C:\Users\yaels\anaconda3\envs\Gymmy\python.exe "C:\Users\yaels\יעל פרוייקט גמר\zedcheck\TrainingNew.py"

pygame 2.5.2 (SDL 2.28.3, Python 3.11.9)

Hello from the pygame community. https://www.pygame.org/contribute.html

screen start

CAMERA INITIALIZATION

ROBOT INITIALIZATION

CAMERA START

MP INITIALIZATION

Training: start exercises

MP START

ROBOT START

CAMERA: Exercise hello\_waving start

CAMERA: Exercise hello\_waving done

TRAINING: Exercise hands\_behind\_and\_lean\_notool start

CAMERA: Exercise hands\_behind\_and\_lean\_notool start

ROBOT: Exercise hands\_behind\_and\_lean\_notool start

55.7 58.54

111.95 115.45

first angle mean: 55.7

first angle stdev: 0.0

second angle mean: 111.95

second angle stdev: 0.0

64.62 48.12

127.58 144.1

first angle mean: 60.160004

first angle stdev: 4.460001

second angle mean: 119.765

second angle stdev: 7.8150024

57.01 44.17

127.03 145.59

first angle mean: 59.11

first angle stdev: 3.9326932

second angle mean: 122.18667

second angle stdev: 7.2419

44.72 47.43

139.32 147.19

first angle mean: 55.5125

first angle stdev: 7.1010966

second angle mean: 126.47

second angle stdev: 9.714665

44.62 45.22

139.19 144.7

first angle mean: 53.334003

first angle stdev: 7.702202

second angle mean: 129.014

second angle stdev: 10.069137

46.45 46.31

139.56 144.79

first angle mean: 52.186672

first angle stdev: 7.484548

second angle mean: 130.77167

second angle stdev: 9.996827

47.98 47.51

140.95 145.28

first angle mean: 51.58572

first angle stdev: 7.0839744

second angle mean: 132.22572

second angle stdev: 9.916925

46.19 47.37

142.01 144.5

first angle mean: 50.911247

first angle stdev: 6.8625193

second angle mean: 133.44875

second angle stdev: 9.82461

45.33 47.89

141.26 142.72

first angle mean: 50.29111

first angle stdev: 6.7035856

second angle mean: 134.31667

second angle stdev: 9.582504

44.97 48.53

138.89 141.12

first angle mean: 49.759

first angle stdev: 6.5568695

second angle mean: 134.774

second angle stdev: 9.193712

45.95 48.22

137.55 140.76

first angle mean: 49.412724

first angle stdev: 6.3469024

second angle mean: 135.02637

second angle stdev: 8.802113

46.33 48.3

137.51 139.31

first angle mean: 49.155834

first angle stdev: 6.136137

second angle mean: 135.23334

second angle stdev: 8.455292

46.8 48.89

138.28 137.82

first angle mean: 48.974613

first angle stdev: 5.928738

second angle mean: 135.4677

second angle stdev: 8.164047

47.58 50.21

139.78 137.73

first angle mean: 48.875

first angle stdev: 5.7243543

second angle mean: 135.77573

second angle stdev: 7.9450765

48.24 49.5

143.43 137.1

first angle mean: 48.832664

first angle stdev: 5.5325193

second angle mean: 136.286

second angle stdev: 7.909579

48.09 47.23

147.07 137.45

first angle mean: 48.78625

first angle stdev: 5.359854

second angle mean: 136.96

second angle stdev: 8.091075

47.13 44.01

149.57 136.88

first angle mean: 48.688824

first angle stdev: 5.2144055

second angle mean: 137.70178

second angle stdev: 8.391545

47.61 43.64

151.53 134.92

first angle mean: 48.62889

first angle stdev: 5.0735126

second angle mean: 138.47002

second angle stdev: 8.748661

48.37 42.18

153.62 130.74

first angle mean: 48.615265

first angle stdev: 4.9385333

second angle mean: 139.26738

second angle stdev: 9.162698

47.97 41.14

152.88 129.36

first angle mean: 48.583

first angle stdev: 4.815541

second angle mean: 139.948

second angle stdev: 9.41059

46.91 42.4

150.16 132.32

first angle mean: 48.503334

first angle stdev: 4.7129726

