Modal intersting rules comparision

Pneumonia – scale semitones without mfcc

▣ ⟨G⟩((max[cntrd] ≥ 1084.33) ∧ (std-[skwns] ≤ 0.08)) ↣ Healthy : (ninstances = 101, ncovered = 17, coverage = 0.17, confidence = 1.0, lift = 2.02, natoms = 2, height = 2)

▣ ⟨G⟩(max[mel8=1194Hz] ≤ -4.91) ∧ [G](max[cntrd] < 1084.33) ∧ [G](std+[mel10=1687Hz] < 0.42) ∧ [G] ((max[mel8=1194Hz] ≤ -4.91) → [DBE](std+[mel13=2832Hz] < 0.17)) ↣ Pneumonia : (ninstances = 101, ncovered = 28, coverage = 0.28, confidence = 0.93, lift = 1.84, natoms = 5, height = 4)

Pneumonia – scale semitones with mfcc

▣ ⟨G⟩((max[mfcc3] ≤ -0.52) ∧ ⟨L⟩(max[crest] ≤ 20.89)) ∧ [G](max[mfcc2] > 1.6) ∧ [G]((max[mfcc3] ≤ -0.52) → [D̄B̄Ē](max[mfcc4] > -0.53)) ∧ [G]((max[mfcc3] ≤ -0.52) → [DBE](max[flatn] < 0.1)) ∧ [G]((max[mfcc3] ≤ -0.52) → [G](sumdiagcov-[mel11=2005Hz] > 0.0)) ∧ [G]((max[mfcc3] ≤ -0.52) → [L]((max[crest] ≤ 20.89) → (std-[mel6=845Hz] > 0.0))) ↣ Healthy : (ninstances = 101, ncovered = 12, coverage = 0.12, confidence = 0.58, lift = 1.05, natoms = 12, height = 8)

▣ [G](max[mfcc2] > 1.6) ∧ [G](max[mfcc3] > -0.52) ∧ [G](max[mel12=2383Hz] > 0.0) ∧ [G](std+[mfcc6] < 0.32) ↣ Pneumonia : (ninstances = 101, ncovered = 25, coverage = 0.25, confidence = 0.96, lift = 2.15, natoms = 4, height = 4)

▣ ⟨G⟩((max[mfcc2] ≤ 1.6) ∧ ⟨D̄B̄Ē⟩(min[mfcc5] ≥ -0.01)) ∧ [G]((max[mfcc2] ≤ 1.6) → [G](max[mfcc5] < 0.91)) ↣ Healthy : (ninstances = 101, ncovered = 40, coverage = 0.4, confidence = 0.92, lift = 1.67, natoms = 4, height = 4)

Pneumonia – scale mel_htk without mfcc

▣ ⟨G⟩((max[cntrd] ≥ 1099.63) ∧ ⟨AO⟩(max[decrs] ≥ -0.04)) ↣ Healthy : (ninstances = 101, ncovered = 24, coverage = 0.24, confidence = 0.96, lift = 1.98, natoms = 2, height = 3)

▣ ⟨G⟩((max[mel11=1179Hz] ≤ -4.59) ∧ ⟨L⟩(std-[mel22=2829Hz] ≤ 0.02)) ∧ [G](max[cntrd] < 1099.63) ∧ [G](std+[mel15=1663Hz] < 0.47) ∧ [G]((max[mel11=1179Hz] ≤ -4.59) → [AO](min[skwns] > 1.42)) ∧ [G] ((max[mel11=1179Hz] ≤ -4.59) → [L]((std-[mel22=2829Hz] ≤ 0.02) → (std-[mel6=710Hz] > 0.0))) ↣ Pneumonia : (ninstances = 101, ncovered = 31, coverage = 0.31, confidence = 0.94, lift = 1.82, natoms = 9, height = 7)

