Discuss the AI related issues in the science fiction movie ‘I, Robot’ and compare and contrast these with actual recent developments in ‘A.I. agents and FSMs in relation to the Boston Dynamics Atlas Robot’

* The A.I. in ‘I, Robot’

Introduction Part 1: Introduce the subject matter, and focus of chosen media item.

Sci-fi, movie, near-future, based/inspired by renowned writer Isaac Asimov’s works, robots, “3-Laws Safe”.

Introduction Part 2: Identify specific part of media and how it relates to the brief.

Two main robot types, NS-4 & NS-5, positronic “brains” are regarded as difference engines, beyond scope of module, interest in FSMs and A.I. agents that make up the movement systems of the robots, depictions in the media, and speculative inferences to likely technological implementation.

Main Part 1: How does the media present the A.I. technologies driving the robots.

Robots have full range of motion, exceptional proprioception, able to do actions humans can do, such as menial labour, cooking/cleaning, etc.

NS-4’s overly polite, not exceptionally “smart”, able to interpret and perform assigned task in relation to 3LOS (3-Law Operating System).

NS-5’s uncanny valley, with uplink for software updates, more personable, more capable, scarier.

Main Part 2: Introduce real-world A.I. example

Boston Dynamics Atlas Robot, Limited range of motion, able to perform similar action to humans.

ThoughtsToText:

Boston Dynamics Atlas robot is a capable physical platform, as supporting libraries of trajectory optimisation movesets are expanded its performance is expected to increase alongside. Think of it as a fit and able gymnast/bodybuilder, minus a functional brain.

USR Robots in “I, Robot”:

* Capable of human-like movements, able to use the hands their chassis is equipped with to manipulate objects.
* Able to navigate terrain, such as stairs, uneven ground and gaps.
* Able to leap higher off the ground than a human, able to fall from a greater height without sustaining injury than a human.
* Able to identify objects within its environment and navigate around them/use them to complete objectives.
* Able to remember the locations/figure out where a given object may be found, such as cutlery in a kitchen drawer.
* Can navigate agent-populated environments, such as a crowded street
* Pathfinding, landmark identification/route planning/map knowledge, likely able to infer alternate routes around obstructions such as roadworks
* NS-4 has unknown/undisclosed memory capacity, so ability to learn environments vs downloaded maps is speculative
* NS-5 has uplink connection for “regular updates”

Finite State Machines;

Utility-Based Agents;

‘I, Robot’

NS-4 & NS-5 Robot models, specifically the software/hardware tied to their movement through a given environment

Main:

Utility-Based Agents are…

Utility-based agents in I robot are the robots

Released in 2004, the near-future depiction was reasonably realistic

At time of writing in 2023, the depiction of the robots in I,robot are, while not completely realistic due to artistic liberties, are astoundingly close to reality

The Real World comparison to the NS-4 robots in I, Robot would be Boston Dynamics’ Atlas platform.

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A Utility-Based Agent is analogous to a “handyman”, when there are multiple pathways available for completing a goal or set of goals, with or without additional restrictions or conditions, the Utility-Based Agent selects actions based on a preference (utility) for a given state, thus attempting to move from its currently perceived state towards a target state. Utility describes how “happy” the agent is, given uncertainty in the world and any existing constraints, the agent will look to “choose the best tool for the job” in the form of an action or series of actions with the maximal expected utility.

Utility-Based Agents are able to perceive their environment through sensors, this perception either defines or is compared to the expected current world state, and this state can be further influenced by any existing agent understanding of how the world evolves or how its action may alter the world state.

A Utility-Based Agent is