Universidade do Minho
Departamento de Informática

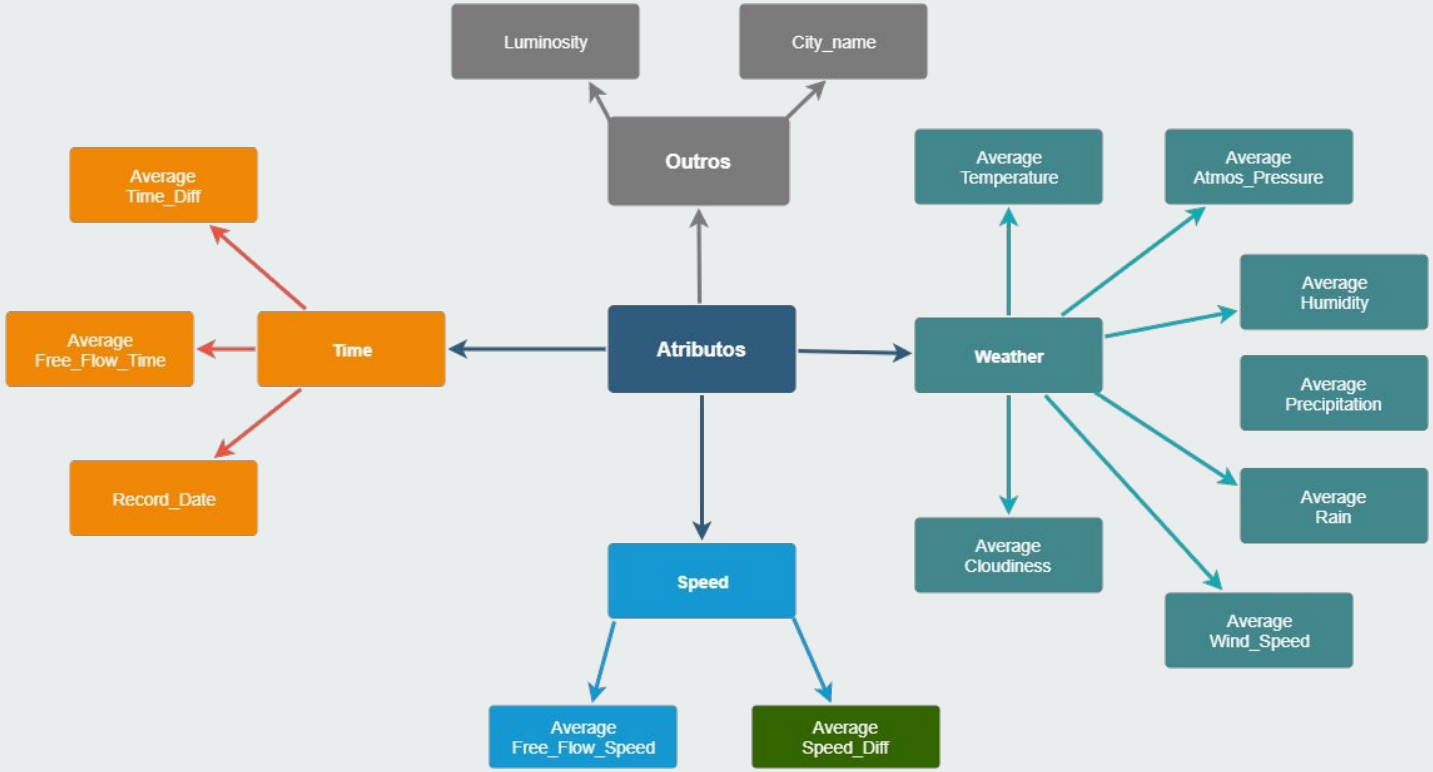
Árvores de Decisão

Grupo 3

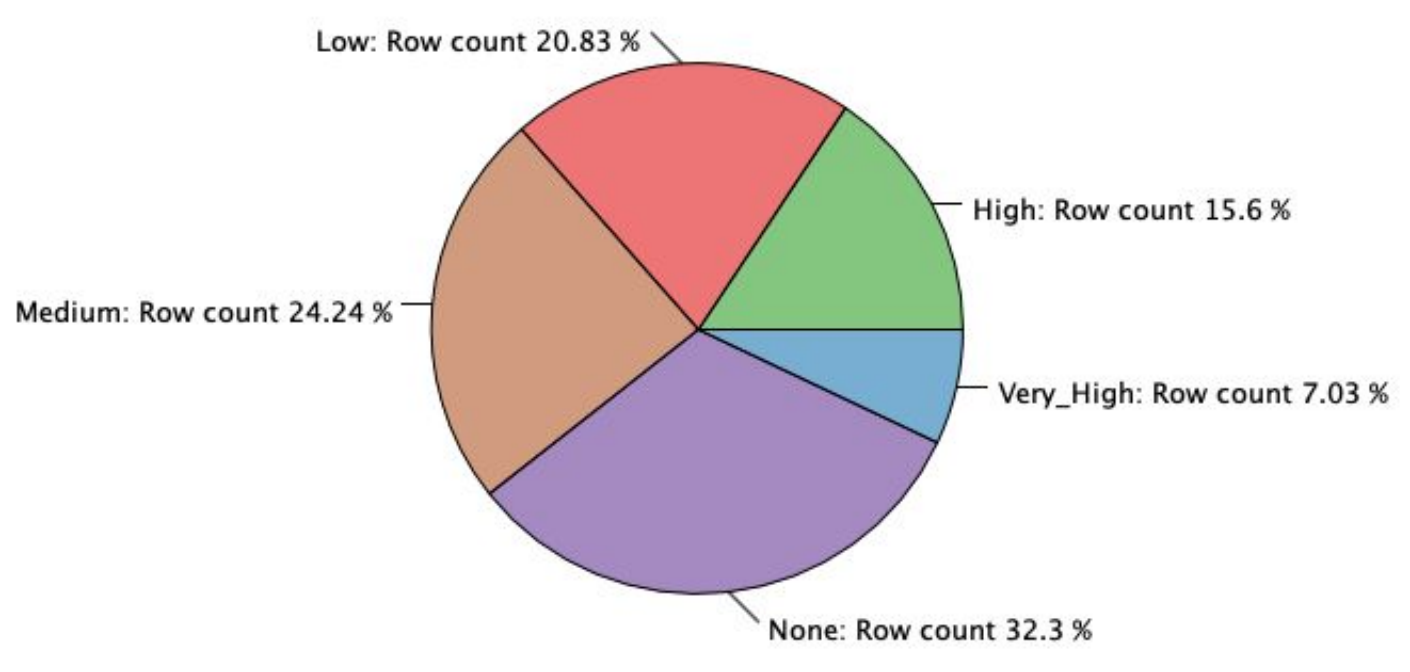
Sistemas Baseados em Similaridade

Universidade do Minho, Mestrado Integrado em Engenharia Informática,
4º Ano, 1º Semestre, Novembro 2019