Pneumonia – scale mel_htk with mfcc

▣ ⟨G⟩((max[mfcc3] ≤ 0.07) ∧ ⟨ĀŌ⟩(min[mfcc2] ≤ 2.06)) ↣ Healthy : (ninstances = 101, ncovered = 25, coverage = 0.25, confidence = 1.0, lift = 2.06, natoms = 2, height = 3)

▣ [G](max[mfcc3] > 0.07) ∧ [G](max[mfcc2] > 1.93) ∧ [G](max[mel10=1074Hz] > 0.0) ∧ [G](mean_longstretch1+[mel4=558Hz] < 9.0) ↣ Pneumonia : (ninstances = 101, ncovered = 37, coverage = 0.37, confidence = 0.97, lift = 1.89, natoms = 4, height = 4)

Bronchiectasis – scale semitones without mfcc

▣ [G](max[mel7=1005Hz] < -4.14) ∧ [G](std-[mel13=2832Hz] > 0.0) ↣ Healthy : (ninstances = 36, ncovered = 6, coverage = 0.17, confidence = 0.67, lift = 1.33, natoms = 2, height = 2)

▣ ⟨G⟩((max[mel7=1005Hz] ≥ -4.14) ∧ ⟨AO⟩((max[kurts] ≤ 6.44) ∧ ⟨D̄B̄Ē⟩((mean[mel7=1005Hz] ≤ -4.18) ∧ ⟨D̄B̄Ē⟩((median[decrs] ≥ -0.36) ∧ (std+[mel1=357Hz] ≥ 0.48))))) ↣ Healthy : (ninstances = 36, ncovered = 6, coverage = 0.17, confidence = 1.0, lift = 2.0, natoms = 5, height = 8)

▣ ⟨G⟩((max[mel7=1005Hz] ≥ -4.14) ∧ ⟨AO⟩(max[kurts] ≤ 6.44)) ∧ [G]((max[mel7=1005Hz] ≥ -4.14) → [AO]((max[kurts] ≤ 6.44) → [D̄B̄Ē](mean[mel7=1005Hz] > -4.18))) ∧ [G]((max[mel7=1005Hz] ≥ -4.14) → [AO]((max[kurts] ≤ 6.44) → (max[mel11=2005Hz] > -5.05))) ↣ Bronchiectasis : (ninstances = 36, ncovered = 6, coverage = 0.17, confidence = 1.0, lift = 2.0, natoms = 8, height = 7)

▣ ⟨G⟩(max[mel7=1005Hz] ≥ -4.14) ∧ [G]((max[mel7=1005Hz] ≥ -4.14) → [AO](max[kurts] > 6.44)) ↣ Bronchiectasis : (ninstances = 36, ncovered = 10, coverage = 0.28, confidence = 0.8, lift = 1.6, natoms = 3, height = 4)

Bronchiectasis – scale semitones with mfcc

▣ ⟨G⟩(max[kurts] ≤ 5.06) ∧ [G]((max[kurts] ≤ 5.06) → [D̄B̄Ē](median[mel8=1194Hz] > 0.0)) ↣ Bronchiectasis : (ninstances = 36, ncovered = 5, coverage = 0.14, confidence = 1.0, lift = 2.25, natoms = 3, height = 4)

▣ ⟨G⟩(std+[mel2=424Hz] ≥ 0.01) ∧ [G](max[kurts] > 5.06) ∧ [G](max[mel7=1005Hz] > 0.0) ↣ Bronchiectasis : (ninstances = 36, ncovered = 6, coverage = 0.17, confidence = 0.83, lift = 1.88, natoms = 3, height = 3)

▣ ⟨G⟩((max[kurts] ≤ 5.06) ∧ ⟨D̄B̄Ē⟩(median[mel8=1194Hz] ≤ 0.0)) ∧ [G]((max[kurts] ≤ 5.06) → [D̄B̄Ē]((median[mel8=1194Hz] ≤ 0.0) → (quantile_hh+[mel9=1419Hz] < 2.2))) ↣ Healthy : (ninstances = 36, ncovered = 16, coverage = 0.44, confidence = 0.94, lift = 1.69, natoms = 5, height = 5)

