

EFC 2

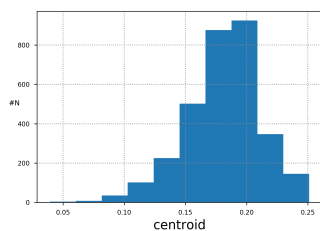
Cláudio Ferreira Carneiro - RA 263796

October 17, 2019

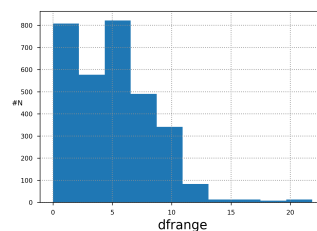
1 Parte 1 –Classificação binária

O código referente às atividades se encontra no repositório:
<https://github.com/carneirofc/IA006.git>

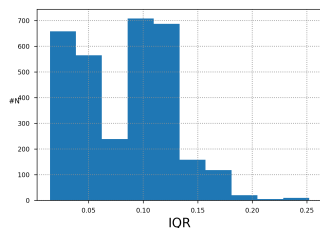
1.1 a) Características dos atributos de entrada



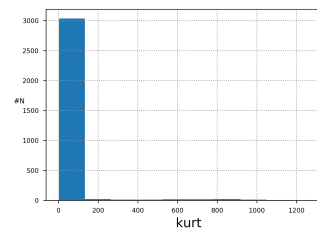
(a) Centroid



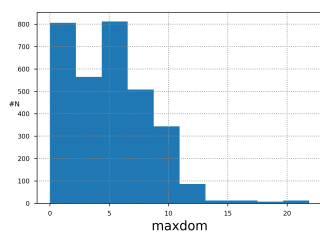
(b) F-Range



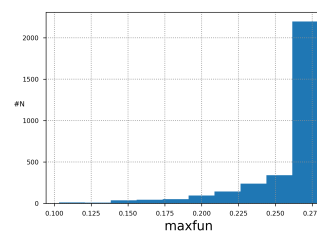
(c) IQR



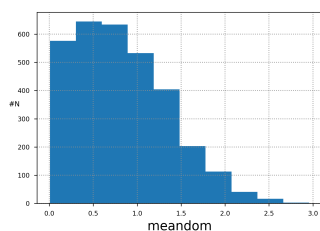
(d) Kurt



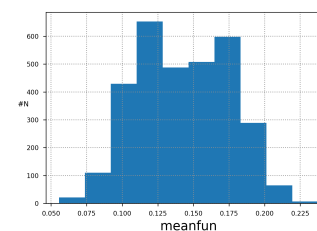
(e) Max dom



(f) Max fun

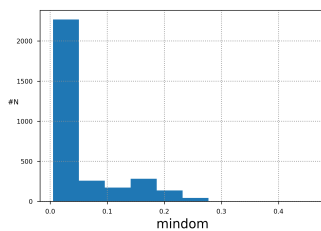


(g) Mean dom

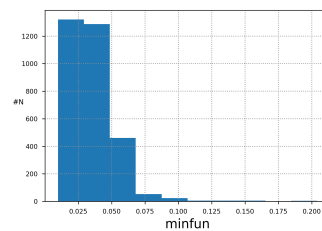


(h) Mean fun

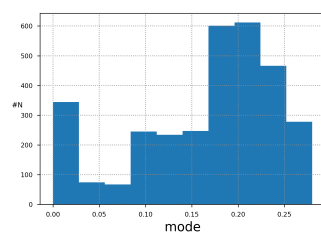
Figure 1: Classificação binária: Histograma dos atributos (1)



