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Mark Coletti, BSc, MSc, PhD

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Education

Jan 2007 – May 2014 **George Mason University**
PhD, Computer Science
Fairfax, USA

Aug 2000 – Jan 2007 **George Mason University**
MSc, Computer Science
Fairfax, USA

Aug 1983 – Dec 1989 **Southern Polytechnic State University**
BSc, Computer Science
Marietta, USA

Thesis

Mark Coletti: *An Analysis of a Model-Based Evolutionary Algorithm: Learnable Evolution Model*. 05/2014,
Degree: PhD, Computer Science, Supervisor: Kenneth De Jong

Research Experience

Aug 2015 – present **Postdoc**
Oak Ridge National Laboratory, Computational Sciences and Engineering Division
Oak Ridge, United States

Apr 2014 – Jul 2015 **Postdoc**
Pennsylvania State University, Department of Geography
University Park, United States

Jan 2007 – Mar 2014 **PhD Student**
George Mason University, Department of Computer Science
Fairfax, Virginia, United States

Research focused on evolutionary algorithm / machine learner hybrids, particularly Learnable Evolution Model (LEM).

Jan 2006 – Dec 2012 **Graduate Research Assistant**
George Mason University, Krasnow Institute for Advanced Study
Implemented a biological inspired cognitive model. Designed and developed large scale social complexity simulations, as well as the GIS related extension,

GeoMASON, for the simulation toolkit MASON.

Awards & Grants

Jul 2009 Award: Best Graduate Student Workshop Paper at GECCO

Skills & Activities

Skills Agent Based Modeling, Evolutionary Computation, Machine Learning, R Programming, Java Programming, UNIX scripting, C++, LaTeX, Software Engineering, Bash Scripting, Python, Evolutionary Algorithms, Algorithms, C, Applied Artificial Intelligence, Computer Programming, Shell Scripting, Qt4, Social Simulation, Object-Oriented Programming, Geoinformatics

Scientific Memberships Association for Computing Machinery, IEEE, National Postdoctoral Association

Publication Highlights

Mark Coletti: *An Analysis of a Model-Based Evolutionary Algorithm: Learnable Evolution Model*. 05/2014, Degree: PhD, Computer Science, Supervisor: Kenneth De Jong

Nicholas Payette, Marius Bujorianu, Glen Ropella, Ken Cline, Jeffrey Schank, Matt Miller, Sara Jonsson, Laszlo Gulyas, Richard Legendi, Olaf Bochmann, Lu´ıs de Sousa, Vlasios Voudouris, Daniil Kiose, Przemyslaw Szufel, Steve Saul, John McManus, Vittorio Scarano, Gennaro Cordasco, Chris Hollander, Paul Wiegand, Vera Kazakova, Brian Hrolenok, J. Daniel Rogers, Michael Schader, Sean Luke, Kenneth De Jong, **Mark Coletti**, Paul Schopf, Claudio Cioffi-Revilla, Keith Sullivan, Khaled Talukder, Ahmed Elmolla, Ermo Wei: *Future MASON Directions: Community Recommendations Report of the 2013 MASON NSFWorkshop*.

Mark Coletti: *The GeoMason Cookbook*. 01/2013;

Mark Coletti: *The Effects of Training Set Size and Keeping Rules on the Emergent Selection Pressure of Learnable Evolution Model*. Genetic and Evolutionary Computing Conference Proceedings; 01/2012

Atesmachew B Hailegiorgis, William G Kennedy, Mark Rouleau, Jeffrey K Bassett, **Mark Coletti**, Gabriel C Balan, Tim Gulden: *An Agent Based Model of Climate Change and Conflict among Pastoralists in East Africa*.

Books

Mark Coletti: *The GeoMason Cookbook*. 01/2013;

Book Chapters

William G. Kennedy, Chenna Reddy Cotla, Tim Gulden, **Mark Coletti**, Claudio Cioffi-Revilla: *Towards Validating a Model of Households and Societies in East Africa*. Advances in Computational Social Science, 01/2014. Pages 315-328; ISBN 978-4-431-54846-1

Journal Publications

William G Kennedy, Atesmachew B Hailegiorgis, Mark Rouleau, Jeffrey K Bassett, **Mark Coletti**, Gabriel C Balan, Tim Gulden: *An Agent-Based Model of Conflict in East Africa And the Effect of Watering Holes*.

Atesmachew B Hailegiorgis, William G Kennedy, Mark Rouleau, Jeffrey K Bassett, **Mark Coletti**, Gabriel C Balan, Tim Gulden: *An Agent Based Model of Climate Change and Conflict among Pastoralists in East Africa*.