Bronchiectasis – scale mel_htk without mfcc

▣ ⟨G⟩(max[flux] ≤ 0.01) ∧ [G]((max[flux] ≤ 0.01) → [G](max[kurts] > 5.19)) ∧ [G]((max[flux] ≤ 0.01) → [D̄B̄Ē](max[mel10=1074Hz] > -5.53)) ∧ [G]((max[flux] ≤ 0.01) → (max[mel9=975Hz] < -4.67)) ↣ Bronchiectasis : (ninstances = 36, ncovered = 5, coverage = 0.14, confidence = 1.0, lift = 1.8, natoms = 7, height = 6)

▣ ⟨G⟩((max[flux] ≤ 0.01) ∧ ⟨G⟩(max[kurts] ≤ 5.19)) ∧ [G]((max[flux] ≤ 0.01) → [G]((max[kurts] ≤ 5.19) → (sumdiagcov-[mel1=359Hz] > 0.01))) ↣ Healthy : (ninstances = 36, ncovered = 8, coverage = 0.22, confidence = 1.0, lift = 2.25, natoms = 5, height = 5)

▣ ⟨G⟩(std+[flatn] ≥ 0.01) ∧ [G](max[flux] > 0.01) ∧ [G](std+[sprd] < 197.9) ↣ Bronchiectasis : (ninstances = 36, ncovered = 13, coverage = 0.36, confidence = 0.92, lift = 1.66, natoms = 3, height = 3)

Bronchiectasis – scale mel_htk with mfcc

▣ ⟨G⟩(max[mfcc4] ≥ 0.43) ∧ [G](std+[mel2=421Hz] < 0.02) ∧ [G]((max[mfcc4] ≥ 0.43) → [D̄B̄Ē](max[mfcc6] > 0.6)) ∧ [G]((max[mfcc4] ≥ 0.43) → (min[mel1=359Hz] < 0.02)) ↣ Bronchiectasis : (ninstances = 36, ncovered = 4, coverage = 0.11, confidence = 1.0, lift = 2.12, natoms = 6, height = 5)

▣ ⟨G⟩(mean_longstretch1+[mel1=359Hz] ≥ 4.0) ∧ [G](std+[mel2=421Hz] < 0.02) ∧ [G](max[mfcc4] < 0.43) ∧ [G](max[mfcc7] > -0.79) ↣ Bronchiectasis : (ninstances = 36, ncovered = 5, coverage = 0.14, confidence = 0.8, lift = 1.69, natoms = 4, height = 4)

▣ ⟨G⟩((std+[mel2=421Hz] ≥ 0.02) ∧ (min[mel1=359Hz] ≥ 0.0)) ↣ Bronchiectasis : (ninstances = 36, ncovered = 9, coverage = 0.25, confidence = 1.0, lift = 2.12, natoms = 2, height = 2)

▣ ⟨G⟩((max[mfcc4] ≥ 0.43) ∧ ⟨D̄B̄Ē⟩((max[mfcc6] ≤ 0.6) ∧ ⟨AO⟩(min[mfcc5] ≥ 0.34))) ∧ [G](std+[mel2=421Hz] < 0.02) ↣ Healthy : (ninstances = 36, ncovered = 16, coverage = 0.44, confidence = 1.0, lift = 1.89, natoms = 4, height = 6)

