AI in Science Fiction

Self-driving cars

Taxonomy of AI

- Perception
  - Computer vision
- Integration and Interaction
  - Connected and Automated vehicles
  - Robotics and Automation

AI domain	AI subdomain	Keyword	
Reasoning	Knowledge representation; Automated reasoning; Common sense reasoning	case-based reasoning	inductive programming
		causal inference	information theory
		causal models	knowledge representation & reasoning
		common-sense reasoning	latent variable models
		expert system	semantic web
		fuzzy logic	uncertainty in artificial intelligence
		graphical models	
Planning	Planning and Scheduling; Searching; Optimisation	bayesian optimisation	hierarchical task network
		constraint satisfaction	metaheuristic optimisation
		evolutionary algorithm	planning graph
		genetic algorithm	stochastic optimisation
		gradient descent	
Learning	Machine learning	active learning	feature extraction
		adaptive learning	generative adversarial network
		adversarial machine learning	generative model
		adversarial network	multi-task learning
		anomaly detection	neural network
		artificial neural network	pattern recognition
		automated machine learning	probabilistic learning
		automatic classification	probabilistic model
		automatic recognition	recommender system
		bagging	recurrent neural network
		bayesian modelling	recursive neural network
		boosting	reinforcement learning
		classification	semi-supervised learning
		clustering	statistical learning
		collaborative filtering	statistical relational learning
		content-based filtering	supervised learning
		convolutional neural network	support vector machine
		data mining	transfer learning
		deep learning	unstructured data
		deep neural network	unsupervised learning
		ensemble method	
Communication	Natural language processing	chatbot	natural language generation
		computational linguistics	machine translation
		conversation model	question answering
		coreference resolution	sentiment analysis
		information extraction	text classification
		information retrieval	text mining
		natural language understanding	
Perception	Computer vision	action recognition	object recognition
		face recognition	recognition technology
		gesture recognition	sensor network
		image processing	visual search
		image retrieval	
	Audio processing	computational auditory scene	sound synthesis
		music information retrieval	speaker identification
		sound description	speech processing
		sound event recognition	speech recognition
		sound source separation	speech synthesis
Integration and Interaction	Multi-agent systems	agent-based modelling	negotiation algorithm
		agreement technologies	network intelligence
		computational economics	q-learning
		game theory	swarm intelligence
		intelligent agent	
	Robotics and	cognitive system	robot system
		control theory	service robot

Are these cars currently possible?

Why not?

- Humans

"building safe driverless cars is harder than rocket science"
Waymo CEO

Ethical implications

- Who should be held responsible?

References

- Jon Kelvey (March 9, 2024). *Minority Report's* Greatest Prediction Isn't the One You Think: https://www.inverse.com/science/minority-report-driverless-cars-real-science
- Kamila Rzymska (October 25, 2021). How 'Minority Report' Predicted the Future of Automotive and The Emergence of Self-driving Cars
https://www.comarch.com/telecommunications/blog/how-minority-report-predicted-the-future-of-automotive/
- Naveen Joshi (Augustus 5, 2022). 5 Moral Dilemmas That Self-Driving Cars Face Today: https://www.forbes.com/sites/naveenjoshi/2022/08/05/5-moral-dilemmas-that-self-driving-cars-face-today/