Bianica (Pint) Pires

Social and Decision Analytics Lab
Biocomplexity Institute of Virginia Tech
900 N. Glebe Rd.
Arlington, VA 22203

703-868-7969
bpires@vt.edu

EDUCATION

2014 **Ph.D., Computational Social Science**

George Mason University, Krasnow Institute for Advanced Study, Fairfax, VA
Dissertation: *When People Rebel: A Computational Approach to Violent Collective Action*
Committee: Andrew Crooks (Advisor), Robert Axtell, William Kennedy, Richard Medina

2003 **M.A., Business Administration – International Business**

University of Florida, Warrington College of Business, Gainesville, FL
Graduated First in Class

2002 **B.S., Industrial & Systems Engineering**

University of Florida, College of Engineering, Gainesville, FL
Graduated with Highest Honors

EMPLOYMENT

2018-Present **Research Assistant Professor**, Social & Decision Analytics Laboratory, Biocomplexity Institute of Virginia Tech, Arlington, VA

2017-2018 **Research Scientist**, Social & Decision Analytics Laboratory, Biocomplexity Institute of Virginia Tech, Arlington, VA

2014-2017 **Postdoctoral Fellow**, Social & Decision Analytics Laboratory, Biocomplexity Institute of Virginia Tech, Arlington, VA

2012-2013 **Graduate Research Assistant**, Department of Computational Social Science, Krasnow Institute for Advanced Study, George Mason University, Fairfax, VA

2011-2012 **Embedded Analyst**, Palantir Technologies, McLean, VA

2008 **Graduate Research Assistant**, Department of Statistics, Volgenau School of Engineering, George Mason University, Fairfax, VA

2008-2011 **Managing Consultant**, IBM Global Business Services, Advanced Analytics & Optimization, Washington, DC

2005-2008 **Senior Consultant**, IBM Global Business Services, Advanced Analytics & Optimization, Washington, DC

2003-2005 **Consultant**, IBM Global Business Services, Advanced Analytics & Optimization, Washington, DC

RESEARCH INTERESTS

My research interest involves understanding and exploring complex social systems using computational and quantitative methods. Through the integration of computational methods and data science techniques, I have developed agent-based models that balance theory and empirical data in the creation of the environment and agents, including agents' communication networks and

behavior. These models explore such research areas as collective action, social influence, knowledge sharing, and attitude formation and change.

GRANTS

08/2016 – 08/2017   Army Research Institute (ARI) Early Career Award, *Proof of Concept: Development of a Framework to Model Dynamic, Multi-Level Interactions within an Organization.* ($128,460).

PI: **Pires, B.** Co-PIs: Goldstein, J., Molfino, E., Ziemer, K.

07/2017-10/2017   State Council of Higher Education (SCHEV), *Creating a Data Profile of Counties/Cities with High Percent of Population with No Secondary Education.* ($15,000).

PI: **Pires, B.**

2016-2021   National Science Foundation (NSF), *Using Statistical and Survey Methodology Research to Improve or Redesign Surveys.* ($2,500,000).

PI: Sallie Keller, Co-PIs: Korkmaz, G., **Pires, B.**, Shipp, S.

PUBLICATIONS

Journal Articles

Pires, B., Crandell, I., Arnsbarger, M., Lancaster, V., Keller, S., Schroeder, A., Shipp, S., Kang, W., and Robinson, P., (forthcoming), Predicting Postsecondary Trajectories in Virginia High Schools using Publicly Available Data. *Statistical Journal of the International Association for Official Statistics.*

Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2018, Estimating Individualized Exposure Impacts from Ambient Ozone Levels: A Synthetic Information Approach. *Environmental Modelling & Software*, 103, pp. 146-157.

Ziemer, K. S., **Pires, B.**, Lancaster, V., Keller, S., Orr, M., and Shipp, S., 2018, A New Lens on High School Dropout: Use of Correspondence Analysis and the Statewide Longitudinal Data System. *The American Statistician*, 72: 2, 191-198.

Keller, S., Shipp, S., Korkmaz, G., Molfino, E., Goldstein, J., Lancaster, V., **Pires, B.**, Higdon, D., Chen, D., and Schroeder, A., 2018, Harnessing the Power of Data to Support Community-Based Research, *Wiley Interdisciplinary Reviews: Computational Statistics*, 10:3, e1426.

Pires, B. and Crooks, A., 2017, Modeling the Emergence of Riots: A Geosimulation Approach. *Computers, Environment and Urban Systems*, 61, pp. 66-80.