second angle mean: 140.43428

second angle stdev: 9.437775

45.86 44.68

145.12 139.07

first angle mean: 48.383183

first angle stdev: 4.637417

second angle mean: 140.64726

second angle stdev: 9.272298

45.82 46.45

141.89 143.54

first angle mean: 48.27174

first angle stdev: 4.5655046

second angle mean: 140.7013

second angle stdev: 9.072026

46.96 49.04

139.67 146.19

first angle mean: 48.217083

first angle stdev: 4.477058

second angle mean: 140.65834

second angle stdev: 8.883406

47.64 50.41

139.48 146.53

first angle mean: 48.194

first angle stdev: 4.3880606

second angle mean: 140.6112

second angle stdev: 8.706987

47.66 51.69

139.31 145.83

first angle mean: 48.173462

first angle stdev: 4.3040724

second angle mean: 140.56116

second angle stdev: 8.54157

48.27 51.34

140.61 144.94

first angle mean: 48.177036

first angle stdev: 4.2236547

second angle mean: 140.56297

second angle stdev: 8.381905

47.37 49.48

142.21 144.32

first angle mean: 48.148216

first angle stdev: 4.15025

second angle mean: 140.6218

second angle stdev: 8.236541

46.98 48.46

142.75 142.97

first angle mean: 48.107933

first angle stdev: 4.083633

second angle mean: 140.69518

second angle stdev: 8.102596

46.81 47.82

142.98 141.98

first angle mean: 48.06467

first angle stdev: 4.02175

second angle mean: 140.77133

second angle stdev: 7.976959

46.54 46.19

142.59 141.58

first angle mean: 48.015488

first angle stdev: 3.965512

second angle mean: 140.83

second angle stdev: 7.85382

46.59 44.68

141.62 139.86

first angle mean: 47.97094

first angle stdev: 3.9109316

second angle mean: 140.85469

second angle stdev: 7.731352

45.71 43.36

141.18 138.47

first angle mean: 47.902424

first angle stdev: 3.8706717

second angle mean: 140.86455

second angle stdev: 7.6135135

44.55 45.36

141.06 138.06

first angle mean: 47.803825

first angle stdev: 3.8551624

second angle mean: 140.8703

second angle stdev: 7.5007873

44.25 46.85

140.44 138.8

first angle mean: 47.70229

first angle stdev: 3.84554

second angle mean: 140.858

second angle stdev: 7.393204

43.97 46.8

140.26 139.2

first angle mean: 47.598614

first angle stdev: 3.8410401

second angle mean: 140.84138

second angle stdev: 7.2904596

43.88 45.57

140.36 139.27

first angle mean: 47.498108

first angle stdev: 3.8364663

second angle mean: 140.82837

second angle stdev: 7.1916895

44.92 45.87

140.25 140.0

first angle mean: 47.430267

first angle stdev: 3.8080776

second angle mean: 140.81316

second angle stdev: 7.0970345

44.95 49.65

138.69 144.19

first angle mean: 47.36667

first angle stdev: 3.7793274

second angle mean: 140.75871

second angle stdev: 7.0134897

44.35 52.07

135.58 150.24

first angle mean: 47.291252

first angle stdev: 3.7613897

second angle mean: 140.62924

second angle stdev: 6.9723043

41.02 53.55

132.37 153.74

first angle mean: 47.138298

first angle stdev: 3.8391166

second angle mean: 140.42781

second angle stdev: 7.0036097

43.28 53.35

129.96 154.17

first angle mean: 47.046432

first angle stdev: 3.8384752

second angle mean: 140.17857

second angle stdev: 7.1013722

46.11 53.63

127.76 155.91

first angle mean: 47.024654

first angle stdev: 3.7962036

second angle mean: 139.88976

second angle stdev: 7.263596

46.27 52.0

125.92 157.19

first angle mean: 47.007504

first angle stdev: 3.7545018

second angle mean: 139.57227

second angle stdev: 7.4763136

43.37 59.2

123.62 162.1

first angle mean: 46.92667

first angle stdev: 3.7510705

second angle mean: 139.21777

second angle stdev: 7.7577367

36.71 61.02

