

**PSYCHOMETRIC AI AND STORY ARRANGEMENT:
PROGRESS OF A TEST-BASED APPROACH
TOWARDS AN ACHIEVABLE ARTIFICIAL
INTELLIGENCE**

By

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ABSTRACT

In an effort to build a system capable of human-level intelligence, what is the proper assessment for having achieved it, or preceding that, what exactly is the ultimate goal to strive toward? No universally accepted definition for human intelligence exists, let alone an undisputed account of artificial intelligence. Most current research in AI takes the form of stand-alone programs that perform one task well, but stumble or outright fail on other seemingly easy tasks. A well-known example is that of Deep Blue, the computer program that beat the [human] world champion chess player Garry Kasparov on May 11, 1997, but could not solve even the simplest variants of chess (e.g. , one in which bishops move in a zig-zag pattern), let alone tasks unrelated to the game.

The focus of this thesis is twofold. On the one hand, in a similar fashion to the Turing Test, and in line with Alan Newell’s so-called “third paradigm” for addressing the study of the mind, we propose a standard to drive AI research and evaluate whether it has been successful. We are endeavoring to articulate and defend a new form of AI based, fundamentally, on the notion of well-defined *tests*. We call this type of Artificial Intelligence *Psychometric AI*.

In this venture we have successfully passed one subtask (i.e. Block Design) on a current and renowned psychological test — the Wechsler Adult Intelligent Scale (WAIS) — and next tackle Picture Arrangement, a much more complicated sub-test from the WAIS, and the second fundamental, and more applied, topic of this thesis. The challenge is to arrange snapshot images in an order that makes a plausible story or segment thereof. Why would solving such a task be significant? Among other reasons, it would make a contribution to the sub-field of Artificial Intelligence that centers around story processing, in particular story understanding and story completion, as well as being the first known mechanization of story arrangement. Furthermore, little research is currently focused on engineering an intelligent system capable of obtaining high-level information from diagrams, and of using such information in further problem solving. The project described herein changes that.