

EMPLOYMENT ELIGIBILITY

Permanent Resident of Canada

EDUCATION

Rensselaer Polytechnic Institute, Troy, NY, USA, 2003-2008

Ph.D. in Science and Technology Studies, 2008

Universidad de Los Andes, Bogotá, Colombia, 1990-1998

MS in Industrial Engineering, 1998

BS in Computer Science and Systems Engineering, 1996

TEACHING EXPERIENCE

Lecturer: Pair Analysis for Visual Analytics, Visual Analytics Summer School 2012, Vancouver BC (VIVA 2012)

- Lecture attended by 28 graduate and undergraduate students from all over Canada

Sessional Instructor: SA-315 New Information Technology and Society, Department of Sociology and Anthropology, Simon Fraser University, Fall 2011 - Spring 2012

- Designed the syllabus and taught this class to 24 undergraduates in Fall 2011 and to 27 students in Spring 2012.

Teaching Assistant: Product Design and Innovation 2: Sustainable Design, Rensselaer Polytechnic Institute, Spring 2008

- Laboratory supervision. Feedback on design projects. One lecture on Appropriation of Technology in South America, monitored progress on individual design portfolios for 35 engineering undergraduate students

Teaching Assistant: Politics and Economics of IT, Rensselaer Polytechnic Institute, Fall 2007

- Discussion sessions for 16 undergraduate students. Coached two teams out of six in the core activity of the course: a simulation of socio-technical entrepreneurship. One of my teams won the simulation. Graded essays and simulation activities.

Teaching Assistant: Design, Culture and Society, Rensselaer Polytechnic Institute, Spring 2006

- Discussion sessions for 20 undergraduate students. Designed pedagogical activities to ground the concepts learned in class. Graded weekly reading reflections.

Teaching Assistant: Introduction to Science and Technology Studies, Rensselaer Polytechnic Institute, Fall 2005

- Discussion sessions for 27 undergraduate students. Designed pedagogical activities to ground the concepts learned in class. Graded weekly reading reflections and quizzes.

Co-lecturer: Technology, Politics and Citizenship, Summer School, Universidad de Los Andes, 2004

- Co-designed and co-taught this course with Dr. Langdon Winner. Responsible for lecturing 16 sessions of the course for 20 undergraduate students.

Assistant Professor: Systems Engineering Department, Universidad de Los Andes, 2001-2003

- Solely responsible for the following undergraduate courses: Managerial Cybernetics; Soft System Methodologies for IT Design; Organizational Diagnosis; Introduction to Systems Thinking; Introduction to Systems and Computing Engineering

Instructor: Systems Engineering Department, Universidad de Los Andes, 1999-2001

- Solely responsible for the following undergraduate courses: Managerial Cybernetics; Soft System Methodologies for IT Design; Introduction to Systems Thinking; Introduction to Programming; Introduction to Systems and Computing Engineering

TEACHING INTERESTS

Foundations of information technology, human-information interaction, visual analytics, information representation, information systems design, information retrieval, user-centered design, sociology and anthropology of information technology, introduction to technological systems, human information behavior, object-oriented programming, design evaluation, qualitative research methods, digital ethnography

RESEARCH EXPERIENCE

Postdoctoral Fellow in Visual Analytics, School of Interactive Arts and Technology, SCIENCE Lab, Simon Fraser University, 2009-2013 (Supervisor: Dr. Brian Fisher).

- Conversation analysis and ethnomethods for interactive design studies of collaborative visual analytics.
- Theoretical and methodological development of Pair Analytics, a new research methodology for the study of human-information interaction in visual analytics.
- Analyses of analytical reasoning in interaction with visual analytic tools for aircraft safety and maintenance engineering. Funded by the Boeing Company and the NSERC grant “visual analytics for safety and security.”
- Analyses of requirements for visual analytic tools for emergency management in the Lower Mainland. NSERC grant “visual analytics for emergency management.”
- Ethnography of visual analysis in aircraft safety, emergency management, and public health, in Canada and in the USA.
- Responsible for writing and managing grant proposals, communicating research results in academic conferences, organizing and chairing international conferences and workshops, and supervising graduate research assistants.

Doctoral Research: Department of Science and Technology Studies, Rensselaer Polytechnic Institute, 2006-2008, (Adviser: Dr. Langdon Winner).

- Dissertation Title: “Engineering the Information Society: A Social Worlds/Arenas Analysis of Engineering in Government and Non-Governmental Organizations in Colombia.”
- Multi-sited ethnography of systems and computer engineers engaged in the design of information technologies oriented to social goals rather than profit maximization. Theoretical analysis based on Anselm Strauss’ social worlds/arenas interactionist framework and Herbert Schiller’s critical analysis of the information society.

