

Joseph Angus Corneli

I have experience in research and open source innovation, through which I've gained unique insights into collective and artificial intelligence, and what happens when they're combined.

Technical Skills: Research design, Mathematics, Programming. I've worked on Web development in PHP; multi-agent systems, document modeling, and knowledge representation in LISP; an automated programming interface in Clojure; and data science in Python.

Business Skills: The ability to ask challenging, thought-provoking, questions, and the perseverance needed to get to a satisfying answer. An awareness of good managerial practices, including attentive listening and positive reinforcement of individual initiative.

Professional Experience

08/2019–present **Director** *Hyperreal Enterprises, Ltd.*

Applying computational and mathematical methods to extract semantics from text and interactions.

- Early stage research and prototyping, targeting an RFP for projects in applied category theory.

02/2017–07/2019 **Research Associate** *School of Informatics, University of Edinburgh*

Analysis of dialogue transcripts and technical tools, leading to new process models and designs.

- Computational models of mathematical creativity based on data from online collaboration.
- Proof development and system interfaces for the Lean theorem prover.
- Design requirements for a large database of mathematical definitions and theorems.
- New Master's-level course "Data Science for Design" that included an innovative 'data fair'.
- Supervision of Master's project: "Importing mathematics formulas from Wikipedia to Wikidata".
- Prepared individual and group proposals for UK government funding.

11/2013–01/2017 **Research Associate** *Goldsmiths College, University of London*

New designs for integrating information based on a theory of creativity from cognitive science.

- Clojure code that interoperates with a Java codebase for program synthesis.
- Theoretical models and simulations of social creativity, using LISP.
- 8 papers in the leading computational creativity conference; Best Paper Award in 2016.

01/2013–10/2013 **Research Assistant** *The Open University, Knowledge Media Institute*

Generated interactive digital stories to assist curators at major European museums.

- Responsible for maintaining a Semantic Web model of a complex Drupal website.
- Programming in LISP to facilitate recombination of materials in curatorial workflows.

01/2012–present **Facilitator** *Peeragogy Project*

Advised on collaborative projects and managed the workflow for a multiauthor book.

- Widely cited in the literature on Massive Open Online Courses and beyond.
- Hosted a long-running online seminar series with speakers from around the world.
- Wrote a brief on Open Educational Resources for a societal transformation project in Ecuador.

09/2003–present **Co-Director** *PlanetMath.org, Ltd.*

User research and innovation with one of the first collaboratively written online encyclopedias.

- When I uploaded my collection of definitions and theorems, I became the site's top contributor.
- Organisational strategy to sustain the project; outreach to users and other organisations.
- Improvements to the contribution model to gather information on mathematical problem solving.
- Prototype development in LISP and PHP; Finalist in Elsevier's Executable Paper Challenge.

05/2003–08/2003 **Technical Associate** *Cycorp, Inc.*

Programming and data management at an artificial intelligence company.

Book

JC, C. J. Danoff, C. Pierce, P. Ricuarte, and L. Snow MacDonald, eds. *The Peeragogy Handbook*. 3rd ed. Chicago/Somerville: PubDomEd/Pierce Press, 2016, 272 pages. (peeragogy.org)

“Howard Rheingold and a great team of collaborators have preceded the rest of humanity in exploring the new dynamics of technologically-enhanced peer learning.” - Michel Bauwens (from back cover).

Peer Reviewed Publications

7 in journals, 22 in conferences, 13 in workshops; 5 book chapters. Citations: 635, h-index: 16.

Selected recent publications include:

JC, U. Martin, D. Murray-Rust, G. Rino Nesin, and A. Pease. Argumentation Theory for Mathematical Argument. In: *Argumentation* 33.2 (June 2019), pp. 173–214.

A. Pease, J. Lawrence, K. Budzynska, JC, and C. Reed. Lakatos-style Collaborative Mathematics through Dialectical, Structured and Abstract Argumentation. In: *Artificial Intelligence* 246 (2017), pp. 181–219.

JC, D. Murray-Rust, and B. Bach. Towards Open-World Scenarios: Teaching the Social Side of Data Science. In: *Cybernetic Serendipity Reimagined Symposium, Proc. Annual Convention of the Society for the Study of Artificial Intelligence and Simulation of Behaviour, University of Liverpool, Liverpool, UK, 4th-6th April 2018*. Ed. by JC, C. Gucklesberger, C. Johnson, and A. Jordanous. 2018.

M. Kaliakatsos-Papakostas, R. Confalonieri, JC, A. Zacharakis, and E. Cambouropoulos. An Argument-based Creative Assistant for Harmonic Blending. In: *Proceedings of the Seventh International Conference on Computational Creativity, ICCO 2016*. Ed. by A. Cardoso, F. Pachet, V. Corruble, and F. Ghedini. 2016. (Recipient of ICCO 2016's **Best Paper Award**.)

Degrees

2014 PhD in Computing from The Open University.

2002 BA in Mathematics from New College of Florida.

Personal

US Citizen, with Indefinite Leave to Remain in the UK.

Samples of software

PHP	<i>Mathematical science web portal.</i> https://github.com/MathHubInfo/Legacy-planetary
Clojure	<i>Interface for automatic programming.</i> https://github.com/holtzermann17/FloWrTester
Emacs Lisp	<i>Hypertext and knowledge representation system.</i> https://repo.or.cz/w/arxana.git
Emacs Lisp	<i>Cellular automata experiments.</i> https://github.com/holtzermann17/metaca
Python	<i>Distributed update of biographies.</i> https://github.com/BioBib/BibProject
Lean	<i>Proofs and system interfaces.</i> https://github.com/holtzermann17/lean_experiments

Contact

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