TP4
Graphs for Pattern Recognition

- JY Ramel – 2018

TP: Development of a PR system based on graph representation

Organisation

- Two person team

- Archive on Célène:
  - the code + exe (Win10)
  - the images
  - The slides (= report)

Goals

1. Oral

2. Attendance

3. Conception choices (graph methods)

4. Functional prototype - Quality of the code

6. Matching quality - Recognition rate

7. Additional functionalities

TP: Development of a PR system based on graph representation

- Languages:
  C++, C#, Java, Python, JavaScript

- IDE:

  Visual Studio, Eclipse, CodeBlocks, …

- Libraries:
  OpenCV, AForge.Net, ImageJ, PIL, …

- Use existing codes ➔ next slide

Toolkits – C++

- GraphM (Mines Paristech)
- https://ukoethe.github.io/vigra/doc-release/vigra/ImageSegmentationTutorial.html (RAG)

Toolkits - Python

- https://dip4fish.blogspot.fr/2014/05/construct-graph-from-skeleton-image-of.html (skel→graph)
- https://github.com/yxdragon/sknw (skel→graph)
- https://vcansimplify.wordpress.com/2014/07/06/scikit-image-rag-introduction/ (RAG)
- https://github.com/networkx (Graph manipulation)   -   page about DF-GED
- https://github.com/sk1712/brain_ged (GED)

Java

- RFAI GraphLib : http://www.rfai.li.univ-tours.fr/PublicData/GraphLib/home.html (GED)
- http://graphstream-project.org/ (Graph manipulation)
- http://jgrapht.org/ (Graph manipulation)

Toolkits - C#

- RFAI GraphLib http://www.rfai.li.univ-tours.fr/PublicData/GraphLib/cgraphlib.html (GED)
- BOOST en C# https://www.codeproject.com/Articles/5603/QuickGraph-A-C-graph-library-with-Graphviz-Sup

- Autres liens: https://iapr-tc15.greyc.fr/links.html#Algorithms for Graph

Possible schedule

- 7 x 2 hours

- Proposed organization:
  - Selection of the problem to solve ➔ meeting 1 for validation
  - Data acquisition and preparation ➔ meeting 2
  - Think carefully (specification - modeling) ➔ meeting 3
  - Developp in parallel (You are 2 in the team!)
  - Test ➔ meeting 4
  - Report ➔ Slides

- Deadline: Friday 23th of March, 2018 (Oral)
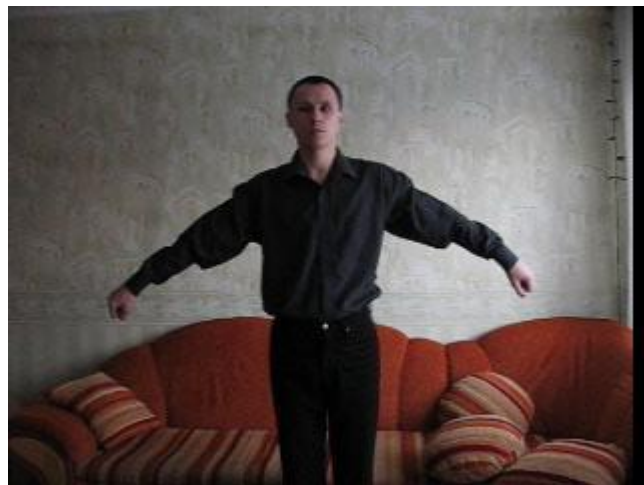
Exemples of possible projects