121.83 165.85

first angle mean: 46.704567

first angle stdev: 3.9980564

second angle mean: 138.83978

second angle stdev: 8.081075

33.65 59.28

120.42 167.95

first angle mean: 46.42681

first angle stdev: 4.3810053

second angle mean: 138.44786

second angle stdev: 8.424942

31.21 57.84

119.24 167.46

first angle mean: 46.10979

first angle stdev: 4.8494163

second angle mean: 138.04771

second angle stdev: 8.776506

30.98 56.84

117.88 167.93

first angle mean: 45.80102

first angle stdev: 5.254827

second angle mean: 137.63612

second angle stdev: 9.142562

32.42 56.45

118.13 168.59

first angle mean: 45.533398

first angle stdev: 5.5290465

second angle mean: 137.246

second angle stdev: 9.4536915

34.08 54.96

118.1 168.26

first angle mean: 45.308823

first angle stdev: 5.700234

second angle mean: 136.87059

second angle stdev: 9.729675

33.32 54.6

115.89 166.27

first angle mean: 45.07827

first angle stdev: 5.8803678

second angle mean: 136.46712

second angle stdev: 10.057256

32.58 56.7

113.98 162.03

first angle mean: 44.842457

first angle stdev: 6.0677824

second angle mean: 136.04283

second angle stdev: 10.421174

32.13 52.15

114.53 164.16

first angle mean: 44.607037

first angle stdev: 6.250877

second angle mean: 135.64444

second angle stdev: 10.723872

32.34 52.97

115.2 165.13

first angle mean: 44.384003

first angle stdev: 6.4069724

second angle mean: 135.27272

second angle stdev: 10.971412

32.78 57.46

115.41 163.38

first angle mean: 44.17679

first angle stdev: 6.5328283

second angle mean: 134.91805

second angle stdev: 11.186675

30.82 64.09

114.5 158.85

first angle mean: 43.94246

first angle stdev: 6.7085085

second angle mean: 134.55983

second angle stdev: 11.4075365

31.41 62.89

115.33 158.52

first angle mean: 43.726383

first angle stdev: 6.8475866

second angle mean: 134.22829

second angle stdev: 11.582483

31.66 55.53

117.2 161.97

first angle mean: 43.521866

first angle stdev: 6.965676

second angle mean: 133.93967

second angle stdev: 11.692367

31.27 53.18

118.32 163.59

first angle mean: 43.31767

first angle stdev: 7.083224

second angle mean: 133.67934

second angle stdev: 11.765687

32.11 60.39

117.91 161.31

first angle mean: 43.133938

first angle stdev: 7.167637

second angle mean: 133.42082

second angle stdev: 11.839417

33.52 65.94

117.5 160.51

first angle mean: 42.978874

first angle stdev: 7.212012

second angle mean: 133.16403

second angle stdev: 11.913576

34.5 65.19

119.28 163.14

first angle mean: 42.844288

first angle stdev: 7.232602

second angle mean: 132.94365

second angle stdev: 11.945358

35.13 60.25

120.72 168.27

first angle mean: 42.72375

first angle stdev: 7.2393713

second angle mean: 132.75266

second angle stdev: 11.948229

37.1 58.82

120.93 169.98

first angle mean: 42.637234

first angle stdev: 7.216737

second angle mean: 132.57077

second angle stdev: 11.944922

38.02 59.1

122.22 167.9

first angle mean: 42.567276

first angle stdev: 7.184031

second angle mean: 132.41393

second angle stdev: 11.921328

37.51 60.07

123.56 166.94

first angle mean: 42.491795

first angle stdev: 7.1565375

second angle mean: 132.28177

second angle stdev: 11.880634

36.87 57.06

124.84 165.96

first angle mean: 42.409122

first angle stdev: 7.1358805

second angle mean: 132.17233

second angle stdev: 11.826924

38.88 56.67

126.02 165.09

first angle mean: 42.357975

first angle stdev: 7.096527

second angle mean: 132.08316

second angle stdev: 11.763911

43.74 52.2

127.58 161.71

first angle mean: 42.377716

first angle stdev: 7.0475636

