

### **RCC-1:**

(-0.095 < CamDir\_X < -0.084 && -4.620 < CamDir\_Y < -4.297 && -1.661 < CamDir\_Z < -1.283 && 0.2684 < CamLoc\_X < 0.2903 && -5.339 < CamLoc\_Y < -5.031 && 14.576 < CamLoc\_Z < 14.823 && 0.3631 < LampLoc\_X < 0.3801 && -5.704 < LampLoc\_Y < -5.642 && 16.556 < LampLoc\_Z < 16.610 && -41.67 < HeadPose\_X < 32.343 && -65.49 < HeadPose\_Y < 63.657 && -59.16 < HeadPose\_Z < 46.440 && 0.0 < faceModel < 7.0) &&

((CamDir\_Y > -4.65 && LampLoc\_Y <= -5.64 && faceModel > 4) ||

(CamDir\_Z <= -1.46 && CamDir\_X <= -0.084) && !(CamDir\_Y > -4.65 && LampLoc\_Y <= -5.64 && faceModel > 4))

### **RCC-2:**

(-0.099 < CamDir\_X < -0.081 && -4.630 < CamDir\_Y < -4.300 && -1.665 < CamDir\_Z < -1.302 && 0.2610 < CamLoc\_X < 0.2897 && -5.327 < CamLoc\_Y < -5.011 && 14.450 < CamLoc\_Z < 14.693 && 0.3632 < LampLoc\_X < 0.3775 && -5.725 < LampLoc\_Y < -5.621 && 16.556 < LampLoc\_Z < 16.624 && -41.77 < HeadPose\_X < -10.04 && -69.29 < HeadPose\_Y < 50.030 && -39.37 < HeadPose\_Z < 46.373 && 1.0 < faceModel < 7.0) &&

((HeadPose\_X <= -27.19 && !(HeadPose\_X > -34.35 && LampLoc\_X <= 0.371)) ||

!(HeadPose\_Z > -39.05 && CamDir\_X <= -0.084) && !(HeadPose\_X <= -27.19) && !(HeadPose\_X > -34.35 && LampLoc\_X <= 0.371))

### **RCC-3:**

(-0.094 < CamDir\_X < -0.080 && -4.666 < CamDir\_Y < -4.290 && -1.624 < CamDir\_Z < -1.294 && 0.2618 < CamLoc\_X < 0.2925 && -5.277 < CamLoc\_Y < -5.011 && 14.449 < CamLoc\_Z < 14.821 && 0.3620 < LampLoc\_X < 0.3809 && -5.713 < LampLoc\_Y < -5.622 && 16.540 < LampLoc\_Z < 16.636 && -41.39 < HeadPose\_X < 24.725 && -57.22 < HeadPose\_Y < 72.040 && -57.39 < HeadPose\_Z < 21.745 && 0.0 < faceModel < 7.0) &&

((CamLoc\_Z <= 14.77 && !(faceModel <= 4 && CamLoc\_Z <= 14.76) && !(faceModel > 6 && LampLoc\_Z <= 16.63)) ||

(CamDir\_Z <= -1.44 && !(CamLoc\_Z <= 14.77) && !(faceModel <= 4 && CamLoc\_Z <= 14.76) && !(faceModel > 6 && LampLoc\_Z <= 16.63))

#### **RCC-4:**

(-0.095 < CamDir\_X < -0.080 && -4.606 < CamDir\_Y < -4.312 && -1.617 < CamDir\_Z < -1.305 && 0.2638 < CamLoc\_X < 0.2896 && -5.349 < CamLoc\_Y < -5.009 && 14.445 < CamLoc\_Z < 14.851 && 0.3611 < LampLoc\_X < 0.3776 && -5.726 < LampLoc\_Y < -5.628 && 16.542 < LampLoc\_Z < 16.631 && -40.79 < HeadPose\_X < 35.141 && -36.04 < HeadPose\_Y < 73.630 && -61.15 < HeadPose\_Z < 47.827 && 0.0 < faceModel < 7.0) &&

(faceModel > 4 && CamDir\_Y > -4.61) ||

((faceModel <= 1 && LampLoc\_Y <= 5.69) && !(HeadPose\_Y > -2.03 && faceModel > 1) && !(faceModel > 4 && CamDir\_Y > -4.61)) ||

(faceModel > 1 && !(faceModel <= 1 && LampLoc\_Y <= 5.69) && !(HeadPose\_Y > -2.03 && faceModel > 1) && !(faceModel > 4 && CamDir\_Y > -4.61))

#### **RCC-5:**

(-0.099 < CamDir\_X < -0.085 && -4.663 < CamDir\_Y < -4.316 && -1.623 < CamDir\_Z < -1.323 && 0.2615 < CamLoc\_X < 0.2928 && -5.337 < CamLoc\_Y < -5.021 && 14.491 < CamLoc\_Z < 14.867 && 0.3621 < LampLoc\_X < 0.3794 && -5.696 < LampLoc\_Y < -5.623 && 16.544 < LampLoc\_Z < 16.626 && -40.11 < HeadPose\_X < 33.948 && -52.85 < HeadPose\_Y < 64.619 && -36.73 < HeadPose\_Z < 34.303 && 0.0 < faceModel < 7.0) &&