COPD – scale semitones without mfcc

▣ ⟨G⟩((max[mel1=357Hz] ≤ -3.83) ∧ ⟨L̄⟩((max[mel13=2832Hz] ≥ -8.07) ∧ (max[skwns] ≤ 1.57) ∧ ⟨D̄B̄Ē⟩(std-[cntrd] ≤ 13.24))) ∧ [G]((max[mel1=357Hz] ≤ -3.83) → [L̄]((max[mel13=2832Hz] ≥ -8.07) → (max[skwns] ≤ 1.57) → [G](std+[entrp] < 0.11))) ∧ [G]((max[mel1=357Hz] ≤ -3.83) → [L̄]((max[mel13=2832Hz] ≥ -8.07) → (max[skwns] ≤ 1.57) → [D̄B̄Ē]((std-[cntrd] ≤ 13.24) → (std+[mel2=424Hz] < 0.41)))) ↣ Healthy : (ninstances = 110, ncovered = 11, coverage = 0.1, confidence = 0.91, lift = 1.85, natoms = 13, height = 8)

▣ ⟨G⟩(max[mel1=357Hz] ≤ -3.83) ∧ [G]((max[mel1=357Hz] ≤ -3.83) → [L̄](max[mel13=2832Hz] < -8.07)) ↣ COPD : (ninstances = 110, ncovered = 13, coverage = 0.12, confidence = 1.0, lift = 1.96, natoms = 3, height = 4)

▣ [G](max[mel1=357Hz] > -3.83) ∧ [G](max[mel12=2383Hz] < -4.46) ∧ [G](max[cntrd] < 986.78) ∧ [G](max[mel7=1005Hz] < -2.36) ↣ COPD : (ninstances = 110, ncovered = 14, coverage = 0.13, confidence = 0.93, lift = 1.82, natoms = 4, height = 4)

▣ ⟨G⟩(max[mel12=2383Hz] ≥ -4.46) ∧ [G](max[mel1=357Hz] > -3.83) ↣ COPD : (ninstances = 110, ncovered = 17, coverage = 0.15, confidence = 1.0, lift = 1.96, natoms = 2, height = 2)

▣ ⟨G⟩((max[mel1=357Hz] ≤ -3.83) ∧ ⟨L̄⟩((max[mel13=2832Hz] ≥ -8.07) ∧ (max[skwns] ≤ 1.57) ∧ ⟨G⟩(std+[entrp] ≥ 0.11))) ↣ Healthy : (ninstances = 110, ncovered = 35, coverage = 0.32, confidence = 0.94, lift = 1.92, natoms = 4, height = 6)

COPD – scale semitones with mfcc

▣ ⟨G⟩((max[mfcc6] ≥ 0.05) ∧ (max[mfcc5] ≤ 0.24)) ∧ [G](max[mel5=711Hz] > 0.0) ↣ COPD : (ninstances = 110, ncovered = 28, coverage = 0.25, confidence = 0.96, lift = 2.04, natoms = 3, height = 3)

▣ ⟨G⟩((max[mel5=711Hz] ≤ 0.0) ∧ ⟨AO⟩((min[cntrd] ≥ 984.58) ∧ ⟨AO⟩(min[mfcc4] ≥ 0.44))) ∧ [G]((max[mel5=711Hz] ≤ 0.0) → [AO]((min[cntrd] ≥ 984.58) → [AO]((min[mfcc4] ≥ 0.44) → [G](max[mel10=1687Hz] > 0.0)))) ↣ Healthy : (ninstances = 110, ncovered = 34, coverage = 0.31, confidence = 0.97, lift = 1.84, natoms = 7, height = 8)

COPD – scale mel_htk without mfcc

▣ ⟨G⟩(max[mel4=558Hz] ≤ -4.45) ∧ [G]((max[mel4=558Hz] ≤ -4.45) → (max[mel21=2632Hz] < -7.98)) ↣ COPD : (ninstances = 110, ncovered = 19, coverage = 0.17, confidence = 0.95, lift = 1.56, natoms = 3, height = 3)