Peer Reviewed Conference Papers/Presentations

Orr, M., Leberiere, C., Stocco, A., Pirolli, P., **Pires, B.**, and Kennedy, W., 2018, *Multi-Scale Resolution of Cognitive Architectures: Connecting Levels between the Newell Bands*, in the post-proceedings of 2018 Association for the Advancement of Artificial Intelligence (AAAI) Fall Symposium on 'A Common Model of the Cognition', 18th-20th October, Arlington, VA. (accepted)

Orr, M., Leberiere, C., Stocco, A., Pirolli, P., **Pires, B.**, and Kennedy, W., 2018, *Multi-Scale Resolution of Cognitive Architectures: A Paradigm for Simulating Minds and Society*, in the post-proceedings of the 2018 International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRIMS), 10th – 13th July, Washington, DC., pp. 3-15.

Pires, B., Goldstein, J., Higdon, D., Reese, S., Sabin, P., Korkmaz, G., Ba, S., Hamall, K., Koehler, A., Shipp, S., and Keller, S., 2017, *A Bayesian Simulation Approach for Supply Chain Synchronization*, in the post-proceedings of the 2017 Winter Simulation Conference (WSC), 3rd – 6th December, Las Vegas, NV, pp. 1571-1582. IEEE.

Pires, B., Goldstein, J., Molfino, E., and Ziemer, K., 2017, *Knowledge Sharing in a Dynamic, Multi-level Organization: Exploring Cascade and Threshold Models of Diffusion*, in the post-proceedings of 2017 International Conference of The Computational Social Science Society of the Americas, 19th-22nd October, Santa Fe, NM, No. 21. ACM.

Pires, B. & Crooks, A., 2016, *The Geography of Conflict Diamonds: The Case of Sierra Leone,* in the post-proceedings of the 2016 International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRIMS), 28th June – 1st July, Washington, DC, pp. 335–345.

Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2015, *Towards an in silico Experimental Platform for Air Quality: Houston, TX as a Case Study.* Paper presented at the Computational Social Science Society of the Americas (CSSSA) 2015, 29th October – 1st November, Santa Fe, NM.

Pint, B., Crooks, A., and Geller, A., 2010, *Exploring the Emergence of Organized Crime in Rio de Janeiro: An Agent-Based Modeling Approach*, in the post-proceedings of the Second Brazilian Workshop in Social Simulation (BWSS), 24th – 25th October, São Bernardo do Campo, Brazil, pp. 7–14.

Non-Refereed Reports

Pires, B. and Goldstein, J., 2017, Proof of Concept: Development of a Framework to Model Dynamic, Multi-Level Interactions within an Organization. Final Report to the Army Research Institute.

Keller, S., Shipp, S., Orr, M., Higdon, D., Korkmaz, G., Schroeder, A., Molfino, E., **Pires, B.**, Ziemer, K., and Weinberg, D., 2015, Leveraging External Data Sources to Enhance Official Statistics and Products. Final Report to the U.S. Census Bureau.

Haruta, A., Horvath, R., **Pint, B.**, and Zhang, J., 2011, High-end Talent Development and Retention in the ICT industry in Kenya. Nairobi: IBM Corporate Service Corps.

Other Conference Presentations

Pires, B. and Goldstein, J., 2017, *Exploring Dynamic, Multi-level Interactions within an Organization: An Agent-based Modeling Approach.* Presentation at the Military Operations Research Society (MORS) Symposium, 19th – 22nd June, West Point, NY.

Pires, B., Goldstein, J., Higdon, D., Korkmaz, G., Keller, S., Shipp, S., Hamall, K., and Koehler, A., 2016, *A Bayesian Simulation Approach for Supply Chain Synchronization*, Poster presented at the Winter Simulation Conference (WSC), 11th – 14th December, Arlington, VA.

Pires, B., 2016, *Challenges and Opportunities for Modeling Violent Collective Action Computationally: Balancing Theory and Data*, Paper presented at the International Congress on Agent Computing, 29th – 30th November, Fairfax, VA.

Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2016, *An in silico Platform for Environmental Coupling.* Poster presented at the Association for Public Policy Analysis & Management (APPAM), 3rd – 5th November, Washington, DC.

Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2016, *An in silico Platform for Environmental Coupling.* Presentation at the International Society of Exposure Science (ISES), 9th – 13th October, Utrecht, The Netherlands.

Pires, B., 2015, Crowd-Sourcing Big Data from Smartphone Apps for Transportation Research: Role of Statistics and Challenges. Panel conducted at the Joint Statistical Meetings (JSM), 8th-13th August, Seattle, WA. With: Feng Guo and Elaine Murakami.

Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., and Schroeder, A., 2015, *An in silico Platform for Environmental Coupling.* Poster presented at the International Symposium for Next Generation Infrastructure, 13th – 15th September, Washington, DC.