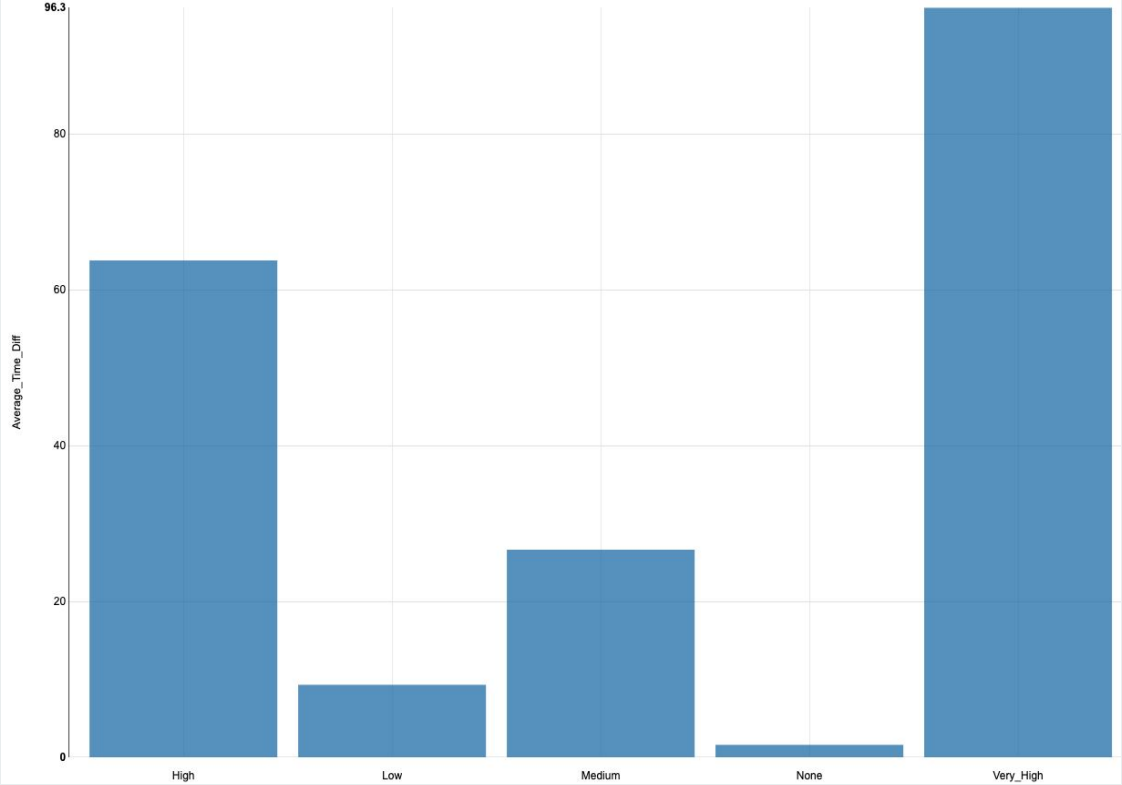
Dataset de intensidade de trânsito



AVERAGE_SPEED_DIFF: distribuição



AVERAGE_SPEED_DIFF & AVERAGE_TIME_DIFF

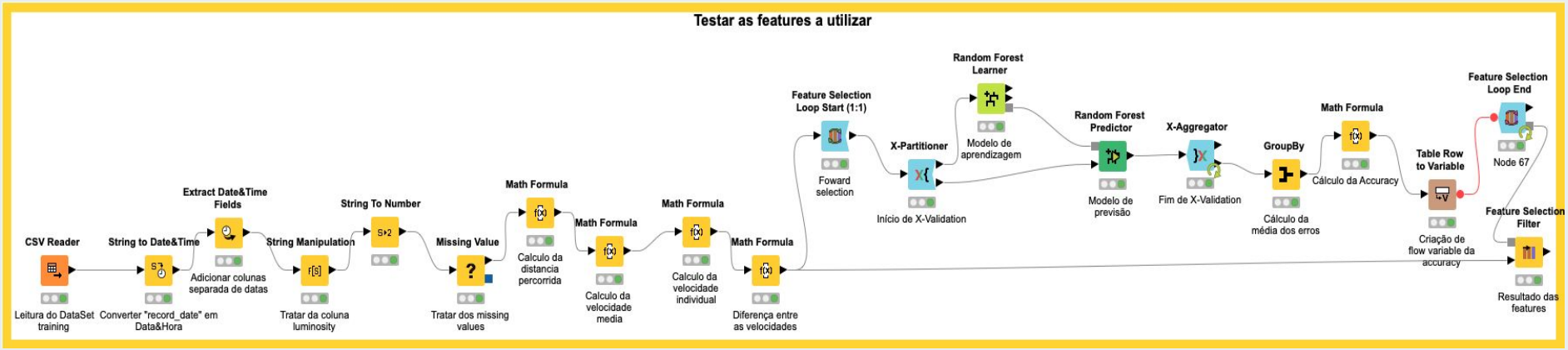


Estatísticas do Dataset

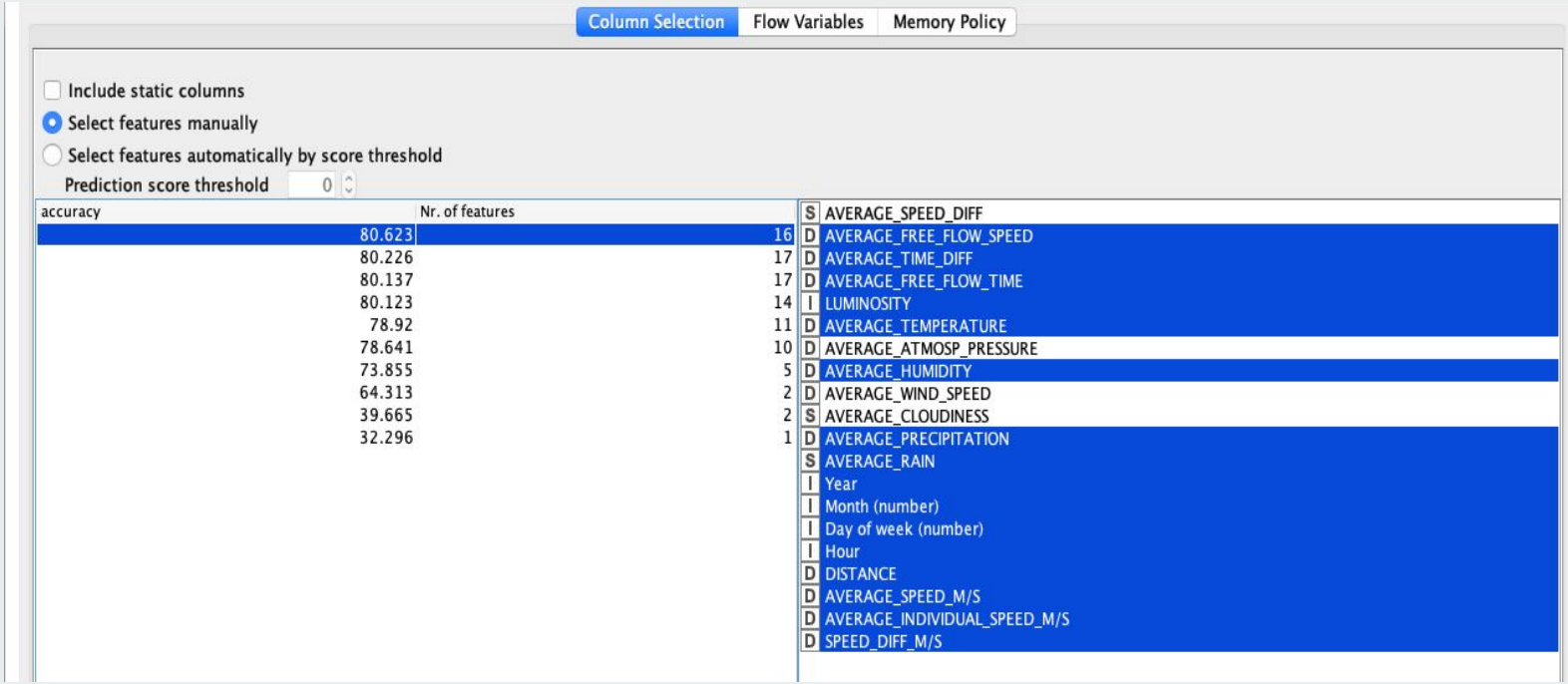
Column	Exclude Column	Minimum	Maximum	Mean	Standard Deviation
AVERAGE_FREE_FLOW_SPEED	☐	30.500	55.900	40.661	4.119
AVERAGE_TIME_DIFF	☐	0	296.500	25.637	33.511
AVERAGE_FREE_FLOW_TIME	☐	46.400	112	81.144	8.294
LUMINOSITY	☐	0	2	0.562	0.570
AVERAGE_TEMPERATURE	☐	0	35	16.193	5.163
AVERAGE_ATMOSP_PRESSURE	☐	985	1033	1017.388	5.751
AVERAGE_HUMIDITY	☐	14	100	80.084	18.239
AVERAGE_WIND_SPEED	☐	0	14	3.059	2.138
AVERAGE_PRECIPITATION	☐	0	0	0	0
Year	☐	2018	2019	2018.600	0.490
Month (number)	☐	1	12	7.089	2.948
Day of year	☐	15	346	200.643	88.943
Day of week (number)	☐	1	7	4.023	2.010
Hour	☐	0	23	11.534	6.940