second angle mean: 132.01883

second angle stdev: 11.691799

47.13 49.98

128.98 158.33

first angle mean: 42.44465

first angle stdev: 7.0201287

second angle mean: 131.97604

second angle stdev: 11.614693

47.9 51.44

130.78 155.0

first angle mean: 42.520416

first angle stdev: 7.000381

second angle mean: 131.95944

second angle stdev: 11.534602

44.04 53.86

132.0 153.79

first angle mean: 42.541233

first angle stdev: 6.9545116

second angle mean: 131.96

second angle stdev: 11.455326

41.65 53.12

132.64 152.77

first angle mean: 42.529186

first angle stdev: 6.908128

second angle mean: 131.9692

second angle stdev: 11.3779335

39.41 50.38

133.13 151.54

first angle mean: 42.4876

first angle stdev: 6.8712397

second angle mean: 131.98466

second angle stdev: 11.302609

40.75 49.2

135.68 149.7

first angle mean: 42.464733

first angle stdev: 6.828756

second angle mean: 132.03328

second angle stdev: 11.235898

45.14 49.95

140.74 147.24

first angle mean: 42.499477

first angle stdev: 6.791026

second angle mean: 132.14636

second angle stdev: 11.20614

48.22 52.31

145.06 144.17

first angle mean: 42.572815

first angle stdev: 6.7779746

second angle mean: 132.3119

second angle stdev: 11.228454

48.43 52.1

145.7 144.11

first angle mean: 42.646957

first angle stdev: 6.766696

second angle mean: 132.48138

second angle stdev: 11.257104

47.39 51.49

145.47 143.59

first angle mean: 42.70625

first angle stdev: 6.7448874

second angle mean: 132.64375

second angle stdev: 11.27922

47.08 52.09

144.47 145.21

first angle mean: 42.760246

first angle stdev: 6.7204995

second angle mean: 132.78975

second angle stdev: 11.285191

47.58 53.01

143.55 146.19

first angle mean: 42.819027

first angle stdev: 6.7003107

second angle mean: 132.92097

second angle stdev: 11.2781725

48.42 53.95

142.97 146.91

first angle mean: 42.886505

first angle stdev: 6.6878004

second angle mean: 133.04204

second angle stdev: 11.263511

48.47 54.07

142.71 147.06

first angle mean: 42.952976

first angle stdev: 6.6753974

second angle mean: 133.15714

second angle stdev: 11.245258

48.33 51.81

142.49 146.18

first angle mean: 43.016235

first angle stdev: 6.6612935

second angle mean: 133.26694

second angle stdev: 11.224117

48.3 52.05

142.43 146.14

first angle mean: 43.077675

first angle stdev: 6.6466327

second angle mean: 133.37347

second angle stdev: 11.201824

48.11 52.86

142.57 146.39

first angle mean: 43.13552

first angle stdev: 6.6300583

second angle mean: 133.47919

second angle stdev: 11.180318

47.08 52.88

143.25 145.71

first angle mean: 43.180344

first angle stdev: 6.605524

second angle mean: 133.59023

second angle stdev: 11.164748

46.51 53.34

143.7 145.77

first angle mean: 43.217754

first angle stdev: 6.5776787

second angle mean: 133.70381

second angle stdev: 11.152871

46.42 50.95

145.05 143.81

first angle mean: 43.253334

first angle stdev: 6.549641

second angle mean: 133.82988

second angle stdev: 11.1543255

47.35 48.48

146.36 141.26

first angle mean: 43.298355

first angle stdev: 6.527541

second angle mean: 133.96758

second angle stdev: 11.169516

48.49 43.66

148.36 137.78

first angle mean: 43.354786

first angle stdev: 6.514249

second angle mean: 134.12402

second angle stdev: 11.208437

50.44 42.86

150.65 136.48

first angle mean: 43.43097

first angle stdev: 6.5202093

second angle mean: 134.30173

second angle stdev: 11.277556

51.73 43.17

152.88 134.77

first angle mean: 43.519257

first angle stdev: 6.541083

second angle mean: 134.49936

