DOWNLOAD PDF V. 2. INTELLIGENCE SYSTEMS TECHNOLOGY

Chapter 1 : Understanding Different Types of Artificial Intelligence Technology

implemented and developed Technology Intelligence (TI) systems, designed to Journal of Technology Intelligence and Planning, Vol. 2, No. 1, pp.

Artificial intelligence has gained an incredible momentum in the past couple of years. The current intelligent systems have the capability of managing large amounts of data and simplifying complicated calculations very fast. But these are not the sentient machines. AI developers are trying to develop this feature in the future. In the coming years, AI systems will reach and surpass the performance of humans in solving different tasks. Different types of AI have emerged to assist other artificial intelligence systems to work smarter. In this article, we are going to have a look at different categories of artificial intelligence. Reactive Machines AI The fundamental types of artificial intelligence systems are quite reactive and they are not able to use previous experiences to advise current decisions and to configure memories. They will detect the movement of vehicles around them constantly. The static data such as lane marks, traffic lights and any curves in the road will be added to the AI machine. This helps autonomous cars to avoid getting hit by a nearby vehicle. Nearly, it will take seconds for an AI system to make considered decisions in self-driving. Theory of Mind AI Theory of mind artificial intelligence is a very advanced technology. In terms of psychology, the theory of mind represents the understanding of people and things in the world that can have emotions which alter their own behavior. Still, this type of AI has not been developed completely in the society. But research shows that the way to make advancements is to begin by developing robots that are able to identify eye and face movements and act according to the looks. This type of AI is not developed yet, but when it happens, it can configure representations about themselves. It means particular devices are tuned into cues from humans like attention spans, emotions and also able to display self-driven reactions. We can find this in smartphones like Cortana and Siri that help users to respond to their problems on request. Because it is not strong enough as we need it to be. Pillo robot is an example of AGI which answers to all questions with respect to the health of the family. It can distribute pills and give guidance about their health. This is a powerful technology which is necessary for living with a full-time live-in doctor. Alpha 2 is the first humanoid robot developed for the family. This robot is capable of managing a smart home and can operate the things in your home. It will notify you of the weather conditions and tells you interesting stories too. It is really a high-powered robot which you feel like is a member of your family.

Chapter 2 : Geospatial Intelligence (GEOINT) - General Dynamics Mission Systems

In addition to V-2 hardware, the U.S. Government delivered German mechanization equations for the V-2 guidance, navigation, and control systems, as well as for advanced development concept vehicles, to U.S. defence contractors for analysis.

