Social *in silico* Research Forum

The Social *in silico* Research Forum (SISR; pronounced "scissor forum") is an academic interest group consisting of researchers. The mission of SISR is to understand emergent large-scale social behavior as a function of individual psychological processes using *in silico* research methods.

Resources

Coordinator	Ian Dennis Miller
Website	`http://imiller.utsc.utoronto.ca/research/sisr.html`
Charter	`http://imiller.utsc.utoronto.ca/pub2/sisr_2016.pdf`

Organization

Meetings

The group meets once per week at the University of Toronto. Meetings are held Mondays at 10am EST (Toronto time) and they run for 2 hours. Meetings will be simulcast via online video conferencing so that remote members may participate.

Agenda

1. old business
2. announcements and new business
3. project updates and brainstorming
4. discuss readings
5. presentation[1]
6. closing

[1] If we achieve a critical mass of group members, we will add weekly rotating presentations.

Projects

Members of the group should conduct a project that makes use of SISR's methods or advances SISR's scholarly objectives. Completed projects should be published in peer reviewed journals and disseminated at academic conferences as posters and presentations. Before undertaking a project, please write and share a brief proposal.

Materials

We strive to standardize our tool use across projects so that it is as easy as possible to share our work. In selecting software, we favor Free and Open Source Software to maximize third-party reproducibility of results. The following table contains an abbreviated software list.

Software

Name	Description	Link
RStudio	A statistics language and environment.	https://www.rstudio.com/
Zotero	Citation management.	https://www.zotero.org/
NetLogo	Pedagogical ABM environment.	http://ccl.northwestern.edu/netlogo/
MASON	Java ABM library.	https://cs.gmu.edu/~eclab/projects/mason/
Octave	Computational language; compatible with MATLAB.	https://gnu.org/software/octave/
NWB	Network Workbench; Social Network Analysis	http://nwb.cns.iu.edu/
Gephi	Graph visualization.	https://gephi.org/
Python	General programming language.	http://python.org/
Flask-Diamond	Python Application Framework.	http://flask-diamond.org/

Academic Society

A scholarly discussion is taking place in journals and at conferences. The following tables provide a starting point for finding the conversation. These are also outlets for contributing to the conversation.

Journals

Name	Impact	Link
Nature	41.296	http://nature.com/
Science	33.194	http://www.sciencemag.org/

Journals

Name	Impact	Link
Psychological Bulletin	22.155	http://www.apa.org/pubs/journals/bul/
Psychological Review	11.398	http://www.apa.org/journals/rev/
Proceedings of the National Academy of Science	10.563	http://www.pnas.org
Journal of Applied Psychology	7.753	http://www.apa.org/pubs/journals/apl/
Journal of Personality and Social Psychology	7.521	http://www.apa.org/pubs/journals/psp/
Psychological Science	6.473	http://pss.sagepub.com/
Journal of Experimental Psychology: General	6.268	http://www.apa.org/pubs/journals/xge/
American Journal of Sociology	5.326	http://www.journals.uchicago.edu/toc/ajs/current
Ecological Modelling	2.752	http://www.elsevier.com/locate/ecolmodel
Social Forces	2.236	http://sf.oxfordjournals.org/
Artificial Life	1.386	http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6720217
Social Science Computer Review	1.364	http://ssc.sagepub.com
Journal of Autonomous Agents and Multi-Agent Systems	1.254	http://www.springer.com/computer/ai/journal/10458
Journal of Artificial Societies and Social Simulation	1.155	http://jasss.soc.surrey.ac.uk/
Journal of Economic Interaction and Coordination	0.962	http://link.springer.com/journal/11403
Simulation	0.818	http://sim.sagepub.com/
International Journal of Microsimulation	0	http://microsimulation.org/ijm
Social Network Analysis and Mining	0	http://link.springer.com/journal/13278