second angle stdev: 11.378183

52.54 41.02

154.03 133.17

first angle mean: 43.614212

first angle stdev: 6.571373

second angle mean: 134.70496

second angle stdev: 11.492311

51.36 36.08

156.41 127.99

first angle mean: 43.694897

first angle stdev: 6.584192

second angle mean: 134.93105

second angle stdev: 11.642755

49.55 34.85

158.6 124.1

first angle mean: 43.755257

first angle stdev: 6.576811

second angle mean: 135.17505

second angle stdev: 11.826758

48.09 36.67

160.19 121.97

first angle mean: 43.799484

first angle stdev: 6.5576553

second angle mean: 135.4303

second angle stdev: 12.031831

48.0 38.47

161.28 123.0

first angle mean: 43.841915

first angle stdev: 6.537958

second angle mean: 135.69142

second angle stdev: 12.2467985

47.21 39.3

161.23 122.57

first angle mean: 43.875595

first angle stdev: 6.5138125

second angle mean: 135.94681

second angle stdev: 12.447537

48.14 37.96

161.43 120.15

first angle mean: 43.91782

first angle stdev: 6.4952235

second angle mean: 136.19911

second angle stdev: 12.640139

49.58 37.14

161.65 117.03

first angle mean: 43.97333

first angle stdev: 6.4873376

second angle mean: 136.44864

second angle stdev: 12.825557

52.41 34.85

162.72 110.23

first angle mean: 44.05524

first angle stdev: 6.5085545

second angle mean: 136.70369

second angle stdev: 13.020508

54.42 34.41

162.38 106.52

first angle mean: 44.154903

first angle stdev: 6.555685

second angle mean: 136.95058

second angle stdev: 13.197792

55.67 35.04

163.25 107.8

first angle mean: 44.26457

first angle stdev: 6.6195545

second angle mean: 137.20103

second angle stdev: 13.3808565

54.0 34.32

164.64 108.63

first angle mean: 44.356415

first angle stdev: 6.6551347

second angle mean: 137.4599

second angle stdev: 13.579176

52.8 32.45

164.3 108.84

first angle mean: 44.43532

first angle stdev: 6.6736016

second angle mean: 137.71074

second angle stdev: 13.760101

53.22 30.85

162.57 108.01

first angle mean: 44.516666

first angle stdev: 6.6957083

second angle mean: 137.94092

second angle stdev: 13.901667

54.78 31.3

162.49 108.01

first angle mean: 44.61082

first angle stdev: 6.736373

second angle mean: 138.16614

second angle stdev: 14.0343

53.83 34.18

163.56 107.53

first angle mean: 44.694633

first angle stdev: 6.7625313

second angle mean: 138.39699

second angle stdev: 14.176741

52.46 36.24

165.28 107.04

first angle mean: 44.76459

first angle stdev: 6.7718673

second angle mean: 138.63918

second angle stdev: 14.339507

51.96 36.63

165.22 105.81

first angle mean: 44.82884

first angle stdev: 6.7754617

second angle mean: 138.87651

second angle stdev: 14.492675

50.96 36.98

163.46 108.18

first angle mean: 44.8831

first angle stdev: 6.7698107

second angle mean: 139.09407

second angle stdev: 14.610948

49.54 38.32

161.68 112.61

first angle mean: 44.923946

first angle stdev: 6.7540274

second angle mean: 139.29219

second angle stdev: 14.69839

50.89 41.22

159.23 119.03

first angle mean: 44.975826

first angle stdev: 6.7473726

second angle mean: 139.46556

second angle stdev: 14.750954

50.77robot count: 1

41.06

157.05 122.09

first angle mean: 45.02578

first angle stdev: 6.7395463

second angle mean: 139.61716

second angle stdev: 14.776925

49.81 39.66

155.27 122.93

first angle mean: 45.06667

first angle stdev: 6.725119

second angle mean: 139.75093

second angle stdev: 14.784025

49.81 38.09

153.86 122.6

first angle mean: 45.10687

first angle stdev: 6.710664

second angle mean: 139.8705

second angle stdev: 14.777951

52.12 40.21

153.85 122.64

