Session 6. Projects

Aplicaciones de Reconocimiento de Formas (ARF)

Curso 2023/2024

Departamento de Sistemas Informáticos y Computación

Selected Students' Projects 2023

- Detección de actividad del habla en vídeos
- Detección de gestos heterogéneos mediante few-shot learning
- Reconocimiento de enfermedades en plantas
- Exploración de técnicas de lingüistica computacional basadas en redes neuronales para lenguajes con pocos recursos. El caso del toki pona.
- Descripción de imágenes
- Presentación de un CAD para la detección y clasificación de tumores en mamografías
- Reinforcement Learning aplicado a Space Invaders de Atari
- Clasificación de especies marinas para competencia Fanthomnet 2023
- Bidirectional translation model for Catalan and Japanese
- Topic Modelling Mar Menor
- Traducción Automática Multilingue mediante LLMs y otros.
- Clasificación de Geo Fósiles
- Generación condicional de imágenes de CelebA y evaluación de la calidad del condicionamiento
- Desarrollo de un modelo de predicción de tráfico utilizando las 3 variables fundamentales de tráfico
- Detección de barcos en imágenes satelitales
- Towards Graph Accessibility and Understanding

Preparing your project proposal

- Required information about the project:

  - Team members
  - Title and brief description (200-300 words)
  - Objectives for the final presentation
    * Subset of objectives for project review (08/05/24)

- Recommendations:

  - Be realistic and ready for unexpected results!
  - Define objectives in an incremental manner. Generic example:
    1. To collect and prepare data (if needed)
    2. To define experimental design: training, dev and test sets
    3. To select a model/system
    4. To implement the selected model/system (if not already available)
    5. To run experiments
    6. To analyse results
    7. Go back to 3 to test additional models/systems if time available

Guidelines for presentations (I)

Duration: 10 minutes presentation + 5 minutes for questions
Number of slides: $\sim$10 (1 minute per slide)
Some recommendations for the content of the presentation:

1. Introduction. Description of the problem to solve.

2. Related work. How your work compares to previous similar works in terms of model/system architecture or results.

3. Task description. Basic statistics to show size of the dataset, number of classes, vocabulary size. Basically, state task complexity.

4. Feature extraction/description. What is the input/output of the model/system?

5. Model or system architecture. General description without going into the details (no code!). Intuitive ideas that can be understood.

Guidelines for presentations (and II)

6. Experimental design. Partition into training, development and test sets; and basic statistics for each set.

7. Results. State error/accuracy measure employed: Classification error rate, F-measure (Precision, Recall), Word Error Rate, etc. Table for few results (Prof. Ney's max = 8) and/or figures to show tendencies.

8. Discussion. Analysis of the results. What is the model/system learning? Where does the model/system fail? Show positive/negative results.

9. Conclusions. Short summary with highlights

10. Future work. What would you have liked to try if you would have had more time? Promising research lines.

11. Demo?

Evaluation of final presentation (I)

Evaluation	Excellent (1.0)	Good (0.75)	Adequate (0.50)	Weak (0.25)
Content and technical merit (8 points, 1 point each)				
Motivation & rel. work	Motivated application and main references discussing differences and original contributions	Motivated application and main references provided	Somewhat motivated application and some important references missing	Missing motivation and no related work
Original work	Work developed from scratch specifically for this course	Work developed from an existing system	Slight modification of an existing system and/or shared across courses	User-level work of an existing system and/or shared across courses
Task description	Full description of data acquisition and complete statistics	Full description of employed data sets and incomplete statistics	Partial description of data sets and no statistics	Poor description of data sets and no statistics
Feature extraction	Clear feature extraction process and throughout description of input/output of the system	Missing a feature extraction step and throughout description of input/output of the system	Missing important feature extraction steps and doubts about input/output of the system	Significant missing point in description of feature extraction or input/output to the system
Model/system arch.	Intuitive complete description that conveys how the system transforms input into output	Complete description with too many technical details	Description of the model/system as a black-box	Unprecise and/or incomplete description of the model/system
Experimental design	Training, dev and test correctly defined, so that the performance results provided are reliable	Training, dev and test definition could be improved, some doubts about results	Data partition presents minor conceptual errors that put fair evaluation at risk	Data partition presents major conceptual errors (i.e. test and dev not representative of the application)
Results and discussion	Previous or baseline results followed by own improvements explaining contributions	Previous or baseline results followed by own results discussing reasons	Previous or baseline results followed by worse results without discussing reasons	Missing previous or baseline results
Conclusions & fut. work	Highlight main contributions and priority list of future approaches	Highlight some of the main contributions and list of future developments	Summary of all work done and vague ideas for future work	Missing main contributions and no future work

Evaluation of final presentation (II)

Evaluation	Excellent (1.0)	Good (0.75)	Adequate (0.50)	Weak (0.25)
Speaking skills (1 point)				
	Speaker is well prepared, establishes effective eye contact with the audience, speaks clearly and audibly, stays on topic and finishes the presentation on time	Speaker is prepared and familiar with the content of the visual aids, but may occasionally stray from topic and/or have other deficiencies in speaking style	Speaker is reasonably prepared but tends to look at visual aids for prompting, and is not able to communicate all of the intended content	Speaker is not prepared and has to read from visual aids or cue cards, does not use voice or body language effectively to engage audience in topic
Presentation (1 point)				
	The visual aids (e.g. slides) are informative, well designed, easy to read, and complement the speaker's content. The number of slides is consistent with the time limit of the presentation	The visual aids are informative and generally supportive of the presentation, but could be improved to more effectively complement the speaker's content	The visual aids are generally supportive of the presentation, but some of them are difficult to read, too clutered, and/or not necessary for the intent of the talk	Visual aids are not designed to effectively to convey the information intended by the speaker

Evaluation	Satisfactory	In progress
CT01. Social and enviromental commitment		
	Comment on social and enviromental impact of the academic project	No comment on social and enviromental impact of the academic project

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

MIARFID — Máster en Inteligencia Artificial, Reconocimiento de Formas e Imagen Digital

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