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## **EGPAI 2017 invited speaker abstract**

The connection from (algorithmic) information theory to machine learning and statistics and machine learning goes back to Solomonoff (1960, 1964) and Wallace and Boulton (1968). Relations between information theory (and compression) and intelligence were pointed out later (Chaitin, 1982; Dowe and Hajek 1997a-b, 1998; Maloney, 1999), with Hernandez-Orallo and Minaya-Collado (1998) providing a test; and the first computer program to pass an I.Q. test happened no later than 2003. Information theory has been combined with re-inforcement learning for intelligence measures (Legg and Hutter, 2007) and intelligence tests (Hernandez-Orallo and Dowe, 2010), and also with a focus on (the Darwin-Wallace distribution of) environments that real-world agents might encounter and on task complexity (Hernandez-Orallo, CUP, 2017), and elsewhere on the LNPPP measure of the merits of statistical estimators. These notions bring us to spatio-temporal resolution - such as the speed at which one can understand speech in a language and the speed at which one can speak a language. And these issues bring us to job automation, both in terms of (more repetitive) jobs of lower information-theoretic content (lower task complexity) being easier to automate and also in terms of spatio-temporal resolution and time taken in terms of salary per amount of task completed. We also note that so many real-world environments have a fragility - that it takes detail and attention to obtain a good score but in so many cases a very small number of actions could lead to a loss of everything. The issue of co-operation arises insofar as many environments lead to competition rather than co-operation. Are humans the most intelligent species on Earth? If so, then 'intelligent' competition seems to lead to many problems on our own planet and makes some speculate that our potential self-annihilation is a reason why we are yet to find intelligent life elsewhere. If humans collectively were as intelligent as many would like to claim, would we soon see universal basic income (UBI), universal basic accommodation and greater acknowledgments of the rights of humans and non-humans?