Présentation 5

- Rappels / Stats données
- Critères de comparaison utilisés
- Contexte de chaque méthode (homogénéité de la comparaison)
- Comparaison des méthodes
- Conclusions
- Pb et à venir ?

Rappels :

Travail sur PPMI_Gait_ArmSwing :

– The gait system used includes three lightweight wireless wearable sensors containing three axial accelerometers, gyroscopes and magnetometers

– 6 tests made : SWAY eyes open/closed + TUG 1 + TUG 2 + Usual walk + Dual task walk (voir pdf)

Rappels :

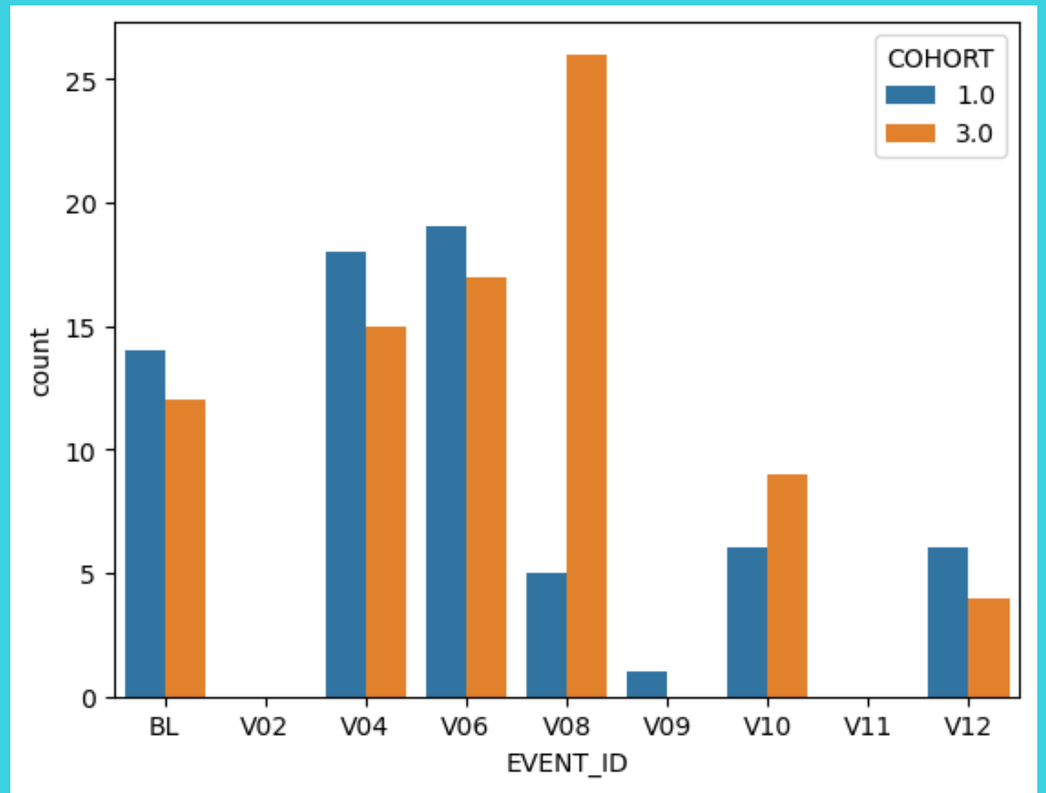
– Motor features extracted from the raw accelerometer and gyroscope signals