Keller, S., Schroeder, A., Shipp, S., Higdon, D., Korkmaz, G., Molfino, E., Orr, M., **Pires, B.**, and Ziemer, K., 2015, *Data: The new asset class.* Poster presented at the International Symposium for Next Generation Infrastructure, 13th – 15th September, Washington, DC.

Pint, B., Crooks, A., 2013, *The Impact of a Slum's Social Dynamics and Geospatial Landscape on the Emergence of Riots: The Case of Kibera,* Presentation at the Association of American Geographies (AAG) Annual Meeting, 9th – 13th April, Los Angeles, CA.

Pint, B., Horvath, R., Zhang, S., and Haruta, A., 2011, *High-end ICT Talent Development and Retention,* Stakeholders Workshop on e-Government Strategic Plan, 9th – 10th March, Nairobi, Kenya.

Pint, B., Levitt, T., and Laskey, K., 2008, *Inferring Threat Group from IED Incident Reports,* The Military Operations Research Society (MORS) Symposium, 10th – 12th June, New London, CT.

Sutherland, S., Ni, H. and **Pint, B.**, 2007, *Canada Post Strategic Network Optimization Model,* Presentation at the Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, 4th – 7th November, Seattle, WA.

Pint, B., Cohen, J. and Ellison, L., 2003, *Case Study: Alpharma & the Brazilian Market,* in the post-proceedings of The Business Association of Latin American Studies (BALAS) Conference, 9th – 12th April, São Paulo, Brazil.

Professional Presentations

Pires, B., Crandell, I., Hamrick, K., 2018, *Identifying Science, Technology, Engineering, and Mathematics (STEM) Pathways.* Interim project presentation to NSF's National Center for Engineering Statistics (NCSES), 18th February, Alexandria, VA.

Pires, B. & Goldstein, J., 2017, *Proof of Concept: Development of a Framework to Model Dynamic, Multi-Level Interactions within an Organization,* Interim project review presentation to Army Research Institute, 17th March, Fort Belvoir, VA.

Keller, S., Shipp, S., Higdon, D., Korkmaz, G., Molfino, E., Orr, M., **Pires, B.**, Schroeder, A., Weinberg, D., Ziemer, K., 2015, *Leveraging External Data Sources to Enhance Official Statistics and Products,* Final project presentation to U.S. Census Bureau, 18th December, Suitland, MD.

Pint, B., 2013, *The Geography of Conflict Diamonds: The Case of Sierra Leone.* Krasnow Institute for Advanced Study, George Mason University seminar series, 8th February, Fairfax, VA.

Pint, B., 2011, *Corporate Service Corp Experience in Kenya.* IBM Advanced Analytics & Optimization brown bag series, 10th June, Herndon, VA.

Pint, B., Horvath, R., Zhang, S., and Haruta, A., 2011, *High-end ICT Talent Development and Retention,* Final project presentation to the Minister of Information Communications and Technology, 18th March, Nairobi, Kenya.

Pint, B., 2008, *Activity-Based Costing at U.S. Customs & Border Protection*. IBM Operations Analytics brown bag series, 17th October, Fairfax, VA.

SKILLS

Research Methods/Techniques

Agent-based modeling, social network analysis, geographic information systems, large-scale data analysis, microsimulation, discrete-event simulation, database design and development, activity-based costing

Software/Programming Languages

R, Python, SQL, Java, MASON, NetLogo, ArcGIS, Palantir, UCINet, NetDraw, PostgreSQL, VBA, LaTeX

Languages

Portuguese (proficient), English (fluent)

AWARDS AND RECOGNITIONS

Best Paper Award (Orr, Leberiere, Stocco, Pirolli, Pires, & Kennedy) at the International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRIMS), 2018

Best Presentation in Working Group at the Military Operations Research Symposium (MORS), 2017

George Mason University funding to attend The Association of American Geographers (AAG) annual meeting, 2013

Palantir Technologies award for full tuition costs, 2011

IBM award for full tuition costs, 2007-2011

IBM Corporate Service Corp (6% acceptance rate), 2011

Profiled on IBM.com, 2008

Received 5 different service awards during tenure at IBM, 2005-2011

U.S. Postal Service Account Excellence Award Winner, 2005

University of Florida funding to attend The Business Association of Latin American Studies (BALAS) Conference, 2003

PROFESSIONAL MEMBERSHIPS

2015 – present	Computational Social Science Society of the Americas (CSSSA)
2016 – present	The Institute for Operations Research and Management Sciences (INFORMS)
2015 – 2016	American Statistical Association (ASA)
2016 – 2017	Association for Public Policy & Management

Referee/Reviewer: Transactions in GIS; GeoInformatica

Program Committee Member: 2018 Computational Social Science annual conference; 2019 Conference on Complexity and Policy Studies