How technology has changed intelligence collection By Mark Pomerleau Apr 22, The Global Hawk is one prominent source of signals intelligence. With the world becoming a more volatile place and certain high-threat environments becoming too dangerous to send personnel, the lack of human intelligence has placed a greater stress on signals intelligence to provide military commanders with greater knowledge of dangerous actors and potential threats. Technology has allowed the military to rely less on human intelligence, or HUMINT, which puts the lives of spies and operators on the ground at risk, and procure aerial systems that provide myriad levels of intelligence. Unmanned aerial vehicles have been invaluable in gathering several types of intelligence from the air, such as SIGINT and image intelligence. The United States is continuing to invest in these proven platforms for intelligence collection. Recent operations in Iraq, Syria, Yemen and continued operations in Afghanistan have forced Washington to continue to procure these vital systems for ISR purposes. But the heavy reliance on machine-based intelligence gathering may have come at a cost in the quality of military intelligence overall. Current aerial ISR platforms such as the Reaper and Predator drones which also have lethal capabilities and Global Hawk, as well as manned ISR aircraft such as the U-2 and the MC, enjoy a mix of electro-optical and infrared sensors, synthetic-aperture radar, LIDAR, electronic intelligence warning systems, and real-time video feeds and communications equipment, among other features. But despite their ability to loiter around a target and operate virtually around the clock, unmanned aircraft fly lower and more slowly than the U-2, which makes them more susceptible to anti-aircraft capability. And there are limits to airborne surveillance that human intelligence could solve. Synthetic-aperture radar, for example, can penetrate through cloud cover, but there are few technologies that can penetrate walls. An attack-strike aircraft capable of supersonic speeds, the Growler is also being developed as an advanced ISR platform. In fact, the Growler is being outfitted with sensors that can intercept frequencies from radars or even cell phones. If discussion between two individuals within a combat zone is picked up, two adjacent Growlers can listen into the calls to measure the transmission times from the air to the ground. This advanced intelligence collection method will allow pilots and those with communication access to the Growler to pinpoint a small area where a target might be located, preventing previous methods of evading older radar systems. The Growler is also capable of providing ISR data to other joint force aircraft. And then there is the F Information captured by the F can be shared securely with units at sea, on the ground or in the air. Additionally, a core processor that is capable of executing more than 1 trillion commands per second enables pilots to view and identify enemy radars and EW emissions and can recommend to pilots which targets to attack and if kinetic of electronic means should be used. For now, the combination of highly capable, remotely piloted aerial surveillance tools operating along with supersonic strike aircraft outfitted with state of the art surveillance equipment allows the military to conduct ISR missions in several theaters. The human element For all the technical prowess of these ISR platforms, however, human intelligence is still important. The absence of HUMINT in areas such as Syria and Yemen, for example, has made it difficult to assess valid targets for military action and monitor developments for national security interests. Babanoury writes that human intelligence accounts for only 10 percent to 20 percent of the information gathered by the U. Drones and other technologies will continue to be essential tools in intelligence gathering, but the U. Defense Systems Update Sign up for our newsletter.

DOWNLOAD PDF V. 2. INTELLIGENCE SYSTEMS TECHNOLOGY

Chapter 3 : Visual Intelligence Inc â€“ Collect more. Do more. For less

Some Limitations in Systems Analysis in Intelligence Activities, R.C. Shreckengost. The procedure to be followed in using operations research or systems analysis techniques to identify optimal actions in large, complex systems is somewhat akin to the recipe for tiger soup, i.e., take one tiger.

Shreckengost The procedure to be followed in using operations research or systems analysis techniques to identify optimal actions in large, complex systems is somewhat akin to the recipe for tiger soup, i. If consistent and well-behaved values and objectives are at hand the analyst may then proceed to apply the art to achieve an optimal concoction. Unfortunately, the multitudinous values generally required to explore fully the optimum allocation of resources among diverse intelligence tasks and responsibilities are as critical to the process as the tiger to tiger soupâ€"but far more difficult to bag, assuming that a suitable set of values even exists. A question persists about the feasibility of orderly analysis and quantification to identify desirable decisions affecting large-scale social systems. However, the demonstrated effectiveness of these techniques in business, military, and similar areas has stimulated effort to extend the methodology to these other areas where the problems of analysis are admittedly extremely complex and difficult. Philosophers have always been concerned with values and objectives in human affairs, so that the complexities of social and political choice are well-recognized even though few "systems" or paradigms for choosing among alternatives have evolved. It is not yet possible to describe definitively the degree and manner in which the new methods may be adapted to the analysis of age-old problems. This paper sketches some of the factors which are critical to two of the basic notions of analysisâ€"value and optimality. The notions of value and optimality are reflected in the quantitative expressions used in analytical calculations. Business and Military Applications The chapter headings of many texts on operations research or systems analysis suggest the characteristic problems for which these techniques have been developed. Generally they are concerned with business operations such as inventory control, the movement of goods from factory to warehouse, replacement problems, queuing, and, of particular interest here, resource allocation among needs. In business operations the objectives are often relatively easy to describeâ€"maximize profit, minimize loss, obtain a certain share of the market, etc. Further, the problem of quantification is usually relatively straightforward using dollars as units of measure. Although relatively simple compared to intelligence problems the relations of several competing objectives may be complex, and not so easy to resolve. Peter Drucker suggests eight business areas in which objectives are important: These judgments must reflect temporal factors and the external forces of the markets over which the executive may have little or no control. Further, some of these areas are difficult in terms of value quantification: In analyzing radar operations, for example, the number of enemy aircraft detected, or similar units of value measurement, have served as readily accepted scales. In contrast, analyses of the allocation of British bomber aircraft to protect shipping rather than attack German industrial sites during World War II did not enjoy any convenient or widely accepted scale of measurement, and the decisions which were made were largely political rather than analytical. In one way or another the problems to be analyzed must be modeled or structured in some orderly wayâ€"and clear objectives and the use of reasonably well-behaved values which permit a useful degree of precision in ranking alternative actions to assess optimality are basic to the development of an acceptable model or structure. A fundamental impediment to broad acceptance of quantification and ordering of values and objectives may be the implication of right and wrong, or that an optimum decision does exist. This is slippery ground at best, and some of the ancient concerns of logic are paralleled in the problems of value and objective selection. Many things change color with time, or have spatial distributions of color, e. And, of course, this matter of color may depend on whether the observer is on the ground or in an airplane. Then it appears that nothing can be A and non-A at the same time, in the same place, and under the same circumstances. In a somewhat analogous fashion it might be stated that the acquisition of data for intelligence purposes has a particular value with respect to alternative allocations pertinent to some intelligence objective. But the value of acquisition in the form of an option rather than an outright purchase may be quite different, and the additional effects of place, circumstances, etc. Problems in