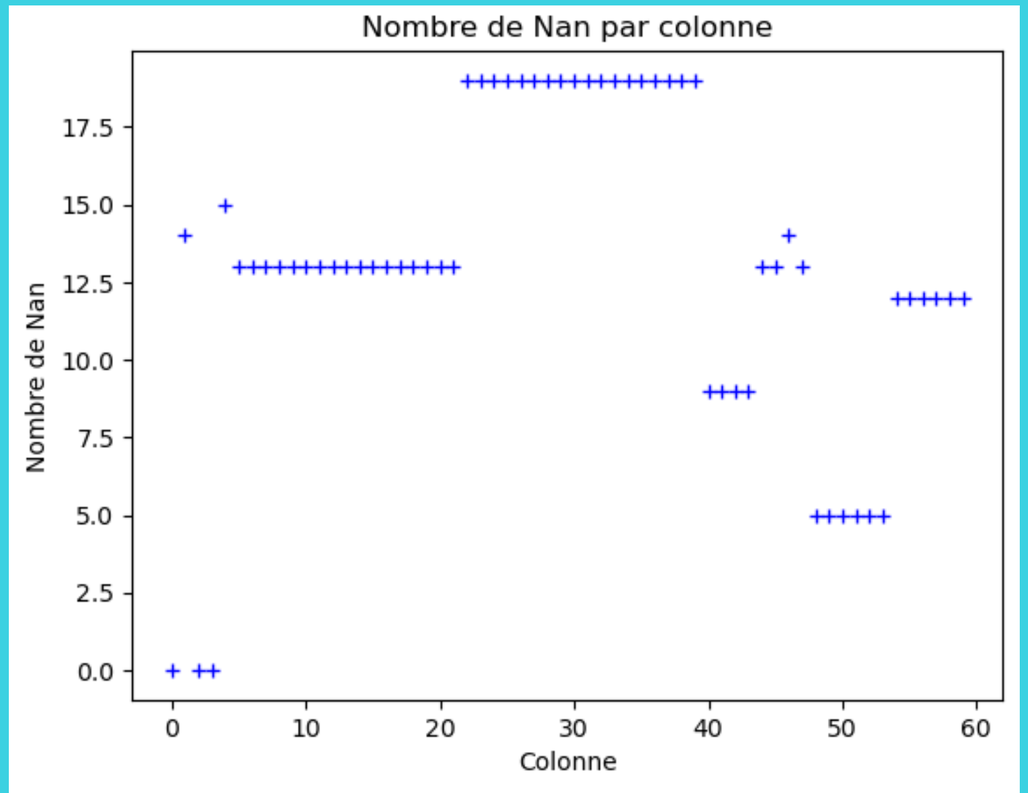
- Sway 30 sec eyes open – center of mass displacement during usual condition.
- Sway 30 seconds eyes closed- center of mass displacement during challenging condition.
- Timed Up and Go (TUG) 1- assessment of mobility, transfers and turns.
- TUG 2- repeated task.
- Usual walk- 1 minute- preferred walking speed

Sway	Timed Up and Go (TUG)	Walking	Arm swing	Axial
velocity (mm/s)	TUG duration (s)	Walk Speed (m/sec)	Amplitude_Right_arm (deg)	Trunk Rotation Asymmetry (%)
Sway path (mm)	Number of steps	Cadence (steps/min)	Amplitude_Left_arm (deg)	Average Amplitude trunk (deg)
centroidal frequency (Hz)	Average step duration during straight walking (s)	Average stride time (sec)	Variability _Right_arm (%)	
Jerk (m^2/s^5)	Average step duration during turns (s)	Stride CV (%)	Variability _Left_arm (%)	
	Step regularity [g^2]	Step Regularity	Symmetry Right/Left	
	Step Symmetry	Step Symmetry	Jerk Right ($deg/^3$)	
		Jerk ($deg/^3$)	Jerk Left ($deg/^3$)	
			Asymmetry_index	

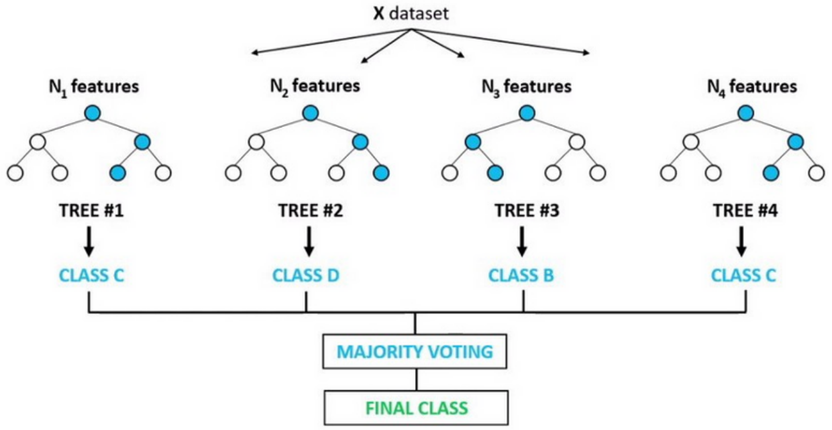
Statistiques sur les données

Nombre de personnes testées : 192 et récupération de 56 mesures
Nombre de Prodromal : (1, 96)
Nombre de personnes ayant Parkinson : (1, 96)



