# Weird Processing Units for New Programming and Applications

Most central processing units available in contemporary computers or mobile devices are based on principles known and unchanging for decades. Due to the stagnancy of base way of operation, increasing speed and efficiency is met with more and more difficulty. This work presents so called Weird Processing Units, innovative and original processors that can solve certain classes of tasks differently and more efficiently.

Weird Processing Units begin with a main idea that expands into full architecture and programming language specification. Architecture properties are tested and verified using the development tools and simulator created according to the specification. Hardware versions of Weird Processing Unit are implemented on FPGA devices.

Specific architecture named 2DWPU was chosen for presentation, based on positive results from experiments. Complex mathematical calculations and other operations are automatically spread over available cores by the hardware portion of the architecture, increasing efficiency and speed. Furthermore, no extra programmer effort is required to parallelize the code.

Simulation of simple virtual organisms was implemented on this architecture, where the behavior each one of them was characterized by a set of variables. Proposed architecture automatically scales the algorithms over varying number of available cores, increasing the speed with additional cores. Describing the behavior via assembly code was simplified as well, allowing better efficiency in the programming stage.