# Abstract

The ethics of AI is an ever increasing debate amongst scientists and those that try to enforce new laws (e.g. privacy) or rights, with machines becoming more and more involved with the day-to-day practises and activities of people around the world. Though true AI (there is debate about that too) is something that may take many years to conceive, the ethics will always be an issue that will need addressing. So what is AI? Why are ethics important? What ethics are already considered today?

# Introduction

Although this paper looks generally at ethics in Artificial intelligence, to understand the topic in more depth, ethics can be broken into two questions that can be asked for both humans and machines alike. Can the subject (person or machine) be ethical? And can the subject be effected by the ethics of others? The first of these questions looks at the responsibilities of AI, and whether it should be used for such purposes as weaponry, or health care. The second question looks at AI rights, laws that could one day effect how they work, and if AI can even be considered to be under the same social circumstances as a person. This paper looks at the general area of AI ethics, and uses sources from a number of journals and news articles to discuss current (less than five years) research, and provides a critique of each.

## What is Artificial intelligence?

Before answering questions about the ethics of AI, it is important to define to a certain extent what the term ‘Artificial intelligence’ means. To break this further, understanding the word intelligence can help define the greater meaning. Alan Turing [http://www.alanturing.net/turing\_archive/pages/reference%20articles/what%20is%20ai.html] breaks intelligence into five major components, all of which should be fulfilled in order to be classed as intelligent:

* Learning- The simplest form of this is trial and error, with more complicated forms such as generalisation meaning the learner can perform better in situations not encountered before.
* Reasoning- Using evidence from a set of given statements to deduct a conclusion.
* Problem solving- Special and general-purpose methods exists, where the special means a method of solving the problem is tailor made, while the latter means the method can be applied to a larger pool of general problems.
* Perception- To be able to process and analyse scenes into objects, features and relationships.
* Language- To use a system of signs, or sounds to communicate or send information to others.

Knowing the general requirements of intelligence, Artificial Intelligence should allow machines perform operations or actions that require the intelligence listed above in humans.

## Why are ethics important with AI?

In a world where humans are becoming more and more dependent on machines, the need for AI is exponentially increasing. Due to this circumstance, ensuring that any machines or computer used by machines that are safety critical is

## AI ethics of today

# Research

Because ethics is such a broad topic, a great amount of research is already available. This part of the paper considers three papers from the past five years, looking at ethical uses of AI, through to considering the ethics of social and emotional AI. With each, a discussion of the research undertaken and findings will be referenced.

## The Ethics of Artificial Intelligence

A paper already mentioned briefly earlier, this piece of research from the Cambridge Handbook of Artificial intelligence \cite{ethics important} looks at the ethical use of AI for a number of scenarios, discussing moral status of machines, the transparency of AI workings, and the ideas of superintelligence, referencing various examples of AI in good and bad circumstances.

As discussed earlier, if AI is to be used more often for day-to-day activities, the ethical decisions taken by the intelligence must be justified by the engineers, creators of the intelligence, and the intelligence itself. The paper spoken about here starts by mentioning

## Emotion, Artificial Intelligence, and Ethics

## Considering Social and Emotional Artificial Intelligence