Workflows no KNIME

Feature selection



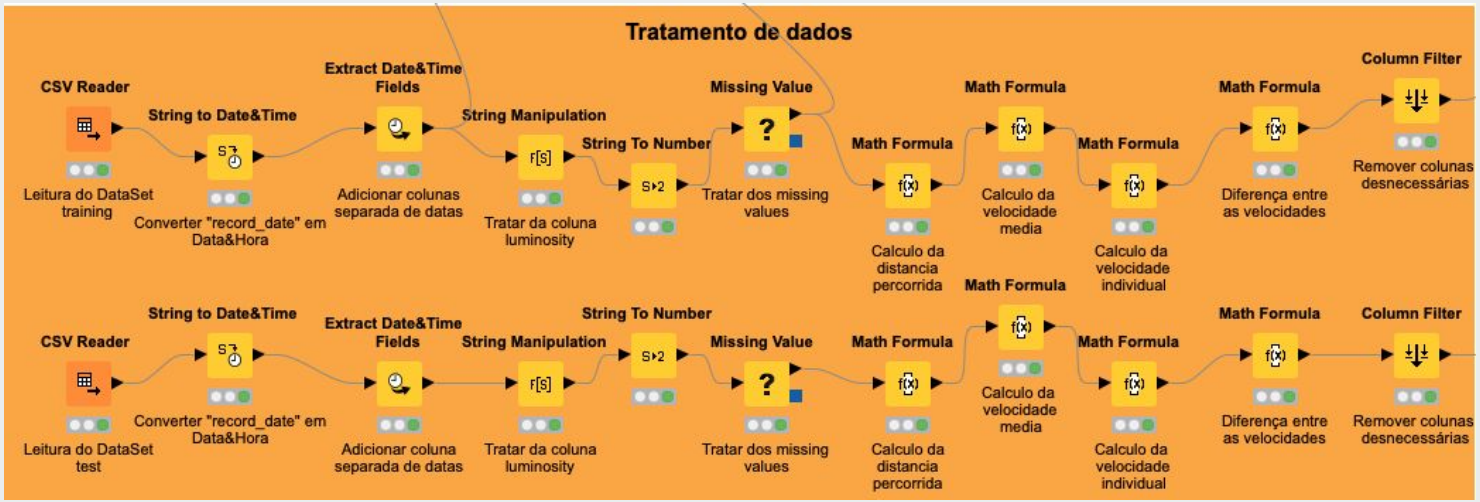
Exemplo Feature Selection



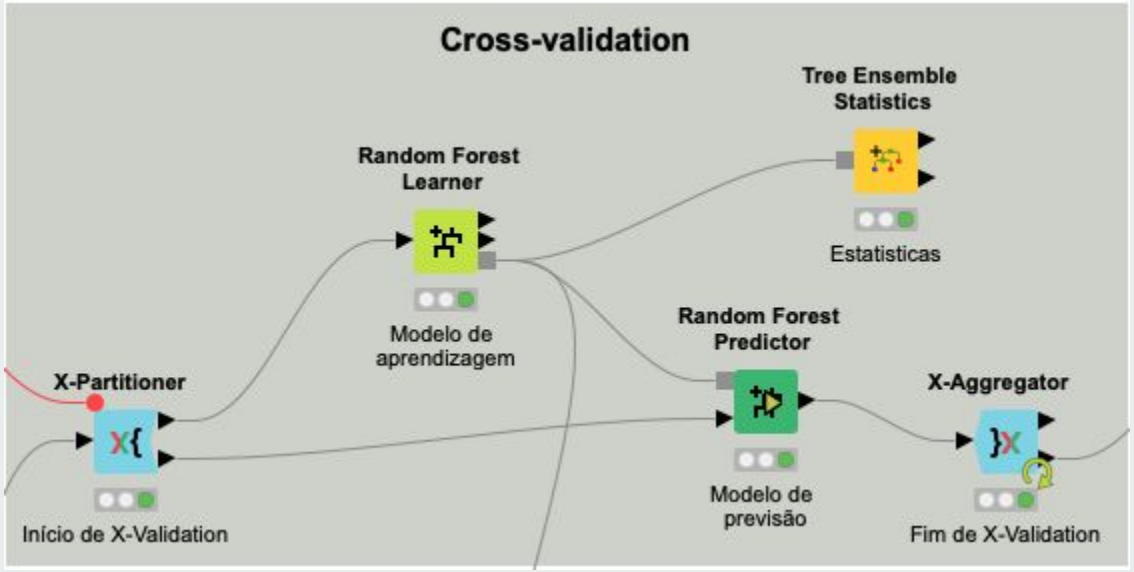
Feature selection

Iteração	1	2	3	Intersecção
Accuracy	79,712%	80,241%	80.417%	
Average_Free_Flow_Speed		X	X	
Average_Free_Flow_Time	X	X	X	X
Luminosity	X	X	X	X
Average_Temperature	X	X	X	X
Average_Atmos_Pressure	X	X	X	X
Average_Humidity		X	X	
Average_Wind_Speed	X		X	
Average_Cloudiness	X	X	X	X
Average_Precipitation	X	X	X	X
Average_Rain	X		X	
Month(Number)	X	X	X	X
Day of Week(Number)		X	X	
Hour		X	X	
Distance		X	X	
Average_Speed_M/S	X		X	
Average_Individual_Speed_M/S	X	X	X	X
Speed_Diff_M/S	X	X	X	X