Research Assistant: Department of Science and Technology Studies, Rensselaer Polytechnic Institute, 2006-2008, (PI: Dr. Ron Eglash)

- Culturally Situated Design Tools: Designed and programmed three java web applications, available for free on the Internet, to engage middle school and high school, Black and Hispanic minorities in the learning of mathematics and computer programming. Conducted training and evaluation of the software with inner city, high school children in Troy, NY.
<http://www.rpi.edu/~eglash/csdt.html>. Funded by NSF (CNS 0837564, CNS 0634329).

Researcher: UNESCO, 2005, (PI: Andres Valderrama)

- Designed, collected and analyzed a survey to document the state of the art of "Engineering and Technology Studies" ETS in the United States, including reference to university departments in this field, course titles, content and teaching materials used. Identified needs for teaching materials and networking, made suggestions for and brief outlines of learning/teaching materials and networking. Funded by UNESCO.

Research Assistant: Department of Science and Technology Studies, Rensselaer Polytechnic Institute, 2005, (PIs: Dr. David Hess and Dr. Langdon Winner)

- Gathered data, conducted interviews, and wrote two case studies on community gardens in NYC and re-use centers in Burlington, VT, for the project “Sustainability, the Politics of Design and Localism,” directed by professors David Hess and Langdon Winner. <http://www.davidjhess.org/sustlocproject.html>. Funded by NSF (SES 0425039).

Researcher: Department of Systems and Computer Engineering, Universidad de Los Andes, 2003, (PI: Ernesto Lleras Manrique)

- Participated in the design and implementation of an educational program for peace promoters in rural areas in Colombia for the Peace Commissioner’s Office. Funded by the Colombian government.

Researcher: Department of Systems and Computer Engineering, Universidad de Los Andes, 2002-2003, (PI: Luz Adriana Osorio)

- Participated in the design and implementation of a training program in educational informatics for schoolteachers in a multi-cultural community in La Guajira, Colombia.

Researcher: Research Center in Education, Universidad de Los Andes, 2001, (PI: Claudia Ordoñez)

- Conducted non-participant observations, surveys and in-depth interviews in a sample of classes to provide insights for a conceptual framework of quality in education at Universidad de Los Andes.

Researcher: Department of Systems and Computer Engineering, Universidad de Los Andes, 2000-2001, (PI: Alvaro Galvis)

- Designed workshops for the creation of collaborative projects of culture and education to improve learning in rural areas of Antioquia.

RESEARCH INTERESTS

Situated and distributed cognition in visual analytics, analytical reasoning in collaborative visual analytics, cognitive-oriented evaluation of visual analytic tools, human-visual analytic tools interaction, socio-cognitive principles for interaction design social and cultural aspects of information visualization, symbolic interactionism for interaction design

ADMINISTRATIVE EXPERIENCE

Co-Chair, International Conference on Information Systems for Crisis Response and Management, ISCRAM 2012, Vancouver, BC, April 21-22, 2012.

- Project manager for the international conference ISCRAM 2012, held in Vancouver, BC, in April 2012. Responsible for general project management, budget management, marketing, conference organization, and logistics. 220 attendees.

Assistant Administrator, Universidad de Los Andes, Bogotá, Colombia, 1997–1999

- Participated in the creation and management of a new educational program. Responsible for operations management functions, including designing administrative procedures, marketing, planning and executing annual budgets, supervising three employees, contacting suppliers, and coordinating resources (classrooms, professors, learning materials, food, etc).

Information Systems Coordinator, COLFUTURO, Bogotá, Colombia, 1995-1996

- Selected before graduation to become the Coordinator of Information Systems in this scholarship granting foundation. Started as Database Manager in charge of managing the personal and financial information of more than 500 scholars. Quickly promoted to help the other areas of the organization in using information systems to automate their daily operations.

Database Administrator, IBM, Bogotá, Colombia, 1994

- Provided IT support for the marketing department at IBM. In charge of administrating an information system with sensitive information about current catalogues of IBM products to be sold in the Colombian market. Ensured continuous availability of the system for the marketing representatives and for the sales workforce. Guaranteed the security of the system and coordinated its operations and maintenance with the headquarters of IBM in the United States.

PARTICIPATION IN CONFERENCES AND WORKSHOPS

10th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2012), May 12-15, 2013, Baden-Baden, Germany

Title of presentation: “An Interaction Approach to Enhance Situational Awareness and the Production of Anticipatory Actions in Emergency Operation Centers”

2013 IEEE International Multidisciplinary Conference on Cognitive Methods in Situation Awareness and Decision Support (CogSIMA), February 26-28, San Diego, CA.

