV** (China Central Television), 2016
- **Sputnik News**, Meet SARA, Very Social Robot That Intends to Make Society Stronger, 2016
- **Radio Sputnik**, These are robots that intend to make society stronger by focusing on social bond
- **Radio Canada**, Here are 4 robots at your service, 2016
- **Tartan (Carnegie Mellon’s Student Newspaper)** The Frontier Conference exhibits featured new technology, 2016
- **Atelier.net**, chatbots of growing human, 2016

NON-ACADEMIC PROFESSIONAL APPOINTMENTS (INDUSTRY)

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|---|-------------|
| Santander Bank (ISBAN) , Test Manager and Team Leader, Spain | 2006 – 2007 |
| Duties and Responsibilities: | |
| <ul style="list-style-type: none">• Execution of functional test for security systems• Development and documentation of test suites and test cases,• TDD, functional tests, unit tests, approval and automated tests using IBM Rational | |
| Unisys , Software Architect and Team Leader, Spain | 2005 – 2006 |
| Duties and Responsibilities: | |
| <ul style="list-style-type: none">• Modeling and Design of Multi-tier Enterprise Architectures• Incorporation of Analysis and Design patterns• Effort, Cost and Development Time Estimation.• Temporal Planning and Task Assignment.• Coaching for the development team | |
| Hewlett Packard (EDS) , Software Architect and A&D Team Leader, Colombia | 2003 – 2005 |
| Duties and Responsibilities: | |
| <ul style="list-style-type: none">• Establishing an Enterprise J2EE Architecture of a web portal for the General Government Accountability Office.• Development of the most Architecturally Significant Use Cases• Development of mechanisms for integrating Legacy Systems to web applications• Development of Web Services and Workflows | |

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- Involvement in SPI activities (Software Process Improvement)
 - Effort, Cost and Scheduling Estimation
 - Involvement in the certification process of CMMI level 4.

Oracle, Software Developer, Colombia

2002 – 2003

Duties and Responsibilities:

- Development of a web enable application for the Price WaterHouse Coopers, using a J2EE architecture.
- Development of J2EE components, JSP, Servlets, EJBS, etc.

SOFTWARE RELEASES (ONLY PUBLIC ACCESS)

Multiuser Framework: it allows developers to easily scale their mono-user architectures to multi-user architectures with little effort. <https://github.com/ojrlopez27/multiuser-framework>

Adroitness: a high-performance Android-based middleware for service integration in Intelligent Personal Assistants. <https://github.com/ojrlopez27/Adroitness-Mobile>

COPERNIC: Cognitively-inspired Pervasive Middleware for Emergent Service Composition. <https://github.com/ojrlopez27/copernic>

MAL-DySCo: Middleware for Natural Language-Based Dynamic Service Composition. <https://github.com/ojrlopez27/semantic-middleware>

SOGO: (Socially-aware Negotiation Conversational Agent). <https://github.com/ojrlopez27/sogo-stanford-server>

Social Reasoner: this is a component for planning conversational strategies in conversational agents. <https://github.com/ojrlopez27/social-reasoner>

INTERNATIONAL LICENSES AND CERTIFICATIONS

- IBM Certified Specialist for Rational Unified Process – IBM Rational
- Function Points Analyst. (IFPUG)
- Object Oriented Analysis and Design Using UML – IBM Rational
- Design Patterns – Digital Think
- Sun Certified Java Programmer for the Java 2 Platform – Oracle
- Java 2 certification for Programmers – Digital Think
- J2EE: Administration of BEA WebLogic Server – BEA WebLogic
- J2EE: Business Process Management with BEA Weblogic Integration – BEA
- J2EE: Development Business Logic Components with EJB using BEA WebLogic – BEA
- J2EE: Enterprise Architecture Master Class Workshop. – BEA WebLogic
- EJB Architecture and Session Beans – Digital Think
- Entity Beans, Transactions and Security - Digital Think.