Alexei V. Samsonovich, Giorgio A. Ascoli, Kenneth A. De Jong, **Mark Coletti**: *Integrated Hybrid Cognitive Architecture for a Virtual Roboscout*.

Conference Proceedings

Mark Coletti: *The Effects of Training Set Size and Keeping Rules on the Emergent Selection Pressure of Learnable Evolution Model*. Genetic and Evolutionary Computing Conference Proceedings; 01/2012

Mark Coletti, Guido Cervone: *Analysis of Emergent Selection Pressure in Evolutionary Algorithm and Machine Learner Offspring Filtering Hybrids*. *Swarm, Evolutionary, and Memetic Computing*. Springer Berlin Heidelberg, 2012. Pages 721-728; ISBN 978-3-642-35379-6

William G Kennedy, M Rouleau, Jeffrey K Bassett, **Mark Coletti**, Gabriel Catalin Balan, Tim Gulden, Claudio Cioffi-Revilla: *MASON HerderLand: Origins of Conflict in East Africa*. Talk presented at the annual meeting of the Computational Social Science Society; 01/2010

William G Kennedy, Atesmachew B Hailegiorgis, Tim Gulden, Jeffrey K Bassett, **Mark Coletti**, Gabriel Catalin Balan, Meghan Clark, Claudio Cioffi-Revilla: *An Agent-Based Model of Conflict in East Africa and the Effect of the Privatization of Land*. Proceedings of the 3rd World Congress on Social Simulation; 01/2010

Michael Q. Kalish, Alexei V. Samsonovich, **Mark Coletti**, Kenneth A. De Jong: *Assessing the role of metacognition in GMU BICA*. Biologically Inspired Cognitive Architectures 2010 - Proceedings of the First Annual Meeting of the BICA Society, Washington, DC, USA, November 13-14, 2010; 01/2010

M Rouleau, **Mark Coletti**, J K Bassett, A B Hailegiorgis, T Gulden, W G Kennedy: *Conflict in Complex Socio-Natural Systems: Using Agent-Based Modeling to Understand the Behavioral Roots of Social Unrest within the Mandera Triangle*. Human Behavior-Computational Modeling and Interoperability Conference; 01/2009

Jeffrey K. Bassett, **Mark Coletti**, Kenneth A. De Jong: *The relationship between evolvability and bloat*. Genetic and Evolutionary Computation Conference, GECCO 2009, Proceedings, Montreal, Québec, Canada, July 8-12, 2009; 01/2009

Mark Coletti: *Learnable evolution model performance impaired by binary tournament survival selection*. Genetic and Evolutionary Computation Conference, GECCO 2009, Proceedings, Montreal, Québec, Canada, July 8-12, 2009, Companion Material; 01/2009

Mark Coletti: *A preliminary study of learnable evolution methodology implemented with C4.5*. Evolutionary Computation, 2002. CEC '02. Proceedings of the 2002 Congress on; 06/2002

Lynn Usery, George Timson, **Mark Coletti**: *A Multidimensional Geographic Feature System*. Proceedings of GIScience; 01/2002

Mark Coletti, Thomas D. Lash, Ryszard S. Michalski, Craig Mandsager, Rida E. Moustafa: *Comparing Performance of the Learnable Evolution Model and Genetic Algorithms.*. Proceedings of the Genetic and

Evolutionary Computation Conference (GECCO 1999), 13-17 July 1999, Orlando, Florida, USA; 01/1999

Technical Reports

Keith Sullivan, **Mark Coletti**, Sean Luke: *GeoMason: Geospatial Support for MASON*. 2010.

Nicholas Payette, Marius Bujorianu, Glen Ropella, Ken Cline, Jeffrey Schank, Matt Miller, Sara Jonsson, Laszlo Gulyas, Richard Legendi, Olaf Bochmann, Lu´ıs de Sousa, Vlasios Voudouris, Daniil Kiose, Przemyslaw Szufel, Steve Saul, John McManus, Vittorio Scarano, Gennaro Cordasco, Chris Hollander, Paul Wiegand, Vera Kazakova, Brian Hrolenok, J. Daniel Rogers, Michael Schader, Sean Luke, Kenneth De Jong, **Mark Coletti**, Paul Schopf, Claudio Cioffi-Revilla, Keith Sullivan, Khaled Talukder, Ahmed Elmolla, Ermo Wei: *Future MASON Directions: Community Recommendations Report of the 2013 MASON NSFWorkshop*.