Do   Re   Mi   Fa

Sol   La   Ti   Do

Pose estimation

Zero   One   Two
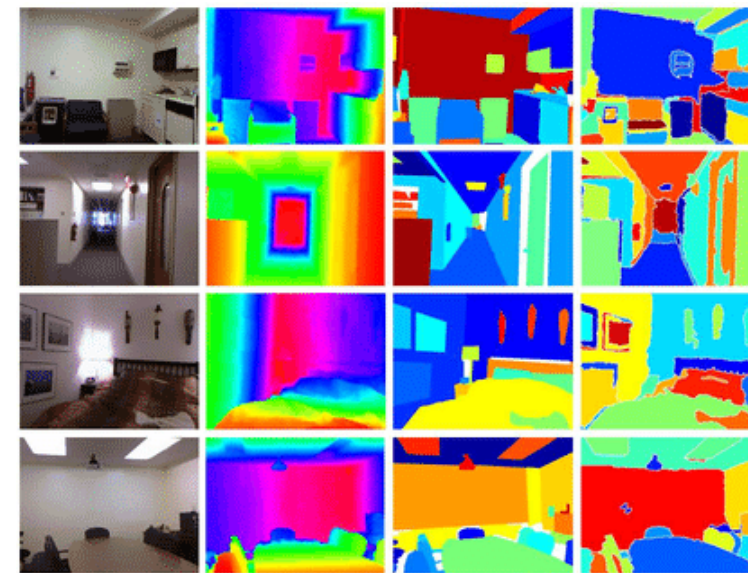
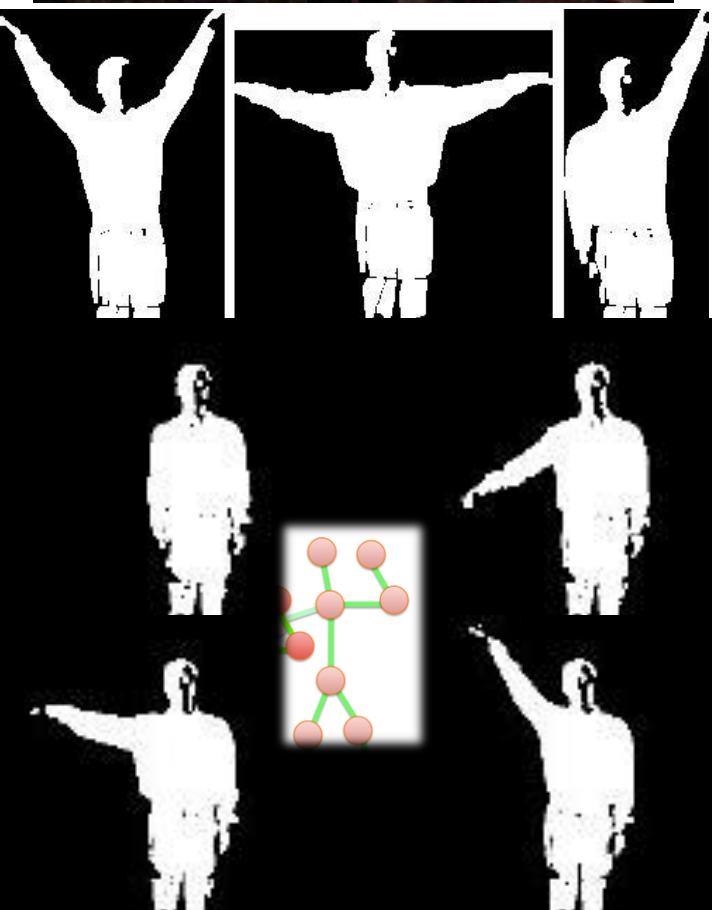Face/Image retrieval
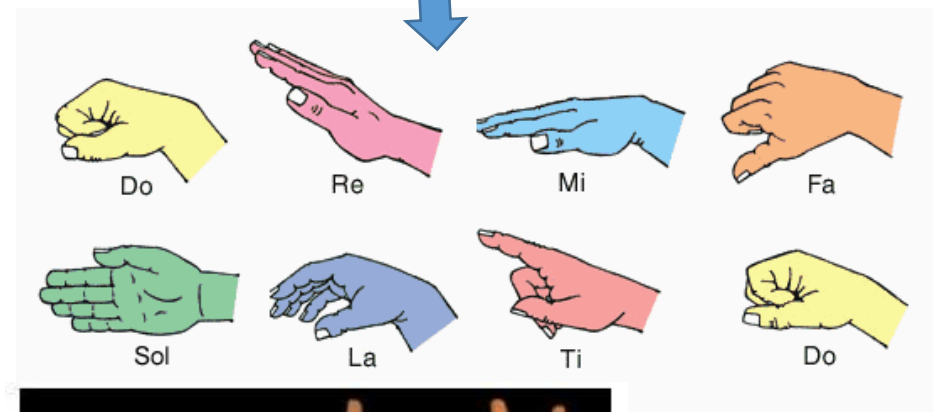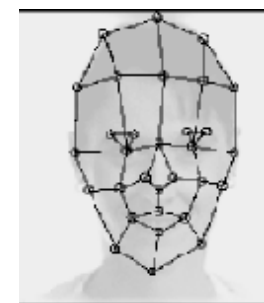
Better if not only recognition but also sub-parts identification:
head, body, arm, finger, eyes, nose, foreground/background, left, top, bottom,...

Let's go...

Jour ▲	Début	Durée (h)	Activité	Enseignants	Etudiants	Salles
Lundi 22/01/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Von Neumann
Vendredi 26/01/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Unix A
Lundi 29/01/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Vendredi 02/02/2018	08:15	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows A
Lundi 05/02/2018	10:30	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Vendredi 09/02/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Unix A
Lundi 12/02/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Vendredi 16/02/2018	10:30	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows A
Lundi 19/02/2018	08:15	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Mardi 20/02/2018	10:30	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Lundi 05/03/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Vendredi 09/03/2018	16:15	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	TP Systèmes
Lundi 12/03/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Vendredi 16/03/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	TP Systèmes
Mardi 20/03/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Windows B
Vendredi 23/03/2018	14:00	02h00	O05_Graphes&Applicat...	RAMEL JEAN-YVES	OptC	Pascal

7 séances