Welcome to FIERCES 2017 / BICA 2017!

The challenge to replicate all the key features of the human mind in a digital environment using a biologically inspired approach (the BICA Challenge) is the spirit and the core of the new frontier that every year attracts more and more young scientists. Its counterpart challenge of Cybersecurity acquires priority as we advance deeper and deeper into the uncharted territory. After many decades of progress in the field of artificial intelligence, problems that we are facing today require a fresh, multidisciplinary view. We need to learn from scratch how to achieve goals that could never be taken seriously in the past, with an understanding that a novel approach is necessary, because essential qualities of biological intelligent systems like robustness, flexibility, adaptability, communicability, and reliability are still unmatched by their artificial counterparts.

This brochure serves as a participant guide for two events, taking place back-to-back at the same location: (1) the First International Early Research Career Enhancement School (FIERCES) on Biologically Inspired Cognitive Architectures and Cybersecurity, which is the second meeting of the FIERCES series, and (2) The 2017 Annual International Conference on Biologically Inspired Cognitive Architectures, also known as the Eighth Annual Meeting of the BICA Society. The events are being held in Baltschug Kempinski hotel in Moscow, Russia, during August 1-6, 2017. Their mission is to facilitate the interaction and collaboration among top experts in the field (including such names as Agnese Augello, Olivier Georgeon, Ricardo Gudwin, Ignazio Infantino, Frank Krueger, Adriano Manfre', Giovanni Pilato, Aaron Sloman, Filippo Vella) and young researchers, who devoted themselves to solution of the BICA Challenge, by bridging cross-disciplinary, cross-generation and cross-cultural barriers.

Biologically Inspired Cognitive Architectures (BICA) are computational blueprints for building artificial intelligent agents, inspired from natural prototypes. They help us to utilize the vast accumulated knowledge about the brain in order to learn from nature how to build intelligent systems. At the same time, new techniques and concepts complement the main focus of the forum. As a consequence, this double-event becomes highly interdisciplinary in nature and will yield bi-directional flow of understanding between experts in all involved disciplines.

Therefore, topics of talks and posters included in the program and in the accompanying electronic volume extensively cover the most advanced scientific fields relevant to BICA that are traditionally considered at the international level of significance and discussed at many mainstream national and international conferences on artificial intelligence, neuroscience and cognitive modeling, including conferences organized by BICA Society. The list of the latter is quite long. Beginning with the AAAI Fall Symposia on BICA (2008, 2009), the Annual International Conference on BICA has been held every year since 2010, demonstrating progressively growing popularity. Locations of the conference included Washington, DC (2010); Palermo, Italy (2012); Kiev, Ukraine (2013); Cambridge, Massachusets (2014); Lyon, France (2015); and New York, USA (2016). The 2017 BICA event in Moscow, however, is unique in its kind, because it brings the conference and the school together.

In this year we received a record number of qualified submissions for a BICA event, that were carefully peer-reviewed. Not all of them were included in the program. Among those, selected papers were selected for publication in prestigious venues, indexed in Web of Science and Scopus. These publication venues include a special volume of Procedia Computer Science and a special volume of Springer Series “Advances in Intelligent Systems and Computing”. In selecting those papers, we paid attention to their scientific quality and relevance to the above challenges.

All published works have been carefully peer-reviewed and refereed, and reflect the high level of ongoing research and development in participating leading universities and research centers around the world, including those the US, in France, Germany, Italy, Spain, Japan, Brazil, China, Ukraine, Belarus, and also in Russia (Moscow, St. Petersburg, Novosibirsk and other Russian cities). The list of our Reviewers was equally widely distributed around the globe. Some good papers were recommended for publication in the journal Biologically Inspired Cognitive Architectures. We are grateful to all Authors and Reviewers for their great job.

* BICA / FIERCES 2017 Organizers