Average_Time_Diff		X		

Tratamento de dados

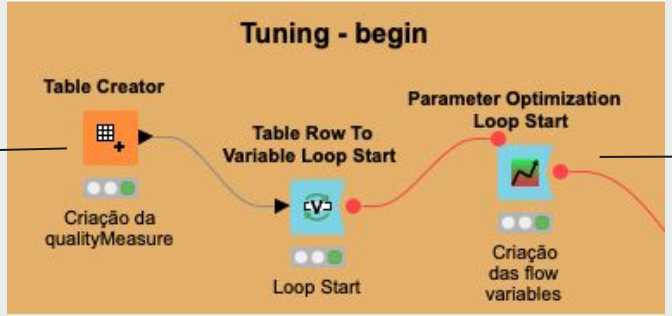


Cross-Validation



Begin tuning

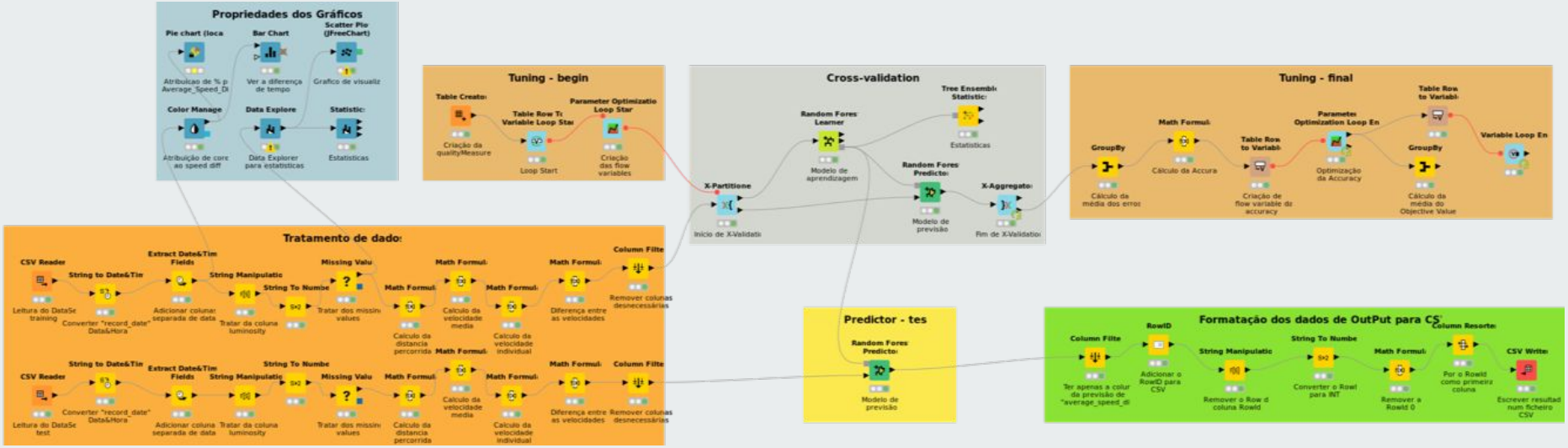
	S qualityMeasure
Row0	InformationGain
Row1	InformationGainRatio
Row2	Gini



Parameter	Start value	Stop value	Step size	Integer?
stopCriteria	2	12	1.0	✓
nrModels	100	500	50.0	✓
nrLevels	10	40	10.0	✓

Row ID	I stopCriteria	I nrModels	I nrLevels	D Objec...	S RowID	I curren...	I maxIt...	S qualityMeasure
Row0	3	500	20	80.799	Best parameters	0	3	InformationGain
Row1	3	500	30	80.946	Best parameters	1	3	InformationGainRatio
Row2	5	300	20	80.608	Best parameters	2	3	Gini

