

Ovi Chris Rouly, Ph.D.

1350 Beverly Rd.
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(858) 699 – 4647
maelzel@ieee.org

CLEARANCE	Active (TS/SCI poly)
EXPERTISE	Data Science, Modeling & Simulation, Computational Social Science, Agent-Based Modeling, and Discrete Event Complex Social Systems Simulation Technologies using Social Psychology, Anthropology, and Computer Science as Foundation Tools.
EDUCATION	<p>2007 - 2015 Ph.D. Computational Social Science George Mason University, Fairfax, Virginia</p> <p>1998 - 2000 M. S. Electrical Engineering New Mexico State University, Las Cruces, New Mexico</p> <p>1996 - 1998 B. S. Computer Science Eastern New Mexico University, Portales, New Mexico</p> <p>1994 - 1996 B. S. Psychology University of the Southwest, Hobbs, New Mexico</p> <p>1985 - 1987 A. A. S. Electronics Technology Mesa Community College, Mesa, Arizona</p>
ACTIVITIES / EMPLOYERS	<p>2022-present Sci. Eng. & Tech. Advisor; Bluemont Tech. / IARPA; Maryland. Sub-contract consultant (SETA) to the Intelligence Advanced Research Projects Activity (IARPA) for social-spatial, urban, Digital Twin big-data analytics.</p> <p>2020-2022 Research Scientist; NGA, U.S. Government, Virginia. Program management service on research efforts including:</p> <ul style="list-style-type: none">• Three programs; 2 programs-of-record and 1 new start• Two Small Business Innovative Research (SBIR) programs• Subject Matter Expertise on 3 NGA academic grants• Coordinated the performance of contract employees• Contributed numerous ‘new program concept’ ideas <p>2019-2020 Research Fellow; Tulane University, New Orleans, Louisiana. Software services to DARPA <i>Ground Truth</i> Research Program for social-spatial big-data analytics.</p>

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- 2018-2019** **Instructor in Mathematics; Orange County Public Schools and Kelly Educational Staffing, Orlando, Florida.**
Taught middle-school and high-school classes in mathematics and general studies.
- 2017-2019** **Scientist; Complex Systems Modeling, LLC; Orlando, Florida.**
Co-owner of a small business dedicated to custom research and development of software involving complex systems.
- 2017 - 2017** **Visiting Assistant Research Professor; UCF; Orlando, Florida.**
Engaged to create an “at scale” model of the internet inhabited by independent, interacting, cognitive/affective artificial agents. Agent-Based Model technology. Work sponsored by the Defense Advanced Research Project Agency (DARPA).
- 2016 - 2017** **Lecturer in Computational Social Science; ETH; Zürich, Switzerland.**
Spring 2017: ETH Zürich, Lecturer in Computational Social Science, [851-0585-44L Social Modelling, Agent-Based Simulation, and Complexity](#), Department of Humanities, Social and Political Sciences program in Computational Social Science.
Fall 2016: ETH Zürich: Seminar Leader in Computational Social Science, [851-0585-41L Computational Social Science](#), Department of Humanities, Social and Political Sciences program in Computational Social Science program in Computational Social Science
Spring 2016: ETH Zürich, Lecturer in Computational Social Science, [851-0585-37L Social Modelling, Agent-Based Simulation and Collective Intelligence](#), Department of Humanities, Social and Political Sciences program in Computational Social Science.
- 2015 - 2016** **Sci. Eng. & Tech. Advisor; Vencore/ONR; Arlington, Virginia.**
Sub-contract consultant (SETA) to the Office of Naval Research (ONR). Performed as a technical consultant to ONR for Augmented Reality (AR) and Virtual Reality (VR) systems assessments. Additionally, had responsibilities for proposal technical evaluation, domain-specific technical evaluations, and writing applied technology drafts for Small Business Innovative Research (SBIR) research grants.
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- 2015** **Ph.D. dissertation; George Mason University.**
Dissertation title: *Towards Emergent Social Complexity*
- 2007 - 2015** **Ph.D. student; George Mason University, Fairfax, Virginia.**
Java and C# modeling and simulation (Agent-Based Modeling and discrete-event/micro-simulation). Developed Agent-Based Models for three projects: 1) a model of country-level human social culture behavior (HSCB) of south-central Asia (Afghanistan) developed for the DoD Joint Improvised Explosive Device Defeat Organization (JIEDDO), 2) a software model of human migrations developed for publication, and 3) a model of virtual agents having affective-cognitive small-group social activity in a virtual world. Published and presented findings in journals and conferences in Australia, Europe, and the United States. Authored technical papers, reports, and briefing materials as required.
- 2012 - 2014** **Software Eng.; Harmonia Holdings, Blacksburg, Virginia.**
Managed and coordinated the work product of a small team of Java developers using an agile software development process. Created a prototype, socio-temporal, 'Prediction Engine' based on a spatial Agent-Based Model (ABM) driving an Anticipatory Learning Classifier System (ALCS). Used various Machine Learning (ML), Evolutionary Algorithms (EA), and Genetic Algorithms (GA) techniques to develop a compute cluster-based adaptive system to pre-place defense weapons platforms. Work done under a subcontract for Department of Defense (DoD) Missile Defense Agency (MDA).
- 2010 - 2011** **Software Eng.; Camber; Centreville, Virginia.**
Worked within Java in a small team of Java developers using an agile software development process. Project deliverable was a spatial Agent-Based Modeling (ABM) using human social culture behavior (HSCB) theories. The software modeled suspicious pedestrian social behavior at a large public event. Incorporated applied and explicit Geographic Information System (GIS) data. Work done under a subcontract into Department of Homeland Security (DHS).

