

Editorial

PIETRO MICHELUCCI, Human Computation Institute

ELENA SIMPERL, University of Southampton

“In the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed.” – Charles Darwin, 1859

“The computer is incredibly fast, accurate, and stupid. Man is incredibly slow, inaccurate, and brilliant. The marriage of the two is a force beyond calculation.” – Leo Cherne, 1968

1. INTRODUCTION

We are not the first to recognize the tremendous potential of human cooperation, nor are we the first to consider the capabilities that might be enabled by bringing together humans and computing machines. Nonetheless, with this inaugural issue of *Human Computation* we come together earnestly, as a global, interdisciplinary scientific community to manifest these phenomena toward their very advancement.

The diversity of our community, however, gives rise to both benefits and challenges. While we can expect to inspire new ideas by sharing discoveries, methods, and results across disciplines, we may also encounter barriers of culture and communication. Indeed, the development of our first few issues has already revealed the complexity of executing peer review in such a space. This experience has reinforced the guiding principle that the content of this journal is driven by purpose rather than approach. We use the term “transdisciplinary” to convey this emphasis.

Thus, we seek to combine perspectives and research within and across scholarly disciplines to further the development of theoretical frameworks, design methods, analytic approaches, interaction techniques, participatory mechanisms, as well as technology and infrastructure toward understanding and implementing information-processing systems that combine humans and machines to achieve unprecedented capabilities.

2. STATE OF THE FIELD

These are exciting times for Human Computation researchers. The publication of this issue occurs on the heels of a Computing Research Association visioning activity to develop a U.S. national research roadmap in human computation, and directly precedes the second annual HCOMP conference, to be held in Pittsburg next month. In parallel to these activities, a burgeoning community of citizen scientists, which also employs and innovates human computation methods, has been self-organizing by creating a new professional association and launching a forthcoming journal of its own. As industry and government interest in human computation grows and public awareness increases, we can only expect to see increasing opportunities for research in this space.

3. CONTENTS OF THIS ISSUE

It is one thing to assert the existence of collective intelligence, but quite another to measure it. Simon DeDeo provides an illuminating and rigorous treatment of collective intentions, beliefs, and values. Using Wikipedia as a case study, he evaluates the hypothesis that group level mental states can be distinct from and irreducible to the mental states of its individual constituents.

The work of Lora Aroyo and Chris Welty shares a similar goal, though they approach the problem of measuring crowd behavior and performance from a slightly different perspective. They propose a revised model for human-derived ‘gold standards’ conventionally used in Computer Science to assess the accuracy of any information processing task. More specifically, their model explores the tantalizing possibility that disagreement among crowdworkers, rather than merely indicating poor annotation quality, may actually be informative about problematic tasks, and go on to provide an empirical framework that captures these cases and celebrates the diversity of human opinion.

A cornerstone of theoretical Computer Science has been the ability to specify the complexity of computational problems; that is, to classify such problems in terms of the resources needed to solve them. This has enabled computer scientists to understand which problems are best suited to algorithmic (deterministic) processes and to align a given problem with the most appropriate approach. R. Jordan Crouser, Benjamin Hescott, and Remco Chang boldly undertake the challenge of defining an analogous complexity framework for systems with humans-in-the-loop, which begins to build a theoretical foundation for performance-based modeling in human computation.

Until recently, crowdsourcing has been an offline task due to the serialized process of first recruiting participants and then collecting data. Walter Lasecki, Christopher Homan, and Jeffrey Bigman survey new, on-demand crowd-powered systems in order to provide an architectural framework, replete with techniques and careful instructions for replicating recent successes in designing and implementing such real-time systems.

Celebrated cultural anthropologist Mary Catherine Bateson concludes this issue with an incisive perspective that considers the interplay of individuality and connectedness toward self-actualization. As we build systems that collect and aggregate human contributions, we are cautioned to preserve and recognize the impact of individual voices and actions.

We hope you find this first issue of *Human Computation* both stimulating and useful. We are grateful to our initial contributors for choosing this forum for their high quality work and to our esteemed board of editors and advisors for their enduring support as we worked together to build and launch this journal. And finally, dear reader, we look forward to including your own scholarly work in future issues.

Collectively yours,

Pietro Michelucci & Elena Simperl
Co-Editors-in-Chief
Human Computation