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**2.A. Complete the chart that summarizes the distinction between positivist and constructionist approaches to research. To make a good comparison, use the captions from the list.**

|  |  |
| --- | --- |
| POSITIVIST approach | CONSTRUCTIONIST approach |
| Facts can have an objective reality. | Facts are subjective constructs. |
| Data validity and reliability are sought. | Reliability and validity are irrelevant concepts since the data are not judged in terms of any external notion of truth. |
| Hypotheses should be explicit and pre-date data collection. | Understanding is emergent, and explanation can emerge after data are collected. |
| Prediction is an objective. Falsification of hypotheses is an objective | Description is an objective. Usefulness of interpretation is an objective. |

**2B. Read a science article on scientific research in your field of interest. Use the questions from the focus text to evaluate its scientific character. Make a record of your notes in the following format. Indicate the examples in the text of the article.**

|  |  |  |
| --- | --- | --- |
| **Title** Containerized A/B Testing | | |
| **Subject** K.6.3 [Management of Computing and Information Systems]: Software Management—Software selection;  H.5.2[Information Interfaces and Presentation]: User Interfaces—Evaluation/methodology;  D.2.9 [Software Engineering]: Management—Software Management | | |
| **Scientific field** Software Quality Analysis with Monitoring | | |
| **Criteria** | **Indication** | **Example** |
| Is the scientific method used? | Yes, experiment |  |
| Are hypotheses  -constructed  -carefully tested? | Yes | In this paper we argue for a new DevOps-style A/B testing for an automated, user experience-based  approach. (Page 2) |
| Are any mechanisms proposed that explain the phenomenon? | No |  |
| Did statistical methods and analyses provide  - evidence of patterns or estimates of certainty  or  -is the idea presented as dogma and unchangeable? | Yes | Our proof of concept implementation is working and has fulfilled our expectations but  there is a lot of work to do and a numerous of choices to make before it becomes production ready. (Page 7) |
| Were alternative explanations considered and evaluated? | Yes | Of course, when it comes down to scalability, we have to use DockerSwarm or Kubernetes client libraries, etc for managing version replacement on a multi-host system. (Page 7) |
| Your commentary   * Conclusion * How useful is it for your research * Other matters | This article shows the wide possibilities of containerization in the field of software testing. And it helps me in writing a graduation project. |  |

**3A. Read a science article on scientific research in your field of interest. Consider if the article has the following features of a peer-reviewed paper. Make a record of your notes in the chart in the following format. Indicate the examples in the text of the article.**

|  |  |  |
| --- | --- | --- |
| **Title** Containerized A/B Testing | | |
| **Subject** K.6.3 [Management of Computing and Information Systems]: Software Management—Software selection;  H.5.2[Information Interfaces and Presentation]: User Interfaces—Evaluation/methodology;  D.2.9 [Software Engineering]: Management—Software Management | | |
| **Scientific field** Software Quality Analysis with Monitoring | | |
| **Criteria** | **Indication** | **Example** |
| Been published in a scholarly journal (Is the journal in which you found the article describe itself as a peer-reviewed publication?) | No |  |
| More than 10 pages in length | 8 pages |  |
| An abstract (summary) on the first page | Yes |  |
| Citations throughout and a reference list at the end | No, only references. |  |
| Credentialed authors usually affiliated with a research university | Yes | AD ́AM R ́EV ́ESZ and NORBERT PATAKI, E ̈otv ̈os Lor ́and University, Faculty of Informatics |
| Is the topic of the article narrowly focused and explored in depth? | Article narrowly focused on A/B testing and docker containers | In this paper we deal with a new approach for A/B testing via Docker containers. |
| Is the article based on either original research or authorities in the field (as opposed to personal opinion)? | It’s original research |  |
| Is the article divided into sections with headings such as those listed below? | Introduction and Conclusion |  |
| Is the research sound and evidenced? | Yes |  |
| Does it help to expand or further research in this subject area? | Yes | There are great configuration management software toolslike Puppet or Chef [Spinellis 2012]. Of course, when it comes down to scalability, we have to use DockerSwarm or Kubernetes client libraries, etc for managing version replacement on a multi-host system. |

**4B. Give your interpretation to the quotes and discuss your stance on the matter. Use the following sample sentence starters:**

* Science is the search for truth that is the effort to understand the world: it involves the rejection of bias, of dogma, of revelation, but not the rejection of morality (Linus Pauling)

I agree with the author that while advancing science and technology, one should not forget about moral principles. When exploring the world, scientists should not be biased.