Conferences

Short	Full	Link
APS	Association for Psychological Science	http://aps.psychologicalscience.org/convention/
ASONAM	ACM International Conference on Advances in Social Networks Analysis and Mining	https://duckduckgo.com/?q=ASONAM
CCS	Conference on Complex Systems	https://duckduckgo.com/?q=conference+on+complex+systems
CHI	ACM Computer-Human Interaction	http://www.sigchi.org/
CI	Collective Intelligence Conference	https://duckduckgo.com/?q=collective+intelligence+conference
CSCW	ACM Computer-Supported Cooperative Work and Social Computing	http://cscw.acm.org/
CSSSA	Computational Social Science Society of the Americas	https://computationalsocialscience.org
HT	ACM Hypertext	http://ht.acm.org/

Conferences

Short	Full	Link
ICCSS	International Conference on Computational Social Science	http://www.kellogg.northwestern.edu/news-events/conference/ic2s2/
ICWSM	AAAI Conference on Web and Social Media	http://www.icwsm.org/
SPSP	Society for Personality and Social Psychology	http://spspmeeting.org/
WCCI	World Congress on Computational Intelligence	http://cis.ieee.org/
WI	International Conference on Web Intelligence	https://duckduckgo.com/?q=ACM+Conference+on+Web+Intelligence
WSC	ACM Winter Simulation Conference	https://duckduckgo.com/?q=acm+wintersim
WSDM	ACM Web Search and Data Mining	http://www.wsdm-conference.org/
WWW	ACM International World Wide Web Conference	http://www.iw3c2.org/

Institutions, Labs, and Other Groups

Name	Link
Santa Fe Institute	http://www.santafe.edu/
Brookings Institute	http://www.brookings.edu/
MIT Center for Collective Intelligence	http://cci.mit.edu/
Manchester Centre for Policy Modelling	http://cfpm.org/
GMU Computational Social Science	http://css.gmu.edu/
Surrey Centre for Research in Social Simulation	http://cress.soc.surrey.ac.uk/
International Microsimulation Association	http://microsimulation.org/
UMich Center for the Study of Complex Systems	http://www.lsa.umich.edu/cscs
LSE Complexity Group	http://lse.ac.uk/complexity
New England Complex Systems Institute	http://necsi.edu/
Groningen Center for Social Complexity Studies	http://www.rug.nl/research/gcscs/
Northwestern Center for Connected Learning	http://ccl.northwestern.edu/
Harvard Institute for Quantitative Social Science	http://www.iq.harvard.edu/
International Network for Social Network Analysis	http://insna.org/
ASU Research Network for Computational Modeling in the Social and Ecological Sciences	https://shesc.asu.edu/research/projects/research-network-computational-modeling-social-and-ecological-sciences-comses-net

Websites

Link	Description
https://www.openabm.org/	"...a growing collection of tutorials and FAQs on agent-based modeling"
http://modelingcommons.org/	NetLogo Modeling Commons

Literature

Keywords

Agent-Based Modeling; Individual-Based Modeling; Simulation; Computational Social Science; Computational Social Psychology; Computational Psychology; Complexity; Complexity Science; Emergence; Emergent Systems; Social Systems; Quantitative Social Science; Dynamic Systems;

Textbooks

Edmonds and Meyer (2015); Wilensky and Rand (2015); Railsback and Grimm (2011); Gilbert and Troitzsch (2005);

Reading Plan

Topic	Readings
Sugarscape, part 1	Epstein and Axtell (1996). Ch 1-3.
Sugarscape, part 2	Epstein and Axtell (1996). Ch 4-6.
Computational Social Science	Mann (2016).
Agent-Based Modeling	Bonabeau (2002).
ABM Toolkits	Tisue and Wilensky (2004); Luke et al. (2005);
Arguments for ABM	Chattoe-Brown (2012).
ABM Specification	Grimm et al. (2014).
Networks	Watts and Strogatz (1998);
Evolution	Chattoe-Brown and Edmonds (2013).
Complexity	Barabási (2007)
Diffusion	Centola and Macy (2007);
Psychology	Smith and Conrey (2007).
Sociology	Macy and Willer (2002);
Epidemiology	Barrett et al. (2005);
Politics	Cioffi-Revilla and Rouleau (2010).
Economics	Farmer and Foley (2009);
Cities	Barrett et al. (2004)
Crowds	Helbing et al. (2000);
Virality	Leskovec et al. (2007);

References

Barabási, A.-L. (2007). The architecture of complexity. *Control Systems, IEEE*, *27*(4), 33–42.