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- 2006 - 2006 Sci. & Eng. Advisor; I3/US Army; Arlington, Virginia.**
Sub-contract consultant (SETA) to the US Army Rapid Equipping Force (USA REF) and Joint Improvised Explosive Device Defeat Organization (JIEDDO) for technology analysis, systems assessment, and support. Produced and presented findings and recommendations to a team of colleagues and clients after reviews of relevant weapon systems. Prepared brief materials describing government research and development efforts. Provided systems technical reviews and evaluation, and quantitative assessment. Traveled Continental United States (CONUS) as required.
- 2004 - 2006 Sci. Eng. & Tech. Advisor; SRS/DARPA; Arlington, Virginia.**
Sub-contract consultant (SETA) to the Defense Advanced Research Project Agency (DARPA) US Army/DARPA transition liaison office. Assisted DARPA Program Managers (PMs) with technology transition to the warfighter across diverse fields: bioengineering, robotics, information technologies, and small man-portable systems, etc. Work involved responsibilities with systems-assessments, identification of technology gaps, tech evaluation, technical risk management, and technology transfer from DARPA to the US Army. Traveled Continental United States (CONUS) as required.
- 2003 - 2004 Sys. Eng.; Raytheon; Arlington, Virginia.**
Worked with business development, marketing, and systems engineering to develop innovative, new cognitive, unmanned, and robotic systems for Raytheon Department of Defense (DoD) customers using autonomous and adaptive systems design theory.
- 2003 - 2003 Adj. Fac. Elec. Eng.; George Mason University; Fairfax, Virginia.**
Taught undergraduate seniors a “capstone course” in microcontroller-based systems design and development. Helped students develop problem solving skills, improve system designs, instantiate novel but operational hardware/software implementations, use control theory, sensors, motors, light-emitting elements, and other input/output devices.

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AWARDS

Single-Author: Winner best paper award at the 2015 Australian Conference on Artificial Life and Computational Intelligence.

Co-Author: Winner best paper award at the 2018 International Conference on Autonomous Agents and Multiagent Systems (AAMAS).

SERVICE

- 2016 ETH Computational Social Science (COSS) team leader to European Research Council
- 2016 Reviewer for European Conference on Artificial Intelligence
- 2016 Reviewer for Australian Conference on Artificial Life and Computational Intelligence

PUBLICATIONS

Kim, J., Kavak, H., **Rouly, C.**, Jin, H., Crooks, A., Pfoser, D., Wenk, C., & Züfle, A. **(2020)**. Location-Based Social Simulation for Prescriptive Analytics of Disease Spread. *28th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2020)*. Seattle, Washington. 3-6 November 2020.

Kim, J.-S., Jin, H., Kavak, H., **Rouly, O.**, Crooks, A., Pfoser, D., Wenk, C., & Züfle, A. **(2020)**. Location-Based Social Network Data Generation Based on Patterns of Life. In R. H. Güting, Wolfson, O., Youssef, M. (Eds.). *Proc. of the 21st IEEE International Conference on Mobile Data Management. (MDM 2020)*. Versailles, France. June 30-July 3, 2020.

Rosés, R., Kadar, C., Gerritsen, C., and **Rouly, O. (2020)**. Simulating Offender Mobility: Modeling Activity Nodes from Large-Scale Human Activity Data. *Journal of Artificial Intelligence Research*. Vol. 68. pp. 541-570.