((HeadPose\_X <= -34.65) ||

(CamDir\_Z > -1.53 && !(CamDir\_X > -0.09 && CamDir\_Y <= -4.51) && !(HeadPose\_X <= 34.65)) ||

!(CamDir\_X <= -0.095) && !(CamDir\_X > -0.095 && faceModel > 0) && !(CamDir\_Z > -1.53) && !(CamDir\_X > -0.09 && CamDir\_Y <= -4.51) && !(HeadPose\_X <= 34.65))

#### **RCC-6:**

(-0.097 < CamDir\_X < -0.082 && -4.668 < CamDir\_Y < -4.323 && -1.628 < CamDir\_Z < -1.306 && 0.2626 < CamLoc\_X < 0.2924 && -5.302 < CamLoc\_Y < -5.021 && 14.474 < CamLoc\_Z < 14.830 && 0.3617 < LampLoc\_X < 0.3801 && -5.728 < LampLoc\_Y < -5.625 && 16.544 < LampLoc\_Z < 16.638 && -40.88 < HeadPose\_X < 30.219 && -69.34 < HeadPose\_Y < 67.111 && -56.48 < HeadPose\_Z < 39.258 && 0.0 < faceModel < 7.0) &&

((HeadPose\_X < -20.25) ||

(-5.72 < LampLoc\_Y < -5.67 && !(HeadPose\_X < -20.25)))

### **RCC-7:**

$(-0.098 < \text{CamDir\_X} < -0.080 \ \&\& \ -4.667 < \text{CamDir\_Y} < -4.320 \ \&\& \ -1.667 < \text{CamDir\_Z} < -1.285 \ \&\& \ 0.2629 < \text{CamLoc\_X} < 0.2919 \ \&\& \ -5.310 < \text{CamLoc\_Y} < -5.007 \ \&\& \ 14.501 < \text{CamLoc\_Z} < 14.793 \ \&\& \ 0.3625 < \text{LampLoc\_X} < 0.3808 \ \&\& \ -5.709 < \text{LampLoc\_Y} < -5.630 \ \&\& \ 16.540 < \text{LampLoc\_Z} < 16.626 \ \&\& \ -40.76 < \text{HeadPose\_X} < 35.224 \ \&\& \ -65.59 < \text{HeadPose\_Y} < 70.789 \ \&\& \ -52.50 < \text{HeadPose\_Z} < 46.698 \ \&\& \ 0.0 < \text{faceModel} < 7.0) \ \&\&$

$!(\text{LampLoc\_Z} \leq 16.56 \ \&\& \ \text{HeadPose\_X} \leq 14.62) \ \&\& \ !(\text{HeadPoseX} > -20.02 \ \&\& \ -15.99 < \text{HeadPose\_Z} \leq 34.91))$

### **RCC-8:**

$(-0.099 < \text{CamDir\_X} < -0.080 \ \&\& \ -4.667 < \text{CamDir\_Y} < -4.303 \ \&\& \ -1.669 < \text{CamDir\_Z} < -1.297 \ \&\& \ 0.2624 < \text{CamLoc\_X} < 0.2900 \ \&\& \ -5.344 < \text{CamLoc\_Y} < -5.009 \ \&\& \ 14.488 < \text{CamLoc\_Z} < 14.857 \ \&\& \ 0.3615 < \text{LampLoc\_X} < 0.3808 \ \&\& \ -5.728 < \text{LampLoc\_Y} < -5.625 \ \&\& \ 16.540 < \text{LampLoc\_Z} < 16.630 \ \&\& \ -34.79 < \text{HeadPose\_X} < 36.851 \ \&\& \ -69.81 < \text{HeadPose\_Y} < 73.678 \ \&\& \ -64.17 < \text{HeadPose\_Z} < 34.422 \ \&\& \ 1.0 < \text{faceModel} < 7.0) \ \&\&$

$!(\text{HeadPose\_Z} > -63.00)$

### **RCC-9:**

$(-0.096 < \text{CamDir\_X} < -0.080 \ \&\& \ -4.621 < \text{CamDir\_Y} < -4.292 \ \&\& \ -1.684 < \text{CamDir\_Z} < -1.301 \ \&\& \ 0.2630 < \text{CamLoc\_X} < 0.2929 \ \&\& \ -5.338 < \text{CamLoc\_Y} < -5.032 \ \&\& \ 14.476 < \text{CamLoc\_Z} < 14.828 \ \&\& \ 0.3614 < \text{LampLoc\_X} < 0.3804 \ \&\& \ -5.712 < \text{LampLoc\_Y} < -5.619 \ \&\& \ 16.542 < \text{LampLoc\_Z} < 16.635 \ \&\& \ -40.40 < \text{HeadPose\_X} < 34.716 \ \&\& \ -35.86 < \text{HeadPose\_Y} < 56.900 \ \&\& \ -62.03 < \text{HeadPose\_Z} < 36.777 \ \&\& \ 0.0 < \text{faceModel} < 7.0) \ \&\&$

$(\text{HeadPose\_Y} > -39.44 \ \&\& \ !(\text{HeadPose\_x} > -25.41 \ \&\& \ \text{HeadPose\_Z} > 13.51))$