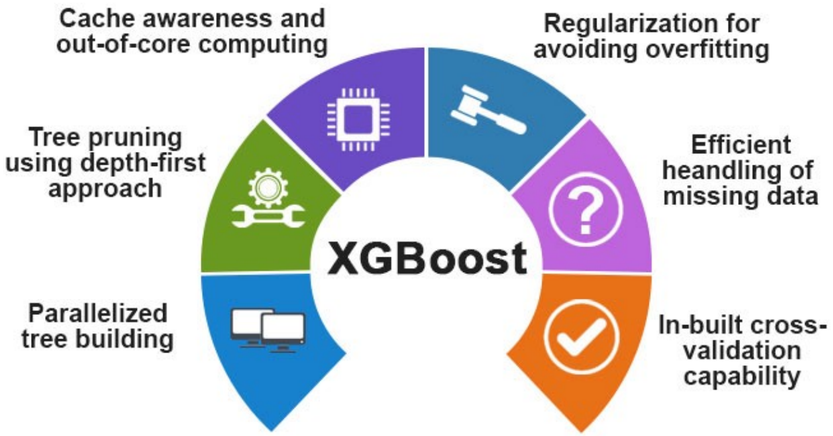


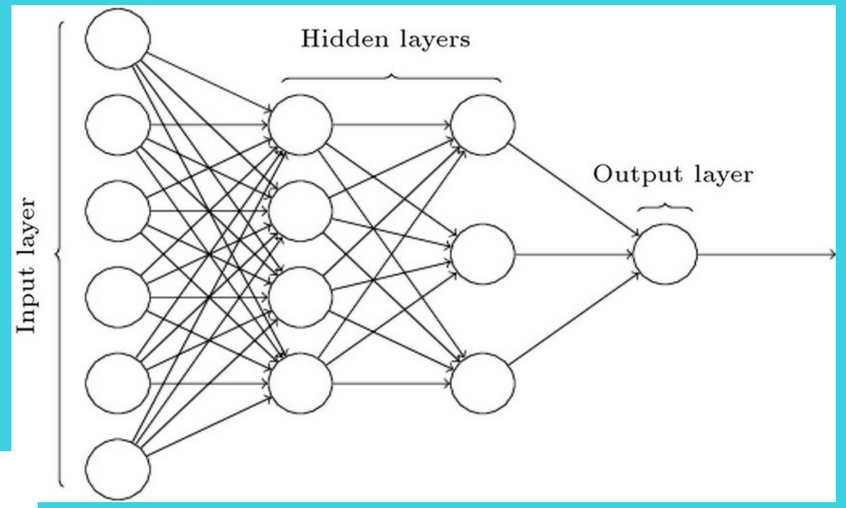
Homogéneisation des algorithmes pour une comparaison exploitable



Random Forest Classifier

XGBoost Classifier





FNN Classifier

Outils utilisés pour comparer

Accuracy is the ratio of correctly predicted observation to the total observations.
Use accuracy for a general report of model performance with balanced datasets.

Accuracy = TP+TN/TP+FP+FN+TN

Precision is the ratio of correctly predicted positive observations to the total predicted positive observations.

Precision = TP/TP+FP

Recall (aka sensitivity or true positive rate): Fraction of positives That were correctly identified.

Recall = TP/(TP+FN)

F1 Score (aka F-Score or F-Measure) – F1 Score takes into account precision and the recall. It is created by finding the the harmonic mean of precision and recall.

F1 = 2 / (1/precision + 1/recall) = 2*precision*recall/(precision+recall)

Résultats et comparaison

Modèles	Accuracy	Precision		Recall		F1-Score	
Cohort	/	Podromal	PD	Podromal	PD	Podromal	PD
Random Forest Classifier	0.85	0.82	0.86	0.82	0.86	0.82	0.86
XGBoost Classifier	0.77	0.74	0.80	0.78	0.76	0.76	0.78
FNN Classifier	0.83	0.81	0.85	0.87	0.79	0.85	0.82

A venir:

– Stratified Cross Validation / Autres graphiques / Visualisations pour exploiter les résultats (Courbe ROC, ...)
SVM?
– Présentation se fait tous ensemble mais 1 partie par élève ?
– Livrable écrit en Latex ? Vous souhaitez le lire avant de le rendre ?
– Endroit ou vous souhaitez que l'on pose des présentations ?