WorkFlow completo



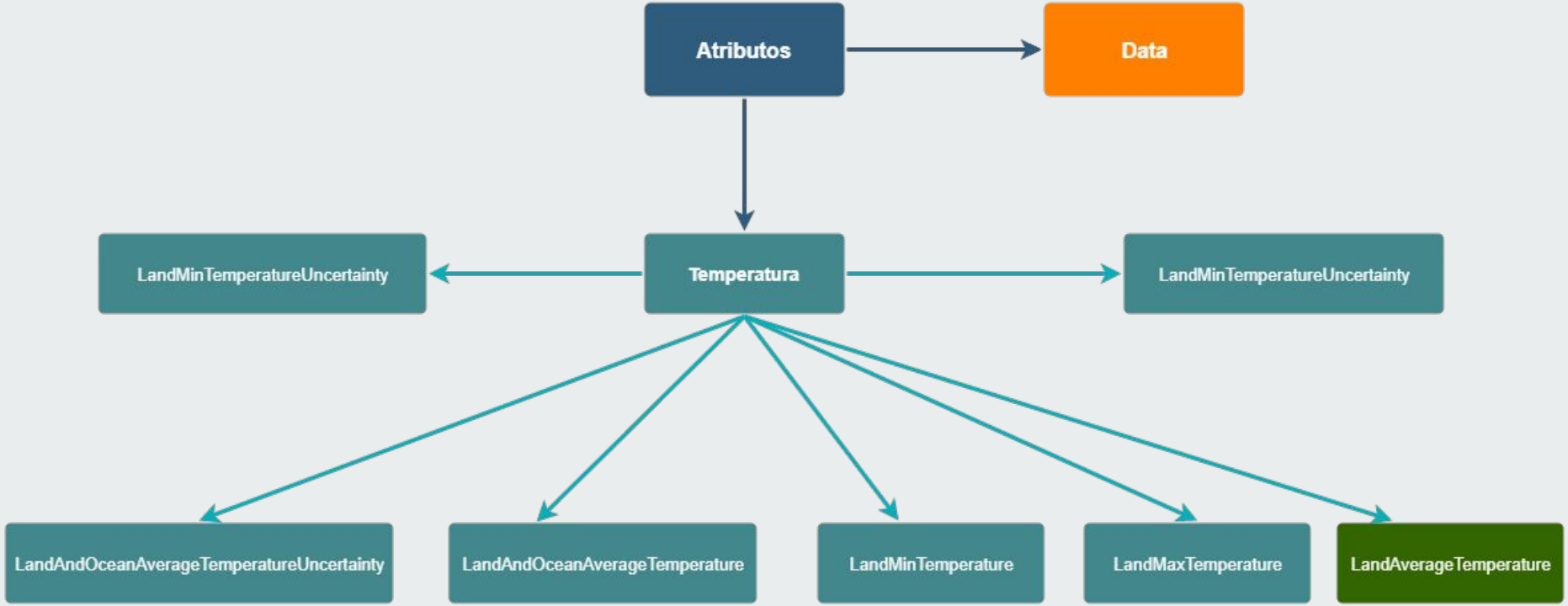
Kaggle

Submissões Kaggle:

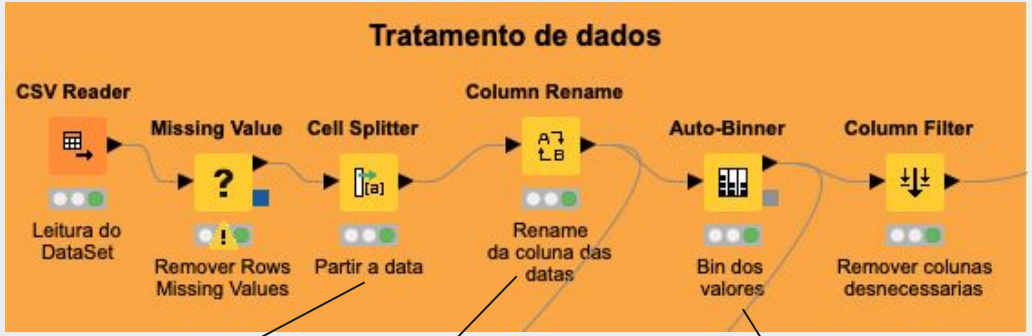
Melhor Dataset: Público - 78,66%
Privado - 82,19%