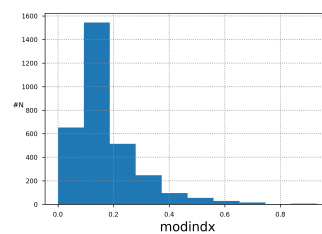
(a) Min dom



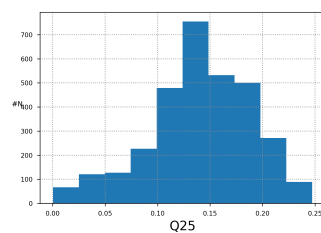
(b) Min fun



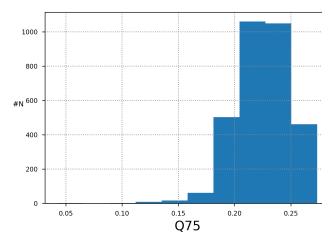
(c) Mode



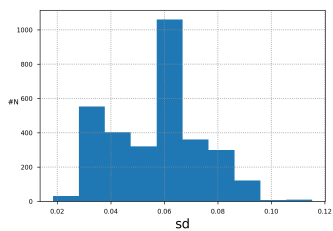
(d) modindx



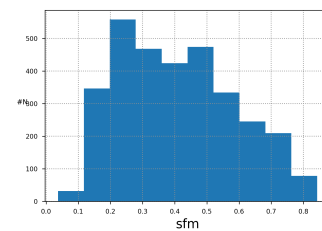
(e) Q25



(f) Q75



(g) sd



(h) sfm

Figure 2: Classificação binária: Histograma dos atributos (2)

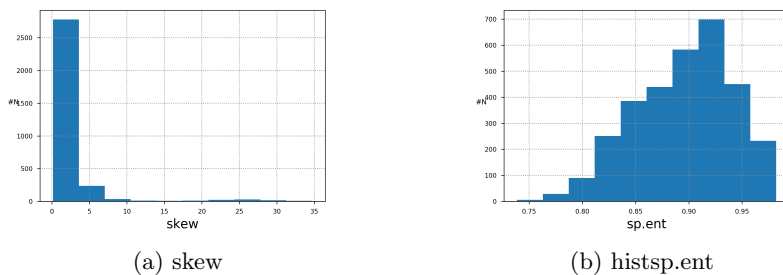


Figure 3: Classificação binária: Histograma dos atributos (3)