▣ ⟨G⟩((max[mel4=558Hz] ≤ -4.45) ∧ (max[mel21=2632Hz] ≥ -7.98) ∧ ⟨ĀŌ⟩(max[skwns] ≤ 1.44)) ∧ [G]((max[mel4=558Hz] ≤ -4.45) → (max[mel21=2632Hz] ≥ -7.98) → [ĀŌ]((max[skwns] ≤ 1.44) → [DBE](sumdiagcov-[mel24=3257Hz] > 0.01))) ↣ Healthy : (ninstances = 110, ncovered = 24, coverage = 0.22, confidence = 0.96, lift = 2.45, natoms = 7, height = 7)

▣ [G](max[mel4=558Hz] > -4.45) ∧ [G](max[mel18=2106Hz] > -6.18) ∧ [G](max[mel2=421Hz] > -3.86) ↣ COPD : (ninstances = 110, ncovered = 31, coverage = 0.28, confidence = 0.97, lift = 1.59, natoms = 3, height = 3)

COPD – scale mel_htk with mfcc

▣ ⟨G⟩((max[mel4=558Hz] ≤ 0.0) ∧ ⟨D̄B̄Ē⟩((quantile_hh+[mel20=2447Hz] ≥ 1.89) ∧ (std-[flatn] ≤ 0.05))) ∧ [G]((max[mel4=558Hz] ≤ 0.0) → [D̄B̄Ē]((quantile_hh+[mel20=2447Hz] ≥ 1.89) → [AO](mean[mfcc3] > 0.12))) ∧ [G]((max[mel4=558Hz] ≤ 0.0) → [D̄B̄Ē]((quantile_hh+[mel20=2447Hz] ≥ 1.89) → [ĀŌ](min[mel3=488Hz] > 0.0))) ↣ COPD : (ninstances = 110, ncovered = 11, coverage = 0.1, confidence = 0.64, lift = 1.3, natoms = 9, height = 7)

▣ ⟨G⟩(max[mfcc7] ≥ -0.26) ∧ [G](max[mel4=558Hz] > 0.0) ∧ [G]((max[mfcc7] ≥ -0.26) → [D̄B̄Ē](mean[mel2=421Hz] > 0.0)) ↣ COPD : (ninstances = 110, ncovered = 29, coverage = 0.26, confidence = 0.97, lift = 1.97, natoms = 4, height = 4)

▣ ⟨G⟩((max[mel4=558Hz] ≤ 0.0) ∧ ⟨D̄B̄Ē⟩((quantile_hh+[mel20=2447Hz] ≥ 1.89) ∧ ⟨AO⟩((mean[mfcc3] ≤ 0.12) ∧ ⟨AO⟩(std-[mel1=359Hz] ≤ 0.0)))) ∧ [G]((max[mel4=558Hz] ≤ 0.0) → [D̄B̄Ē]((quantile_hh+[mel20=2447Hz] ≥ 1.89) → [AO]((mean[mfcc3] ≤ 0.12) → [AO]((std-[mel1=359Hz] ≤ 0.0) → (median[mfcc13] > -0.37))))) ↣ Healthy : (ninstances = 110, ncovered = 39, coverage = 0.35, confidence = 0.95, lift = 1.86, natoms = 9, height = 9)

URTI – scale semitones without mfcc

▣ ⟨G⟩(max[flatn] ≥ 0.14) ∧ [G]((max[flatn] ≥ 0.14) → [L](max[flatn] < 0.28)) ∧ [G]((max[flatn] ≥ 0.14) → [L̄](sumdiagcov-[flatn] > 0.01)) ∧ [G]((max[flatn] ≥ 0.14) → [D̄B̄Ē](max[crest] > 15.22)) ↣ Healthy : (ninstances = 86, ncovered = 12, coverage = 0.14, confidence = 0.5, lift = 1.08, natoms = 7, height = 6)