Dataset Submetido: Público - 81,11%
Privado - 81,43%

Dataset da temperatura global

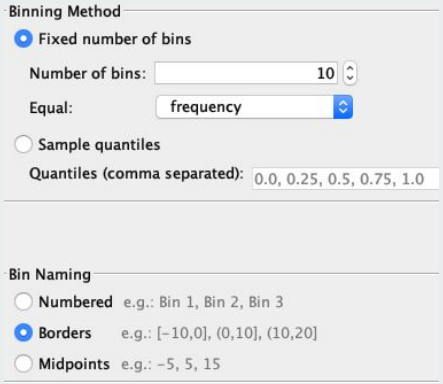


Tratamento de dados

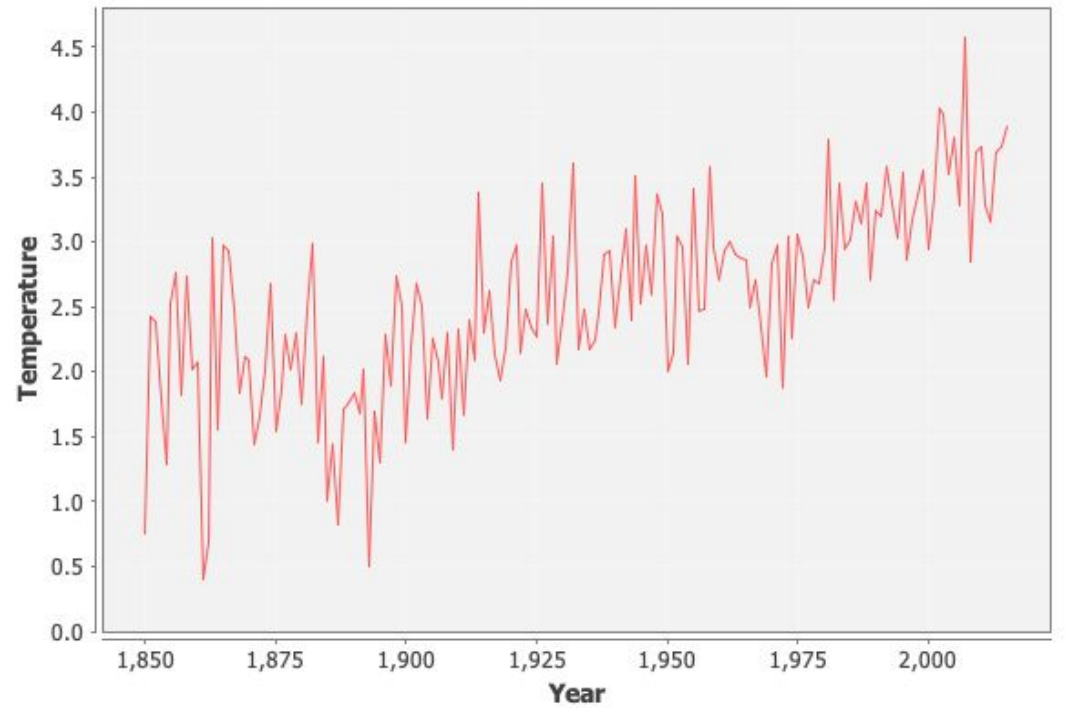


S dt
1850-01-01

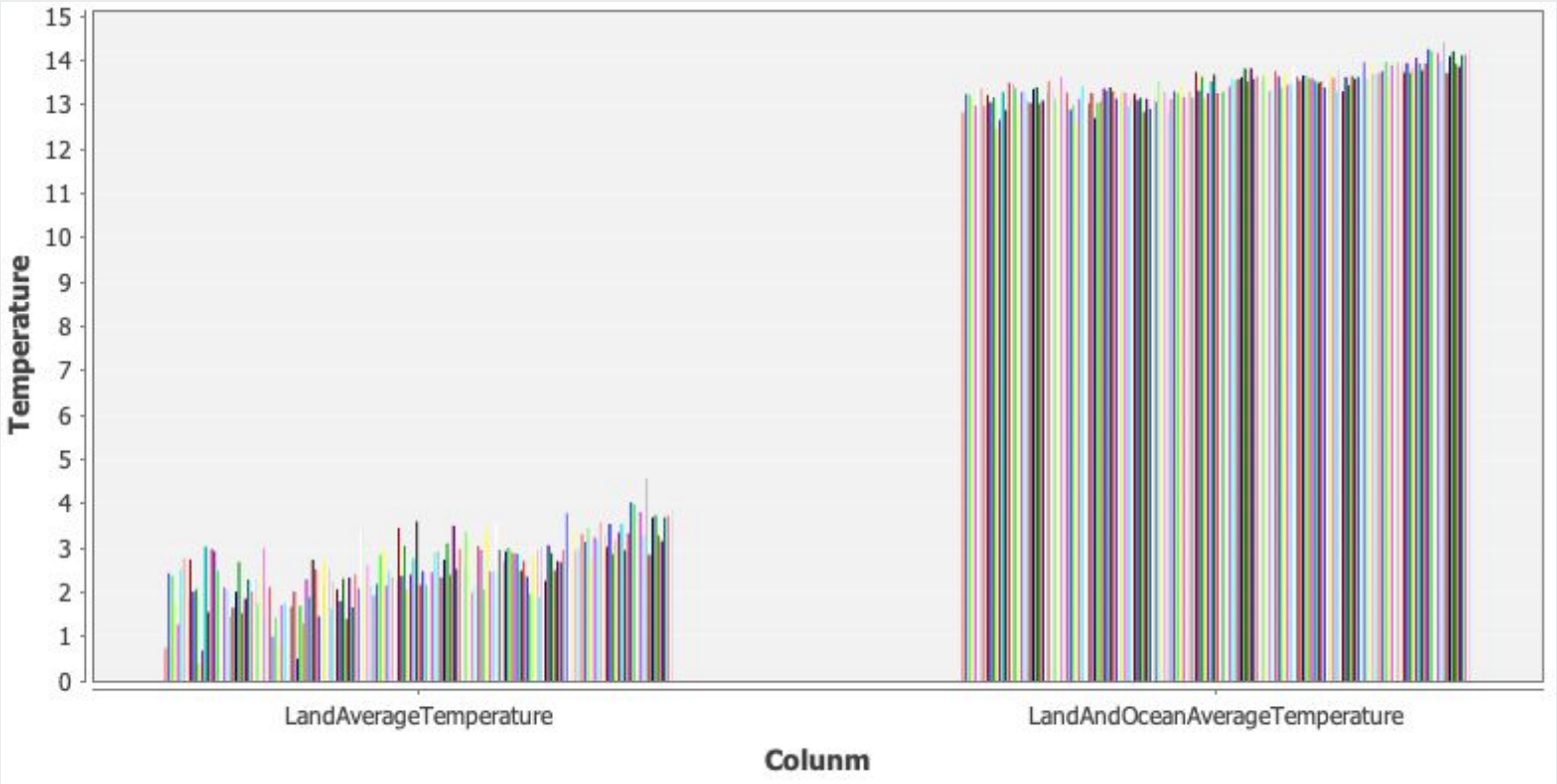
I Year	I Month	I Day
1850	1	1



AverageLandTemperature & Year



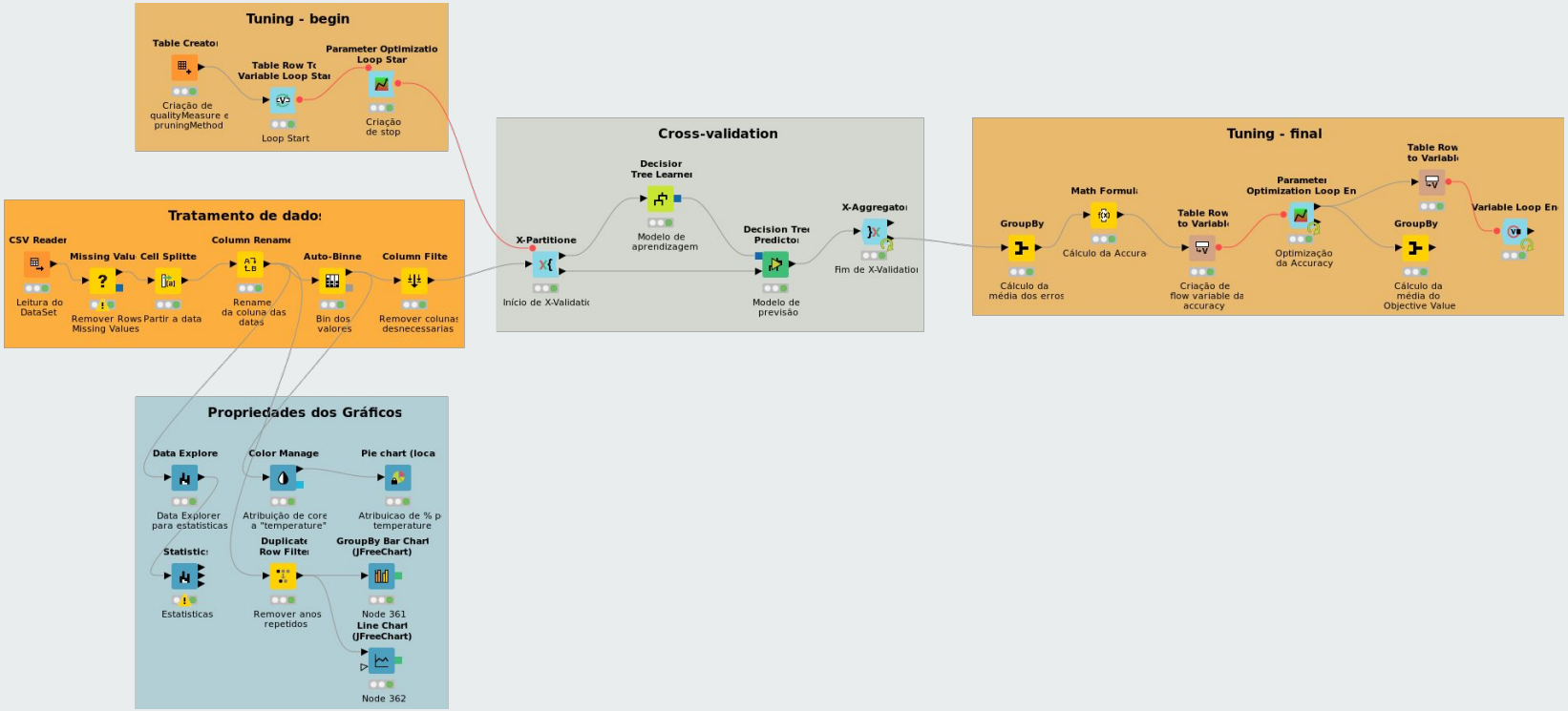
Average LandTemperature & LandOceanTemperature



Resultados Obtidos

Row ID	I stopCriteria	D Objective value	S RowID	I curren...	I maxIt...	S qualityMeasure	S pruningMethod
Row0	3	85.945	Best parameters	0	4	Gain ratio	No pruning
Row1	3	85.543	Best parameters	1	4	Gain ratio	MDL
Row2	4	87.399	Best parameters	2	4	Gini index	No pruning
Row3	2	86.095	Best parameters	3	4	Gini index	MDL

WorkFlow completo



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