Barrett, C. L., Eubank, S. G., Kumar, V. S. A., & Marathe, M. V. (2004). Understanding Large-Scale Social and Infrastructure Networks: A Simulation-Based Approach. *SIAM News*.

Barrett, C. L., Eubank, S. G., & Smith, J. P. (2005). If smallpox strikes portland... *Scientific American*, *292*(3), 54–61.

Bonabeau, E. (2002). Agent-based modeling: Methods and techniques for simulating human systems. *Proceedings of the National Academy of Sciences*, *99*(suppl 3), 7280–7287.

Centola, D., & Macy, M. (2007). Complex Contagions and the Weakness of Long Ties. *American Journal of Sociology*, *113*(3), 702–734.

Chattoe-Brown, E. (2012, October). How do we convince agent-based modeling agnostics? *Religion, Brain & Behavior*, *2*(3), 201–203.

Chattoe-Brown, E., & Edmonds, B. (2013). Evolutionary mechanisms. In *Simulating Social Complexity* (pp. 455–495). Springer.

Cioffi-Revilla, C., & Rouleau, M. (2010). MASON RebeLand: An Agent-Based Model of Politics, Environment, and Insurgency1. *International Studies Review*, *12*(1), 31–52.

Edmonds, B., & Meyer, R. (2015). *Simulating Social Complexity*. Springer.

Epstein, J. M., & Axtell, R. L. (1996). *Growing Artificial Societies: Social Science from the Bottom Up*. Brookings Institution Press.

Farmer, J. D., & Foley, D. (2009). The economy needs agent-based modelling. *Nature*, *460*(7256), 685–686.

Gilbert, N., & Troitzsch, K. (2005). *Simulation for the social scientist*. McGraw-Hill Education (UK).

Grimm, V., Augusiak, J., Focks, A., Frank, B. M., Gabsi, F., Johnston, A. S. A., ...

Railsback, S. F. (2014, May). Towards better modelling and decision support: Documenting model development, testing, and analysis using TRACE. *Ecological Modelling*, *280*, 129–139.

Helbing, D., Farkas, I., & Vicsek, T. (2000). Simulating dynamical features of escape panic. *Nature*, *407*(6803), 487–490.

Leskovec, J., Adamic, L. A., & Huberman, B. A. (2007). The dynamics of viral marketing. *ACM Transactions on the Web (TWEB)*, *1*(1), 5.

Luke, S., Cioffi-Revilla, C., Panait, L., Sullivan, K., & Balan, G. (2005, July). MASON: A Multiagent Simulation Environment. *SIMULATION*, *81*(7), 517–527.

Macy, M. W., & Willer, R. (2002). From factors to actors: Computational sociology and agent-based modeling. *Annual review of sociology*, 143–166.

Mann, A. (2016, January). Core Concepts: Computational social science. *Proceedings of the National Academy of Sciences*, *113*(3), 468–470.

Railsback, S. F., & Grimm, V. (2011). *Agent-based and individual-based modeling: a practical introduction*. Princeton university press.

Smith, E. R., & Conrey, F. R. (2007, February). Agent-Based Modeling: A New Approach for Theory Building in Social Psychology. *Personality and Social Psychology Review*, *11*(1), 87–104.

Tisue, S., & Wilensky, U. (2004). Netlogo: A simple environment for modeling complexity. In *International conference on complex systems* (Vol. 21). Boston, MA.

Watts, D. J., & Strogatz, S. H. (1998). Collective dynamics of 'small-world'networks. *nature*, *393*(6684), 440–442.

Wilensky, U., & Rand, W. (2015). *An introduction to agent-based modeling: modeling natural, social, and engineered complex systems with NetLogo*. MIT Press.