▣ ⟨G⟩((max[mel7=1005Hz] ≤ -4.79) ∧ ⟨AO⟩(sumdiagcov-[entrp] ≤ 0.04)) ∧ [G](max[flatn] < 0.14) ∧ [G]((max[mel7=1005Hz] ≤ -4.79) → [D̄B̄Ē](max[mel8=1194Hz] > -6.82)) ∧ [G]((max[mel7=1005Hz] ≤ -4.79) → [ĀŌ](mean_longstretch1+[mel4=599Hz] < 8.0)) ↣ URTI : (ninstances = 86, ncovered = 21, coverage = 0.24, confidence = 0.9, lift = 1.69, natoms = 7, height = 6)

URTI – scale semitones with mfcc

▣ ⟨G⟩((max[mfcc2] ≥ 5.02) ∧ ⟨ĀŌ⟩(std-[sprd] ≤ 1.03)) ↣ URTI : (ninstances = 86, ncovered = 9, coverage = 0.1, confidence = 0.78, lift = 1.37, natoms = 2, height = 3)

▣ ⟨G⟩(max[skwns] ≤ 1.13) ∧ [G](max[mfcc2] < 5.02) ∧ [G](max[mfcc4] > -0.03) ∧ [G](std+[skwns] < 3.45) ∧ [G](std+[mfcc4] < 0.61) ∧ [G]((max[skwns] ≤ 1.13) → [ĀŌ](max[cntrd] > 690.0)) ∧ [G]((max[skwns] ≤ 1.13) → [G](sumdiagcov-[mel3=504Hz] > 0.0)) ↣ Healthy : (ninstances = 86, ncovered = 10, coverage = 0.12, confidence = 0.5, lift = 1.16, natoms = 9, height = 7)

▣ ⟨G⟩((max[mfcc2] ≥ 5.02) ∧ (mean[flatn] ≥ 0.02) ∧ ⟨G⟩(std+[entrp] ≥ 0.1)) ∧ [G]((max[mfcc2] ≥ 5.02) → [ĀŌ](std-[sprd] > 1.03)) ∧ [G]((max[mfcc2] ≥ 5.02) → [L](std+[mel13=2832Hz] < 0.0)) ∧ [G]((max[mfcc2] ≥ 5.02) → (mean[flatn] ≥ 0.02) → [L](std-[mel2=424Hz] > 0.0)) ↣ URTI : (ninstances = 86, ncovered = 12, coverage = 0.14, confidence = 0.83, lift = 1.46, natoms = 10, height = 7)

URTI – scale mel_htk without mfcc

▣ ⟨G⟩((max[rllff] ≥ 2156.25) ∧ (sumdiagcov-[mel1=359Hz] ≤ 0.04)) ∧ [G]((max[rllff] ≥ 2156.25) → [L](std+[slope] < 0.0)) ↣ Healthy : (ninstances = 86, ncovered = 11, coverage = 0.13, confidence = 0.73, lift = 1.42, natoms = 4, height = 4)

▣ ⟨G⟩(max[mel11=1179Hz] ≤ -4.56) ∧ [G](max[rllff] < 2156.25) ∧ [G]((max[mel11=1179Hz] ≤ -4.56) → [ĀŌ](max[mel9=975Hz] > -6.37)) ∧ [G]((max[mel11=1179Hz] ≤ -4.56) → [G](max[mel15=1663Hz] < -4.4)) ↣ URTI : (ninstances = 86, ncovered = 14, coverage = 0.16, confidence = 0.86, lift = 1.76, natoms = 6, height = 5)