Combining Priorities The concept of rationality imposes another specific problem in arriving at values. Although the individual decision makers may be rational, their collective preferences may not be. Starting with this well-known paradox 3f voting it may be shown that it is generally impossible to construct a social welfare function indicating preferences for alternatives when more than two alternatives and more than one person are involved except through imposition or a dictatorial process. Means are lacking for obtaining an ordering of values by combining individual orderings. Perils in Problem Partitioning Important problems on a still broader scale than value assignment and ordering also exist. One often tacit but important premise is that the optimal solutions to sub-problems comprise an optimal solution to a total problem. The results of these several sub-analyses may not add up to an overall optimal solutionâ€”neglecting that the selection of objectives, hence a determination of optimality, may be difficult or impossible because of the possible non-rational situation described for values. Efforts by individual players to score as often as possible do not add up to the optimal strategy for a basketball team. Although the sport team represents a rather trite example, the equivalent may be recognized in large scale social systems. West Churchman in discussing this partitioning of problems and the resulting suboptimization states: We are all suboptimizers, perhaps prone to the most dangerous kinds of suboptimization. After noting that Plato, Spinoza, and others since have seemed to believe it possible to expand the use of modelsâ€”and that this philosophy is often used today to sell systems science and operations researchâ€”so that ultimately nothing might escape the eventual embrace of rational models, he strongly states, "The trouble with this philosophy is that it is wrong, dangerously wrong, pigheadedly wrong, philosophically inexcusable. Other Concerns Although the problems are formidable and the prospects for achieving a fully satisfactory procedure now appear nil, the importance of improving decisionmaking is so great that extensive effort to this end is justified. The matter of overall benefit is perhaps most difficult because it is so pervasive and appears in so many difficult forms. An example such as the acquisition of a new reconnaissance system may suggest many legitimate benefit concerns. How will the acquisition be made? What segment of the intelligence community will benefit from the acquisition? Will the procurement hinder or help other efforts? Will the interests of the intelligence community members be equally affected? Any procedure which purports to embrace and rationalize ,diverse and somewhat independent interests must at least provide visibility of all important facetsâ€”or risk rejection. Welfare economics, ethics, and other formal approaches hold little promise for any technique for integrating individual valuesâ€”this has been the subject of debate for centuries. Can these interests and views be satisfactorily created without resorting to an integrated form? May not a system of costs and benefits be devised which more completely and honestly effects various points of view? The benefit analysis characteristics, difficult as they are, must also. To what degree should the present or future e sacrificed in order to provide greater benefits in the future or resent? Although technological forecasting in neatly organized scientific and technical fields is difficult and uncertain, sociological and political forecasting is far more difficult and certain. Coupling temporal considerations seriously exacerbates value assessment. A second factor typifying characteristics which should be considered in assessing values and optimality is the degree of reversibility associated with any action. Ultimately such concerns emphasize maintaining the status quo. Possible Approaches for Improvement Several approaches illustrate lines along which some improvements might be made in working toward values, objectives, and optimality. Knowing if the problem of radar data acquisition has been analyzed using the values of an analyst at the national levelâ€”or the values of a technical expert in radar characteristicsâ€—or the values of a tactical operations officerâ€—provides sight to the results of the analysis. In some cases it might be useful to restrict the scope of the analysis severely, speculate on the value perturbations that might result from a set of different political condemns and their relation to optimality. Some reconciliation of different value preferences might be achieved rough the use of the Delphi technique. Deriving implied values from current resource allocations appears to be especially intriguing. For example, appropriations for the intelligence community imply some current preferences, values, and objectives as well as past investments and commitments. The dollar amounts might be regarded as representing de facto values. The frustration and concern which is so evident in C.