* No great advance has been made in science, politics, or religion without controversy (Lyman Beecher)

I think the author is trying to say that without discussion and contradictions in science, politics and religion, truth cannot be achieved. As in disputes, people evaluate the issue from different perspectives. And the contradictions show that perhaps in the statement there is an error or inaccuracy.

* Science is the father of knowledge, but opinion breeds ignorance (Hippocrates)

I like this idea, science is accurate and not biased, when opinion may be mistaken and mislead people.

* Science has everything to say about what is possible. Science has nothing to say about what is permissible (Charles Krauthammer)

I think that the author had in mind that in science there are no inaccurate assumptions, but there are only sound hypotheses.

* Science is a wonderful thing if one does not have to earn one's living at it. (Albert Einstein)

I like this statement, because science must be driven by the desire for knowledge and discovery, not money.

**4C. Find examples of newspaper articles where scientific controversies are mentioned. Discuss the validity of the claim of controversy. Discuss the benefits of true scientific controversy.**

I think that the claims in this article are justified. So how to transplant one organ to a person causes major problems with its rejection in a person. When a head transplant, even with success, will cause big problems for a person.

**4.D. Writing a Position Paper**

**TITLE:** Friendly artificial intelligence

**AUTHOR:** Fedor Sadaev

**INTRODUCTION:**

A friendly artificial intelligence is a hypothetical artificial general intelligence (AGI) that would have a positive effect on humanity. It is a part of the ethics of artificial intelligence and is closely related to machine ethics. While machine ethics is concerned with how an artificially intelligent agent should behave, friendly artificial intelligence research is focused on how to practically bring about this behaviour and ensuring it is adequately constrained.

**PRO-SIDE OF THE ARGUMENT:**

ASSERTION 1: Creation of "embryo AI", in which the incentive system will initially be integrated concern for humanity.

EVIDENCE 1: If the AI will be laid good intentions for humanity from the beginning, you will eventually get a good artificial intelligence.

ASSERTION 2: Creating favorable conditions for the manifestation of friendliness.

EVIDENCE 2: The AI will be friendly if it is in the conditions in which it is beneficial to him, and not just to be embedded in it.

**CON-SIDE OF THE ARGUMENT:**

ASSERTION 1: The first AI can only be created by powerful private corporations, and these transnational corporations will not have any incentive to realize friendliness.

EVIDENCE 1: AI development requires huge investments which are available for large corporations and they can be neglected friendly, if it will entail losses.

ASSERTION 2: AI could quickly become a superintelligence, and that most such superintelligences will have convergent instrumental reasons to endanger humanity and its interests.

EVIDENCE 2: If the AI will develop independently, it is not a fact that it will become friendly.

**POSSIBLE COMPROMISES:**

Compromise may be increased control over the development of AI and ensuring the use of AI for good purposes.

**PERSONAL OPINION:**

I agree with the argument about creating the “germ of AI”. If you lay in the AI goodwill to the person and care about him, then it is quite possible to get an AI that will help people.

**5. Describe 3 different trends in science and technology.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **What’s trending?** | **What’s this trend a result of?** | **What impact do you think it will have?** | **Advantages** | **Disadvantages** |
| Deploying applications in the cloud | The need to use applications and services anywhere and on any device. | Increasing the number of multiplatform applications available anywhere in the world | Availability of services anywhere, service scalability, increased productivity of personal computers. | Requires constant access to the Internet. You need a fast and high-quality Internet. Not every program is available for remote access. |
| Machine learning technology development | The need to create programs with an unknown algorithm. | Neural networks are used to solve problems, the algorithm for solving which is unknown. | Resistance to noise input. Adaptation to change. Resiliency. | Neural networks are not able to give accurate and unambiguous answers. Neural networks cannot solve the problem step by step. |
| Voice Interface Development | The need for more understandable and convenient control. | More friendly controls and reverse interaction. | Convenience. Understandable. | Accurate understanding of voice. Security. |