Title of presentation: “The ‘Tunnel Vision’ Effect: Structuring of Attention and Use of Digital Technologies in Emergency Operation Centers.”

46th Annual Hawaii International Conference on System Sciences (HICSS 46), January 7-10, 2011, Maui, HI

Title of Presentation: “A Qualitative Methodology for the Design of Visual Analytic Tools for Emergency Operation Centers”

9th Annual Canadian Risks and Hazards Network Symposium (CHRNet 2012), October 24-26, 2012, Vancouver, BC

Title of presentation: "Perception of Lower Mainland Practitioners on the Incorporation of Social Media in Emergency Management"

4S Annual Meeting, October 17-20, 2012, Copenhagen, Denmark

Title of presentation: "Autism and Performance in Visual Analytics."

9th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2012), April 22-25, 2012, Vancouver, BC

Conference Chair

4S Annual Meeting, November 2-5, 2011, Cleveland, OH

Chair of Panel: ICTs, Media and Visualization

Title of presentation: "Response Cries in Technological Environments: Self-Talk in Collaborative Visual Analytics."

CogSci 2011, July 20-23, Boston, MA

Poster Session. Title of Poster: "Joint Action Theory and Pair Analytics: In-vivo Studies of Cognition and Social Interaction in Collaborative Visual Analytics."

Engineering, Social Justice and Peace International Conference. Bogota, July 6-9, 2011.

Title of Presentation: "'Ingenieros Oonejeros:' subjectivities and interpretations of social justice in non-governmental engineering organizations in Colombia."

Workshop on Analytical Provenance, CHI 2011, May 7-12, 2011, Vancouver, BC

Title of Presentation: "Analytic Provenance in Pair Analytics"

Visualisation in the Age of Computerisation, March 25-26, 2011, Saïd Business School, University of Oxford

Title of Presentation: "From Cognitive Amplifiers to Cognitive Prostheses: Understandings of the Material Basis of Cognition in Visual Analytics."

44th Annual Hawaii International Conference on System Sciences (HICSS 44), January 4-7, 2011, Kauai, HI

Title of Presentation: "Pair Analytics: Capturing Reasoning Processes in Collaborative Visual Analytics"

CogSci 2010, August 10-14, 2010, Portland, OR

Poster Session. Title of Poster: "Pair Analytics: A Research Protocol to Study Cognition and Interaction in Visual Analytics."

4S Annual Meeting, October 28, 2009, Washington, DC

Co-chair and organizer of the Panel: Post-colonial Computing – Information Technology and Development

Title of presentation: "Technological Neutrality: following a policy object from neoliberal centers of power to its encounter with Colombian engineers."

4S Annual Meeting, October 10-13, 2007, Montreal, Canada

Title of presentation: "How to Measure the Information Society: dominant discourses at the Colombian Bureau of Statistics and the Information Society they construct."

Ninth National Congress of Sociology, December 6-10, 2006, Bogotá, Colombia

Title of presentation: "Engineering ICTs in Civil Society Organizations."

4S Annual Meeting, October 20-22, 2005, Pasadena, CA, USA

Title of presentation: "Re-engineering Technocracy: Hybridizing Identities of Engineers as Technology Policy-Makers in Colombia."

PUBLICATIONS

Human-Information Interaction & Visual Analytics:

Arias-Hernandez, R. and Fisher, B. (2013). "An Interaction Approach to Enhance Situational Awareness and the Production of Anticipatory Actions in Emergency Operation Centers." *Proceedings of the 10th International ISCRAM Conference – Baden-Baden, Germany, May 2013*. T. Comes, F. Fiedrich, S. Fortier, J. Geldermann and L. Yang, eds.

Arias-Hernandez, R. and Fisher, B. (2013). "The 'Tunnel Vision' Effect: Structuring of Attention and Use of Digital Technologies in Emergency Operation Centers." *Proceedings of the 2013 IEEE Conference on Cognitive Methods in Situation Awareness and Decision Support*, February 26-28, 2013

Arias-Hernandez, R. and Fisher, B. (2013). "A Qualitative Methodology for the Design of Visual Analytic Tools for Emergency Operation Centers." *Proceedings of HICSS 2013*, Jan. 7-10, 2013. Maui, HI

Fisher, B., Kaastra, L., and **Arias-Hernandez, R.** (2012). "Evaluating Analytic Performance." *Proceedings of the IEEE VisWeek 2012 Workshop on Beyond Time and Errors: Novel Evaluation Methods for Visualization (BELIEV 2012)*. October 14-15, 2012, Seattle, WA.