Chapter 4 : Intelligent vehicle technologies - Wikipedia

PC [AN/MSWA(V)2]: The second PC variant is identical to the first with the exception of the elimination of the AN/VRC LOS radio from the system. PC [AN/MSWB(V)2]: The third configuration is a Fixed-Site version of the.

Nevertheless, the threat of what was then code-named "Big Ben" was great enough that efforts were made to seek countermeasures. The situation was similar to the pre-war concerns about manned bombers and led to a similar solution, the formation of the Crossbow Committee to collect, examine and develop countermeasures. Early on, it was believed that the V-2 employed some form of radio guidance, a belief that persisted in spite of several rockets being examined without discovering anything like a radio receiver. This led to efforts to jam this non-existent guidance system as early as September , using both ground and air-based jammers flying over the UK. In October, a group had been sent to jam the missiles during launch. By December it was clear these systems were having no obvious effect, and jamming efforts ended. The first estimates suggested that , shells would have to be fired for each rocket. At a 25 August meeting of the Crossbow Committee, the concept was rejected. Some low-level analysis suggested that this would be successful against 1 in 50 rockets, provided that accurate trajectories were forwarded to the gunners in time. Work on this basic concept continued and developed into a plan to deploy a large number of guns in Hyde Park that were provided with pre-configured firing data for 2. After the trajectory was determined, the guns would aim and fire between 60 and rounds. However, the Committee suggested that a test not be carried out as no technique for tracking the missiles with sufficient accuracy had yet been developed. At a 26 March meeting the plan moved ahead, and Pile was directed to a subcommittee with RV Jones and Ellis to further develop the statistics. Three days later the team returned a report stating that if the guns fired 2, rounds at a missile there was a 1 in 60 chance of shooting it down. Plans for an operational test began, but as Pile later put it, " Monty beat us to it", as the attacks ended with the Allied liberation of their launching areas. Plans were made to move the Pile system to protect that city, but the war ended before anything could be done. The British were able to convince the Germans to direct V-1s and V-2s aimed at London to less populated areas east of the city. This was done by sending deceptive reports on the damage caused and sites hit via the German espionage network in Britain, which was controlled by the British the Double-Cross System. Churchill sent a scathing minute to General Ismay requesting a thorough explanation for "this extraordinarily bad aiming". SS General Hans Kammler , who as an engineer had constructed several concentration camps including Auschwitz , had a reputation for brutality and had originated the idea of using concentration camp prisoners as slave laborers in the rocket program. More people died manufacturing the V-2 than were killed by its deployment. We knew that each V-2 cost as much to produce as a high-performance fighter airplane. We knew that German forces on the fighting fronts were in desperate need of airplanes, and that the V-2 rockets were doing us no military damage. From our point of view, the V-2 program was almost as good as if Hitler had adopted a policy of unilateral disarmament. This reduced its effectiveness. In comparison, in one hour period during Operation Hurricane , the RAF dropped over 10, long tons of bombs on Brunswick and Duisburg , roughly equivalent to the amount of explosives that could be delivered by 10, V-2 rockets. While the V-programs did in fact divert resources needed for other, more effective programs, this aspect should not be overstated, as the limiting factor for German aviation after was always the availability of high test aviation gas , not planes or pilots, so criticisms that compare their cost to hypothetical increases in fighter or bomber production are misguided. On the other hand, the psychological effect of the V-2 was considerable, as the V-2, travelling faster than the speed of sound , gave no warning before impact unlike bombing planes or the V-1 Flying Bomb , which made a characteristic buzzing sound. There was no effective defence and no risk of pilot and crew casualties. With the war all but lost, regardless of the factory output of conventional weapons, the Nazis resorted to V-weapons as a tenuous last hope to influence the war militarily hence Antwerp as V-2 target , as an extension of their desire to "punish" their foes and most importantly to give hope to their supporters with their miracle weapon. If deployed, it would have allowed a U-boat to launch V-2 missiles against United States cities, though only with considerable effort and limited effect. These schemes were met by the Americans with Operation Teardrop. To this Hitler had replied that Dornberger might not expect more, but he Hitler certainly did. A civilian V-2 expert was a passenger on U , bound for Japan in May when the war ended in Europe. The fate of these V-2 rockets is unknown. Von Braun, his brother Magnus von Braun , and seven others decided to surrender to the United States military Operation Paperclip to ensure they were not captured by the advancing Soviets or shot dead by the Nazis to prevent their capture. In October , British Operation Backfire assembled a small number of V-2 missiles and launched three of them from a site in northern Germany. The engineers involved had already agreed to move to the US when the test firings were complete. The Backfire report remains the most extensive technical documentation of the rocket, including all support procedures, tailored vehicles and fuel composition. It could have enabled sub-orbital spaceflight similar to, but at least a decade earlier than, the Mercury-Redstone flights of V-2 sounding rocket US test launch of a Bumper V At the close of the Second World War, over rail cars filled with V-2 engines, fuselages , propellant tanks, gyroscopes, and associated equipment were brought to the railyards in Las Cruces, New Mexico , so they could be placed on trucks and driven to the White Sands Proving Grounds , also in New Mexico. In addition to V-2 hardware, the U. Government delivered German mechanization equations for the V-2 guidance, navigation, and control systems, as well as for advanced development concept vehicles, to U. In the s some of these documents were useful to U. Devices were sent aloft to sample the air at all levels to determine atmospheric pressures and to see what gases were present. Other instruments measured the level of cosmic radiation. The first photo from space was taken from a V-2 launched by US scientists on 24 October Only 68 percent of the V-2 trials were considered successful. The arms pulled away just after the engine ignited, releasing the missile. The setup may look similar to the R

