LO21 - Système expert

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Automne 2020

1 Introduction

Un système expert est composé d'une base de conaissances, une base de faits et un moteur d'inférence. C'est un outil capable de reproduire les mécanismes cognitifs d'un expert, dans un domaine particulier.

2 Base de connaissances

Une base connaissances est une liste de règles on ne fait aucune supposition sur leurs véracité en dehors du moteur d'inférence et de la base de faits.

2.1 Règle

On défini une règle comme une liste de propositions divisées en 2 parties la prémisse et la conclusion.
Soit E l'ensemble des propositions de l'univers.
On défini une règle Γ comme ceci :

$$\begin{aligned}\Gamma :&(E)^n \longrightarrow E\\ &(P_1, P_2, ..., P_n) \longmapsto T\end{aligned}$$

Soit n $\in$ N. On définit l'application Γ par

$$\forall (P_1, P_2, ..., P_n) \in (E)^n, \Gamma(P_1, P_2, ..., P_n) = P_1 \wedge P_2 \wedge ... \wedge P_n = T$$

Avec T la conclusion de la règle et $(P_1, P_2, ..., P_n)$ les propositions de sa prémisse.

3 Algorithm Implementation and Development

Add your algorithm implementation and development here. See Algorithm 1 for how to include an algorithm in your document. This is how to make an *ordered* list:

1. Fluffy swallowed a marble.
2. I took Fluffy to the vet.
3. They took an ultrasound of Fluffy's intestines.

4 Computational Results

Add your computational results here. See Table 4 for how to include a table in your document. See Figure 1 for how to include figures in your document.

Algorithm 1: Example Algorithm

```
Import data from Testdata.mat
for j = 1 : 20 do
    Extract measurement j from Undata
    Do something useful
end for
if i ≥ 5 then
    i ← i − 1
else
    if i ≤ 3 then
        i ← i + 2
    end if
end if
```

	Name	Years
1	Frosty	1922-1930
2	Frosty II	1930-1936
3	Wasky	1946
4	Wasky II	1947
5	Ski	1954
6	Denali	1958
7	King Chinook	1959-1968
8	Regent Denali	1969
9	Sundodger Denali	1981-1992
10	King Redoubt	1992-1998
11	Prince Redoubt	1998
12	Spirit	1999-2008
13	Dubs I	2009-2018
14	Dubs II	2018-Present

Figure 1: Here is a picture of Dubs [1]. Dubs did not swallow a marble.

5 Summary and Conclusions

Add your summary and conclusions here.

References

[1] Evan Webeck. *10/10, would cheer with: UW introduces new live mascot, Dubs II, and he is adorable.* Mar. 2018. URL: https://www.seattletimes.com/sports/uw-huskies/10-10-would-cheer-with-uw-introduces-new-live-mascot-dubs-ii-and-he-is-adorable/.

Appendix A MATLAB Functions

Add your important MATLAB functions here with a brief implementation explanation. This is how to make an **unordered** list:

- `y = linspace(x1,x2,n)` returns a row vector of `n` evenly spaced points between `x1` and `x2`.
- `[X,Y] = meshgrid(x,y)` returns 2-D grid coordinates based on the coordinates contained in the vectors `x` and `y`. X is a matrix where each row is a copy of `x`, and `Y` is a matrix where each column is a copy of `y`. The grid represented by the coordinates `X` and `Y` has `length(y)` rows and `length(x)` columns.

Appendix B MATLAB Code

Add your MATLAB code here. This section will not be included in your page limit of six pages.

```
clear all; close all; clc;
load Testdata

L = 15; % spatial domain
n = 64; % Fourier modes
x2 = linspace(-L,L,n+1); x = x2(1:n); y = x; z = x;
k = (2*pi/(2*L))*[0:(n/2-1) -n/2:-1]; ks = fftshift(k);

[X,Y,Z] = meshgrid(x,y,z);
[Kx,Ky,Kz] = meshgrid(ks,ks,ks);

for j = 1:20
    Un = reshape(Undata(j,:),n,n,n);
    close all, isosurface(X,Y,Z,abs(Un),0.4)
    axis([-20 20 -20 20 -20 20]), grid on, drawnow
    pause(1)
end
```

Listing 1: Example code from external file.