Unit 6: Creating agent dialogues

In this dialogue, Agent Alice initiates the conversation by requesting information about the available stock of 50 inch televisions and the number of HDMI slots they have. Agent Bob responds with the available quantity of televisions. Then, Agent Alice follows up with a query about the number of HDMI slots. Agent Bob again responds with the required information.

Agent Alice: (tell

:content (request

:sender Alice

:receiver Bob

:language KQML

:ontology warehouse

:action stock-query

:object (and

(product

:name "50 inch television")

(attribute

:name "HDMI slots"))))

Agent Bob: (tell

:content (inform

:sender Bob

:receiver Alice

:language KQML

:ontology warehouse

:action stock-query

:object (and

(product

:name "50 inch television")

(attribute

:name "quantity"))))

Agent Alice: (tell

:content (request

:sender Alice

:receiver Bob

:language KQML

:ontology warehouse

:action stock-query

:object (and

(product

:name "50 inch television")

(attribute

:name "HDMI slots"))))

Agent Bob: (tell

:content (inform

:sender Bob

:receiver Alice

:language KQML

:ontology warehouse

:action stock-query

:object (and

(product

:name "50 inch television")

(attribute

:name "HDMI slots")))))

Unit 8: Constituency based Parse Trees

In the parse tree:

S stands for Sentence

NP stands for Noun Phrase, and it consists of a determiner (DT) and a noun (NN).

VP stands for Verb Phrase, and it consists of a verb (VBZ) and an NP

PP is the prepositional phrase.

1. **The government raised interest rates**

```
(ROOT
  (S
    (NP (DT The) (NN government))
    (VP (VBZ raised)
      (NP (interest rates))
    (. .)))
```

2. **The internet gives everyone a voice**

```
(ROOT
  (S
    (NP (DT The) (NN internet))
    (VP (VBZ gives)
      (NP (NN everyone) (DT a) (NN voice)))
    (. .)))
```

3. **The man saw the dog with the telescope**

```
(ROOT
  (S
    (NP (DT The) (NN man))
    (VP (VBD saw)
```

(NP (DT the) (NN dog))

(PP (IN with)

(NP (DT the) (NN telescope))))

(. .)))

Unit 10: Deep learning in Action

One application of deep learning that is expected to have a significant impact on society is facial recognition technology. Facial recognition technology uses deep learning algorithms to analyse and identify individuals based on their facial features, allowing for automated identification and verification.

Overview of Facial Recognition Technology:

Facial recognition technology utilises deep learning models known as convolutional neural networks (CNNs) to extract distinctive facial features from images or video frames. These models are trained on large datasets of labeled faces to learn patterns and representations that enable accurate recognition. The system compares the extracted facial features with a database of known faces to determine a match.

Potential Impact and Socio-Technical Aspects:

Facial recognition raises concerns about privacy and personal data protection. The widespread deployment of this technology could lead to constant surveillance, as individuals may be tracked and identified without their knowledge or consent. This raises questions about the right to privacy and the potential for misuse or abuse of personal information (Andrejevic & Selwyn, 2020).

Deep learning models used in facial recognition can be influenced by preferences existent in the training data, leading to discriminatory outcomes. These biases may disproportionately affect certain demographic groups, exacerbating existing societal inequalities. It is crucial to address and mitigate bias to ensure fairness and prevent discrimination.

Facial recognition has implications for public surveillance and security. While it can aid in identifying criminals or enhancing security measures, there are concerns about the potential for mass surveillance, infringing upon civil liberties, and creating a chilling effect on freedom of expression and assembly.

Facial recognition technology can offer convenience and efficiency in various applications, such as unlocking smartphones, accessing secure areas, or personalised customer experiences. It can also assist in finding missing persons or identifying individuals in disaster situations. However, ethical considerations are necessary to balance the benefits against the potential risks and impacts on society (Raji et al., 2020).

The rapid implementation of facial recognition has prompted calls for robust regulations to ensure responsible and ethical use (Almeida et al., 2022). Transparent governance frameworks, legal safeguards, and accountability mechanisms are needed to address the ethical implications and protect individuals' rights.

In conclusion, while facial recognition technology powered by deep learning has the possiblility to deliver advantages in terms of improved security and accessibility, it also raises significant moral concerns related to privacy, partiality, discrimination, and surveillance. Striking a balance between technological advancement and

safeguarding societal values is essential to ensure responsible deployment and minimise potential negative impacts on individuals and communities.

References:

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