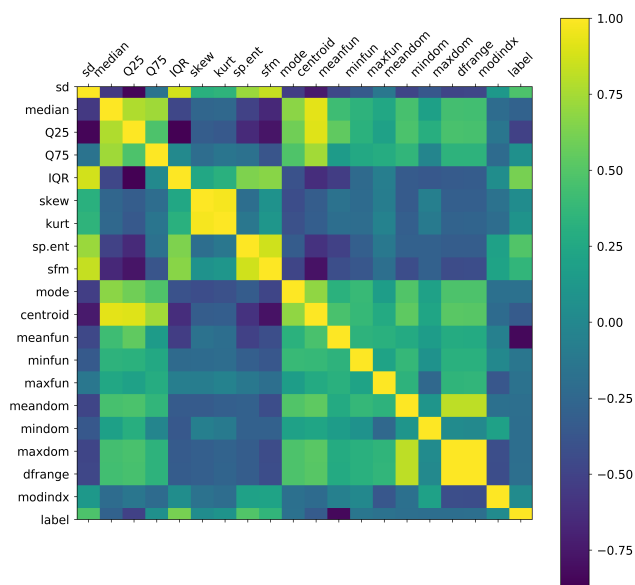


Figure 4: Classificação binária: Mapa de calor da correlação dos atributos

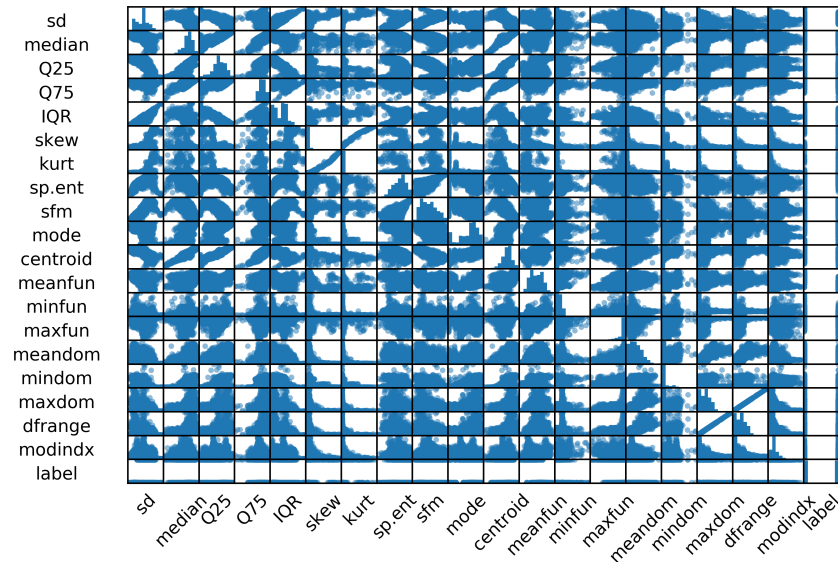


Figure 5: Classificação binária: Correlação dos atributos em gráfico de dispersão

1.2 b) Curva ROC e F_1 -medida

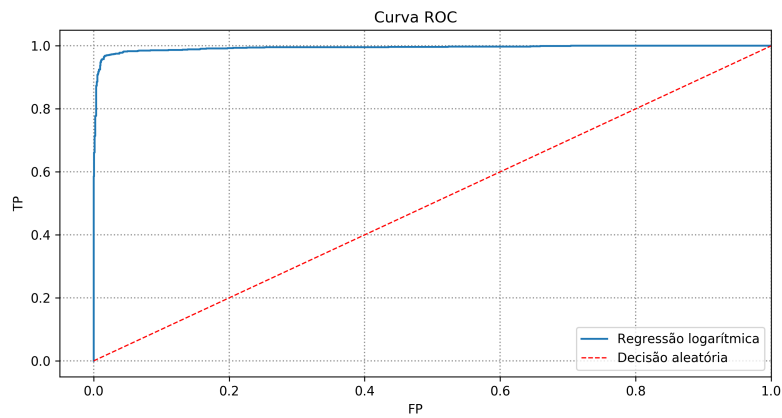


Figure 6: Classificação binária: Curva ROC relativa aos dados de Teste

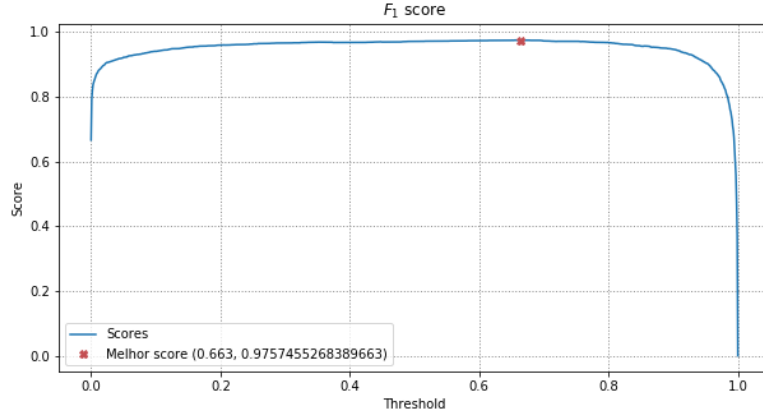


Figure 7: Classificação binária: F_1 -medida relativa aos dados de Teste

1.3 c) Melhor *threshold*, matriz de confusão e acurácia

Para a escolha do valor de *threshold* será utilizada a F_1 -medida, de forma que o *recall* e precisão do classificador tenham a mesma importância.

Conforme apresentado na figura [7], o ponto de máxima F_1 -medida é obtido com:

$$threshold = 0.663$$

$$F_1 - medida \approx 0.9757$$

Utilizando o limiar de máxima F_1 -medida, a classificação do *dataset* de testes é apresentada conforme a matriz de confusão:

			Classe Estimada	
			Masculino	Feminino
			+	-
Classe Verdadeira	Masculino	+	1227	40
	Feminino	-	21	1246

O classificador apresenta acurácia (*acc*), precisão() e *recall* de:

$$acc \approx 0.9759$$

$$prec \approx 0.9832$$

$$recall \approx 0.9684$$