The brain in silicon: history, and skepticism

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Abstract

The suggestion of getting inspiration from neural architectures in designing microprocessors, the "brain in silicon" idea, has lurked around the twists and turns of the computer history, almost since its beginning. More precisely, three main periods during which this idea turned into practical projects can be identified. The first neural hardware was designed by Marvin Minsky in 1951, building upon the logical interpretation of neural activity by McCulloch and Pitts, and was followed by just few more attempts. After a long period of an almost complete lack of progress, a renewed interest sparked at the end of the 80's, with several founded projects in Europe, US, and Japan. At the beginning of this century, almost no results of all that effort reached maturity. In the last few ears, a new wave of enthusiasm spread around, with forecast of a revolution in microprocessor design, that closely were to mimic the previous two periods. Despite obvious progress and changes in the technology and knowledge of neural mechanisms, the analysis of those three periods shows a shared the view on the main reason why the brain in silicon should be successful. We argue that this principle is theoretically flawed, and therefore the premises for the success of this approach are weak.

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