first angle mean: 45.165802

first angle stdev: 6.713003

second angle mean: 139.98798

second angle stdev: 14.770955

53.92 43.85

153.29 126.06

first angle mean: 45.238754

first angle stdev: 6.7321754

second angle mean: 140.09883

second angle stdev: 14.758902

53.67 47.38

151.81 132.33

first angle mean: 45.308434

first angle stdev: 6.747611

second angle mean: 140.19562

second angle stdev: 14.735978

52.55 47.89

149.96 134.64

first angle mean: 45.367786

first angle stdev: 6.7515454

second angle mean: 140.27567

second angle stdev: 14.701845

49.74 48.96

145.61 136.68

first angle mean: 45.403336

first angle stdev: 6.7354975

second angle mean: 140.31903

second angle stdev: 14.649794

47.12 49.11

141.74 137.19

first angle mean: 45.417183

first angle stdev: 6.7100396

second angle mean: 140.33049

second angle stdev: 14.591155

45.8 47.9

139.66 137.42

first angle mean: 45.420242

first angle stdev: 6.683233

second angle mean: 140.32512

second angle stdev: 14.532797

45.54 49.07

139.64 137.27

first angle mean: 45.421192

first angle stdev: 6.656668

second angle mean: 140.31969

second angle stdev: 14.47514

46.51 50.27

140.26 137.44

first angle mean: 45.429764

first angle stdev: 6.631107

second angle mean: 140.31921

second angle stdev: 14.418039

48.67 50.52

140.12 137.98

first angle mean: 45.45508

first angle stdev: 6.611311

second angle mean: 140.31766

second angle stdev: 14.361618

49.33 48.93

138.29 138.0

first angle mean: 45.485115

first angle stdev: 6.594399

second angle mean: 140.30193

second angle stdev: 14.30695

48.34 49.19

136.7 138.27

first angle mean: 45.50708

first angle stdev: 6.5737205

second angle mean: 140.27423

second angle stdev: 14.255292

48.57 49.91

134.85 138.06

first angle mean: 45.53046

first angle stdev: 6.554006

second angle mean: 140.23282

second angle stdev: 14.208623

48.1 50.39

134.02 138.04

first angle mean: 45.54993

first angle stdev: 6.532933

second angle mean: 140.18576

second angle stdev: 14.164948

46.88 49.33

134.51 139.03

first angle mean: 45.55993

first angle stdev: 6.5093412

second angle mean: 140.14308

second angle stdev: 14.12011

47.55 48.05

136.06 140.36

first angle mean: 45.57478

first angle stdev: 6.4872684

second angle mean: 140.11261

second angle stdev: 14.071713

50.46 49.07

136.98 141.9

first angle mean: 45.610966

first angle stdev: 6.4767575

second angle mean: 140.08942

second angle stdev: 14.022072

55.98 50.33

136.17 142.55

first angle mean: 45.687206

first angle stdev: 6.513424

second angle mean: 140.0606

second angle stdev: 13.974438

56.9 52.27

135.87 144.25

first angle mean: 45.769054

first angle stdev: 6.559424

second angle mean: 140.03

second angle stdev: 13.927911

53.04 53.8

136.4 147.17

first angle mean: 45.821743

first angle stdev: 6.5646453

second angle mean: 140.00371

second angle stdev: 13.880771

46.27 53.88

132.35 151.61

first angle mean: 45.824963

first angle stdev: 6.541099

second angle mean: 139.94862

second angle stdev: 13.845867

41.19 54.21

127.36 155.69

first angle mean: 45.79186

first angle stdev: 6.529373

second angle mean: 139.85872

second angle stdev: 13.837

39.1 55.94

125.65 159.4

first angle mean: 45.744396

first angle stdev: 6.530367

second angle mean: 139.75795

second angle stdev: 13.839305

39.21 56.1

126.58 162.52

first angle mean: 45.69838

first angle stdev: 6.530234

second angle mean: 139.66515

second angle stdev: 13.834446

41.32 57.17

126.97 163.1

first angle mean: 45.667763

first angle stdev: 6.517581