URTI – scale mel_htk with mfcc

▣ ⟨G⟩((max[mfcc2] ≤ 2.89) ∧ ⟨D̄B̄Ē⟩((mean[mfcc13] ≤ 0.0) ∧ ⟨G⟩(std+[mel8=882Hz] ≥ 0.0))) ∧ [G]((max[mfcc2] ≤ 2.89) → [DBE](max[mfcc4] < 0.57)) ∧ [G]((max[mfcc2] ≤ 2.89) → [D̄B̄Ē]((mean[mfcc13] ≤ 0.0) → (mean[mfcc4] > -0.44))) ∧ [G]((max[mfcc2] ≤ 2.89) → [D̄B̄Ē]((mean[mfcc13] ≤ 0.0) → [G]((std+[mel8=882Hz] ≥ 0.0) → [ĀŌ](mean[mfcc11] < 0.3)))) ∧ [G]((max[mfcc2] ≤ 2.89) → [D̄B̄Ē]((mean[mfcc13] ≤ 0.0) → [G]((std+[mel8=882Hz] ≥ 0.0) → (quantile_hh+[mel2=421Hz] < 2.17)))) ↣ URTI : (ninstances = 86, ncovered = 9, coverage = 0.1, confidence = 0.67, lift = 1.33, natoms = 16, height = 9)

▣ ⟨G⟩((max[mel11=1179Hz] ≤ 0.0) ∧ ⟨AO⟩((min[mfcc10] ≥ 0.28) ∧ (max[mel1=359Hz] ≤ 0.0))) ∧ [G](max[mfcc2] > 2.89) ∧ [G]((max[mel11=1179Hz] ≤ 0.0) → (max[mel13=1407Hz] > 0.0)) ↣ URTI : (ninstances = 86, ncovered = 14, coverage = 0.16, confidence = 0.86, lift = 1.71, natoms = 6, height = 6)

▣ ⟨G⟩((max[mfcc2] ≤ 2.89) ∧ ⟨DBE⟩(max[mfcc4] ≥ 0.57)) ∧ [G]((max[mfcc2] ≤ 2.89) → [DBE]((max[mfcc4] ≥ 0.57) → [L](std+[mel3=488Hz] < 0.0))) ↣ Healthy : (ninstances = 86, ncovered = 18, coverage = 0.21, confidence = 0.78, lift = 1.56, natoms = 5, height = 6)

Bronchiolitis – scale semitones without mfcc

▣ [G](max[crest] < 39.35) ∧ [G](sumdiagcov-[entrp] > 0.0) ↣ Healthy : (ninstances = 56, ncovered = 9, coverage = 0.16, confidence = 1.0, lift = 1.93, natoms = 2, height = 2)

▣ ⟨G⟩((max[crest] ≥ 39.35) ∧ ⟨AO⟩((median[flux] ≥ 0.21) ∧ ⟨AO⟩((min[mel4=599Hz] ≤ -5.09) ∧ (max[mel8=1194Hz] ≥ -5.55)))) ∧ [G]((max[crest] ≥ 39.35) → [AO]((median[flux] ≥ 0.21) → [AO]((min[mel4=599Hz] ≤ -5.09) → [L](max[crest] > 15.83)))) ↣ Bronchiolitis : (ninstances = 56, ncovered = 17, coverage = 0.3, confidence = 0.88, lift = 1.83, natoms = 8, height = 8)

Bronchiolitis – scale semitones with mfcc

▣ [G](max[crest] < 39.35) ∧ [G](std-[mel11=2005Hz] > 0.0) ↣ Healthy : (ninstances = 56, ncovered = 12, coverage = 0.21, confidence = 0.83, lift = 1.94, natoms = 2, height = 2)

▣ ⟨G⟩((max[crest] ≥ 39.35) ∧ ⟨AO⟩((mean[mel1=357Hz] ≥ 0.0) ∧ (mean[mfcc1] ≤ -19.99))) ∧ [G]((max[crest] ≥ 39.35) → [AO]((mean[mel1=357Hz] ≥ 0.0) → (mean[mfcc1] ≤ -19.99) → [AO](min[mel3=504Hz] > 0.0))) ↣ Bronchiolitis : (ninstances = 56, ncovered = 14, coverage = 0.25, confidence = 0.93, lift = 1.63, natoms = 7, height = 7)