Rosés, R., Kadar, C., Gerritsen, C., and **Rouly, O. (2018)**. Agent-Based Simulation of Offender Mobility: Integrating Activity Nodes from Location-Based Social Networks. In M. Dastani, G. Sukthankar, E. André, S. Koenig (Eds.). *Proc. of the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018)*. Stockholm, Sweden. July 10–15, 2018.

Rouly, O. (2018). A Computer simulation to investigate the association between gene-based gifting and pair-bonding in early hominins. *Journal of Human Evolution*. Vol. 116C. pp. 43-56.

Caduff, I., Krummenacher, S. & **Rouly, O. (2017)**. Power law distribution of language families using an agent-based model. *Proceedings of the Computational Social Science Society 2017 Conference*. Santa Fe, New Mexico, USA. 19-22 October 2017.

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Rouly, O. (2016). Artificial Intelligence using P-Type Unorganized Machines. *The Rutherford Journal*, 5(16). Retrieved 12 September 2016, <http://dotbu.com/PHIL/> ISSN: 1177-1380.

Rouly, O. (2015). Towards Emergent Social Complexity. Unpublished dissertation. George Mason University, Fairfax, Virginia, USA.

Rouly, O. (2015). At the root of sociality: Working towards emergent, permanent, social affines. In Andrews, P., Caves, L., Doursat, R., Hickinbotham, S., Polack, F., Stepney, S., Taylor, T. & Timmis, J. (Eds.). *Proceedings of the European Conference on Artificial Life 2015*. pp. 82-89, MIT Press.

Rouly, O. (2015). ALife using Adaptive, Autonomous and Individual Agent Control. In Chalup, S., Blair, A. & Randall, M. (Eds.). *Proceedings of the Australian Conference on Artificial Life and Computational Intelligence (ACALCI 2015)*. University of Newcastle, Australia.

Rouly, O. (2014). Midwife: CPU cluster load distribution of Virtual Agent AIs. In Barolli, L and Xhafa, F. (Eds.). *Proceedings of the 8th International Conference on Complex, Intelligent, and Software Intensive Systems*, Birmingham, UK.

Rouly, O. & Kennedy, W. (2011). Sexually differentiated philopatry and dispersal: A demonstration of the Baldwin effect and genetic drift. *Proceedings of the Computational Social Science Society 2011 Conference*. Santa Fe, New Mexico, USA. 9-12 October 2011.

Hendrey, M., **Rouly, O.**, West, J., Kennedy, W., & Axtell, R. (2010). Abstract. Social decision-making processes in tribal Afghanistan: An agent-based model. *Proceedings of the Computational Social Science Society 2010 Conference*. Arizona State University, Tempe, Arizona, USA. 4-6 November 2010.

Rouly, O. C., and Crooks, A. (2010). A prototype, multi-agent system for the study of the Peopling of the Western Hemisphere. In *Proceedings of the 3rd World Congress on Social Simulation (WCSS2010): Scientific Advances in Understanding Societal Processes and Dynamics*, A. Ernst and S. Kuhn, eds. Kassel, Germany.

Rouly, O. & Crooks, A. (2010). Abstract. A prototype, multi-agent system for the study of the peopling of the western hemisphere. *Proceedings of the Computational Social Science Society 2010 Conference*. Arizona State University, Tempe, Arizona, USA, 4-6 November 2010.

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Rouly, O. (2009). *In search of the roots of social complexity*. Unpublished Manuscript. George Mason University, Fairfax, Virginia.

Axtell, R. & **Rouly, O. (2008)**. The sports league formation problem: Case of the Washington Area Girls Soccer League. *Proceedings of the Second World Congress on Social Simulation*, George Mason University, Fairfax, Virginia, USA. 14-17 July 2008.

Rouly, O. (2007). Learning automata and need-based drive reduction. In Ha, Q. & Kwok, N. (Eds.) *Proceedings of the 8th International Conference on Intelligent Technologies (InTech)*. University of Technology, Sydney, Australia.

Rouly, O. (2004). A viewpoint on embodied synthetic agency. *American Association for Artificial Intelligence Fall Symposium*. Arlington, Virginia, USA. 22-24 October 2004.

Rouly, O. (2000). *Cybernetic intelligence: A return to complex qualitative feedback theory*. Unpublished thesis. New Mexico State University, Las Cruces, New Mexico, USA.