Green, T.M., **Arias-Hernandez, R.** and Fisher, B. (2012). "Individual Differences and Translational Science for Human Centric Visualizations." In: Wang, W. (Ed.). *Human Centric Visualization*. (In press)

Diaz, P., Aedo, I., **Arias-Hernandez, R.**, and Diez, D. (2012). "Towards Emergency 2.0: Social Media and Civil Engagement in Emergency Management." *Proceedings of the 10th International Conference on the Design of Cooperative Systems*, May 30 - June 1, Marseille France.

Arias-Hernandez, R., Green, T.M., and Fisher, B. (2012). "From Cognitive Amplifiers to Cognitive Prostheses: Understandings of the Material Basis of Cognition in Visual Analytics." In: Carusi, A. and

Sissel Hoel, A. (Eds.), Computational picturing, imaging and visualising. Special Issue for *Interdisciplinary Science Reviews Journal* 37(1). Maney Publishing: London, UK.

Al-Hajj, S., **Arias-Hernandez, R.** and Fisher, B. (2011). "Interactive Visualization for Analyzing and Understanding immunological data." *Proceedings of IEEE Visual Analytics in Health Care Workshop 2011: Understanding the Physician Perspective*, 45-48, October 2011.

Arias-Hernandez, R., Kaastra, L.T., and Fisher, B. (2011). "Joint Action Theory and Pair Analytics: In-vivo Studies of Cognition and Social Interaction in Collaborative Visual Analytics." In: L. Carlson, C.Hoelscher, and T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 3244-3249). Austin TX: Cognitive Science Society.

Arias-Hernandez, R., Kaastra, L.T., and Fisher, B. (2011). "Pair Analytics: Capturing Reasoning Processes in Collaborative Visual Analytics." *Proceedings of HICSS 2011*, Jan. 4-7, 2011. Kauai, HI

Green, T.M., Wakkary, R., **Arias-Hernandez, R.** (2011). "Expanding the scope: Interaction Design Perspectives for Visual Analytics." *Proceedings of HICSS 2011*, Jan. 4-7, 2011. Kauai, HI

Fisher, B., Green, T.M., **Arias-Hernandez, R.** (2011). "Visual Analytics as a Translational Science," *TopiCS in Cognitive Science*, Vol. 3, No. 3, pp. 609-625. Wiley-Blackwell.

Arias-Hernandez, R., Dill J., Green, T.M., and Fisher, B. (2011). "Visual Analytics and Human Computer Interaction," *Interactions*, Vol. 18, No. 1, January-February, 2011, pp. 51-55. Association for Computing Machinery.

Engineering Studies & Science and Technology Studies:

Arias-Hernandez, R. (2013). "Exceptional Engineering: Challenges and opportunities for socially just engineers in NGOs." In: Juan Lucena (Ed.), (2013) *Engineering Education for Social Justice: Critical Explorations and Opportunities*. New York: Springer

Valderrama, A., **Arias-Hernandez, R.**, Ramirez, M. C., Bejarano, A., Silva, J.C. (2012). "The Borders of Engineers without Borders: A Self-Assessment of Ingenieros Sin Fronteras Colombia." *International Journal of Engineering, Social Justice, and Peace* 1(1), pp. 18-30.

Arias-Hernandez, R. (2011). *Engineering the Network Society: A Social Worlds/Arenas Analysis of Engineering in Government and Non-Governmental Organizations in Colombia*. ProQuest, UMI Dissertation Publishing, 336 pages.

Arias-Hernandez, R. (2004). "Learning Communities that Build Appropriate Technology." *World Futures Journal*, January-March 2004. Volume 60, Numbers 1-2

Lleras, E., **Arias-Hernandez, R.** (2001). "A Learning Community as an Experiment in Local Development." *Proceedings of OR41*. Bath, UK. 2001. September, 2001

PROFESSIONAL ASSOCIATIONS

International Association for Information Systems for Crisis Response and Management (ISCRAM) – Member since 2010
IEEE – Visual Analytics Science and Technology – Member since 2009
International Network of Engineering Studies (INES) – Member since 2007
Society for the Social Studies of Science (4S) – Member since 2005

AWARDS

ISCRAM Association – Distinguished Service Award (2012)
Rensselaer Polytechnic Institute Graduate Fellowship (2003-2006)
Fulbright Scholarship (US Department of State) 2003-2006