Chapter 5 : Signal Intelligence System Uncovers Enemy Sites | SIGNAL Magazine

No. 2] Regulating Artificial Intelligence Systems The potential for further rapid advances in AI technology has prompted expressions of alarm from many quarters, including some.

Chapter 6 : Some Limitations in Systems Analysis in Intelligence Activities â€" Central Intelligence Agency

The papers are organized in topical sections on information management, information systems, information technology, healthcare information management and technology, business intelligence, applications, as well as management science and education.

Chapter 7 : How technology has changed intelligence collection -- Defense Systems

The Intelligence Analysis System (IAS) is the Marine Corps' primary intelligence processing system supporting Marine IEW operations. It is a UNIX-based modular, three tiered, ADP system which provides multisource intelligence support to the Marine Component and Marine Air-Ground Task Force (MAGTF).

Chapter 8 : V-2 rocket - Wikipedia

BAE Systems' SIGINT systems gather information from adversaries' electronic signals. Analysts then evaluate this raw data from foreign communication systems, radars, and weapon systems, and transform it into actionable intelligence.

Chapter 9 : Air - General Dynamics Mission Systems

International Journal of Artificial Intelligence & Applications (IJAIA), Vol.2, No.4, October 65 To remove the drawbacks of ERP systems and DSS as described above, IDSS are used.