Bronchiolitis – scale mel_htk without mfcc

▣ ⟨G⟩((max[cntrd] ≤ 489.66) ∧ ⟨$\bar{A}\bar{O}$⟩((min[skwns] ≤ 2.99) ∧ ⟨L⟩(std+[mel2=421Hz] ≥ 0.7))) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{A}\bar{O}$]((min[skwns] ≤ 2.99) → [$\bar{L}$](std+[mel13=1407Hz] < 0.52))) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{A}\bar{O}$]((min[skwns] ≤ 2.99) → [L](max[mel3=488Hz] > -6.22))) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{A}\bar{O}$]((min[skwns] ≤ 2.99) → [L]((std+[mel2=421Hz] ≥ 0.7) → (std-[mel4=558Hz] > 0.16)))) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{A}\bar{O}$]((min[skwns] ≤ 2.99) → [L]((std+[mel2=421Hz] ≥ 0.7) → (min[mel1=359Hz] > -5.48)))) ↣ Bronchiolitis : (ninstances = 56, ncovered = 7, coverage = 0.12, confidence = 0.86, lift = 1.85, natoms = 17, height = 9)

▣ ⟨G⟩((max[cntrd] ≤ 489.66) ∧ ⟨G⟩(std-[mel3=488Hz] ≤ 0.02)) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{A}\bar{O}$](min[skwns] > 2.99)) ↣ Healthy : (ninstances = 56, ncovered = 7, coverage = 0.12, confidence = 1.0, lift = 1.87, natoms = 4, height = 4)

▣ ⟨G⟩(std-[mel3=488Hz] ≤ 0.01) ∧ [G](max[cntrd] > 489.66) ↣ Healthy : (ninstances = 56, ncovered = 9, coverage = 0.16, confidence = 1.0, lift = 1.87, natoms = 2, height = 2)

▣ ⟨G⟩((max[cntrd] ≤ 489.66) ∧ ⟨$\bar{A}\bar{O}$⟩((min[skwns] ≤ 2.99) ∧ ⟨$\bar{L}$⟩(std+[mel13=1407Hz] ≥ 0.52))) ↣ Bronchiolitis : (ninstances = 56, ncovered = 15, coverage = 0.27, confidence = 0.87, lift = 1.87, natoms = 3, height = 5)

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▣ ⟨G⟩(quantile_hh+[decrs] ≥ 2.16) ∧ [G](max[cntrd] > 489.66) ∧ [G](max[mfcc8] > -0.17) ↣ Healthy : (ninstances = 56, ncovered = 7, coverage = 0.12, confidence = 0.71, lift = 1.6, natoms = 3, height = 3)

▣ ⟨G⟩(max[cntrd] ≤ 489.66) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{L}$](max[mfcc3] > 0.09)) ∧ [G]((max[cntrd] ≤ 489.66) → [$\bar{A}\bar{O}$](median[crest] > 29.84)) ↣ Healthy : (ninstances = 56, ncovered = 8, coverage = 0.14, confidence = 0.5, lift = 1.12, natoms = 5, height = 5)

▣ ⟨G⟩(max[mfcc8] ≤ -0.17) ∧ [G](max[cntrd] > 489.66) ↣ Healthy : (ninstances = 56, ncovered = 8, coverage = 0.14, confidence = 0.88, lift = 1.96, natoms = 2, height = 2)

▣ ⟨G⟩((max[cntrd] ≤ 489.66) ∧ ⟨$\bar{L}$⟩((max[mfcc3] ≤ 0.09) ∧ ⟨G⟩((max[mel1=359Hz] ≥ 0.0) ∧ ⟨AO⟩((max[mel11=1179Hz] ≤ 0.0) ∧ (min[decrs] ≤ -1.46))))) ↣ Bronchiolitis : (ninstances = 56, ncovered = 20, coverage = 0.36, confidence = 0.8, lift = 1.45, natoms = 5, height = 8)