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Christof Teuscher

Turing's Connectionism

An Investigation of Neural Network Architectures

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- Contains a Foreword by B. Jack Copeland and D. Proudfoot
- Develops Turing's ideas, by building his machines and training them using evolutionary algorithms
- Goes beyond Turing's ideas, and proposes new machines

Alan Mathison Turing (1912-1954) was the first to carry out substantial research in the field now known as Artificial Intelligence (AI). He was thinking about machine intelligence at least as early as 1941 and during the war circulated a typewritten paper on machine intelligence among his colleagues at the Government Code and Cypher School (GC & CS), Bletchley Park. Now lost, this was undoubtedly the earliest paper in the field of AI. It probably concerned machine learning and heuristic problem-solving; both were topics that Turing discussed extensively during the war years at GC & CS, as was mechanical chess [121]. In 1945, the war in Europe over, Turing was recruited by the National Physical Laboratory (NPL) in London, his brief to design and develop an electronic stored-program digital computer—a concrete form of the universal Turing machine of 1936 [185]. Turing's technical report "Proposed Electronic 2 Calculator", dating from the end of 1945 and containing his design for the Automatic Computing Engine (ACE), was the first relatively complete specification of an electronic stored-program digital computer [193,197]. (The document "First Draft of a Report on the EDVAC", produced by John von Neumann and the Moore School group at the University of Pennsylvania in May 1945, contained little engineering detail, in particular concerning electronic hardware [202].

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