second angle mean: 139.57637

second angle stdev: 13.826521

38.77 52.21

123.84 163.51

first angle mean: 45.619858

first angle stdev: 6.520121

second angle mean: 139.46709

second angle stdev: 13.84026

37.22 48.49

119.44 163.31

first angle mean: 45.56193

first angle stdev: 6.5346804

second angle mean: 139.32896

second angle stdev: 13.89168

33.38 47.62

114.86 163.64

first angle mean: 45.478493

first angle stdev: 6.5893126

second angle mean: 139.16138

second angle stdev: 13.990347

33.06 49.46

115.53 165.09

first angle mean: 45.394012

first angle stdev: 6.6457233

second angle mean: 139.00061

second angle stdev: 14.077335

33.44 49.03

117.29 166.17

first angle mean: 45.313244

first angle stdev: 6.6952395

second angle mean: 138.85393

second angle stdev: 14.141982

33.84 45.52

119.97 166.77

first angle mean: 45.236244

first angle stdev: 6.7381687

second angle mean: 138.72719

second angle stdev: 14.178528

33.71 41.45

119.99 167.03

first angle mean: 45.1594

first angle stdev: 6.7808566

second angle mean: 138.60226

second angle stdev: 14.213212

32.35 43.51

117.84 166.17

first angle mean: 45.07457

first angle stdev: 6.837759

second angle mean: 138.46477

second angle stdev: 14.265812

33.66 43.83

117.13 164.77

first angle mean: 44.999474

first angle stdev: 6.8774195

second angle mean: 138.32442

second angle stdev: 14.323036

34.69 42.7

118.97 162.98

first angle mean: 44.932095

first angle stdev: 6.9050627

second angle mean: 138.19792

second angle stdev: 14.361088

35.36 41.73

122.28 162.68

first angle mean: 44.869938

first angle stdev: 6.9254155

second angle mean: 138.09454

second angle stdev: 14.371369

35.71 45.12

123.4 163.13

first angle mean: 44.81084

first angle stdev: 6.941886

second angle mean: 137.99974

second angle stdev: 14.373164

38.9 47.64

123.88 160.89

first angle mean: 44.77295

first angle stdev: 6.9356613

second angle mean: 137.90923

second angle stdev: 14.37127

41.07 50.55

124.87 159.35

first angle mean: 44.749367

first angle stdev: 6.9198112

second angle mean: 137.82619

second angle stdev: 14.362937

47.16 55.88

129.81 157.11

first angle mean: 44.76462

first angle stdev: 6.900527

second angle mean: 137.77544

second angle stdev: 14.331518

50.35 59.24

134.58 157.18

first angle mean: 44.79975

first angle stdev: 6.8929505

second angle mean: 137.75536

second angle stdev: 14.288612

48.68 61.22

136.86 155.82

first angle mean: 44.823997

first angle stdev: 6.878177

second angle mean: 137.74974

second angle stdev: 14.244065

47.37 59.21

137.19 152.82

first angle mean: 44.839813

first angle stdev: 6.8597

second angle mean: 137.74626

second angle stdev: 14.199828

50.63 56.94

140.25 149.53

first angle mean: 44.875553

first angle stdev: 6.853517

second angle mean: 137.76172

second angle stdev: 14.157291

53.45 53.61

141.05 145.56

first angle mean: 44.92816

first angle stdev: 6.8651886

second angle mean: 137.78189

second angle stdev: 14.116133

53.72 51.77

140.22 143.66

first angle mean: 44.981766

first angle stdev: 6.8783627

second angle mean: 137.79675

second angle stdev: 14.074309

50.9 50.08

139.05 142.28

first angle mean: 45.017635

first angle stdev: 6.872854

second angle mean: 137.80435

second angle stdev: 14.031933

49.99 48.35

138.6 140.63

first angle mean: 45.04759

first angle stdev: 6.862916

second angle mean: 137.80914

second angle stdev: 13.989739

47.78 47.44

140.91 138.47

first angle mean: 45.06395

first angle stdev: 6.845584

second angle mean: 137.82771

second angle stdev: 13.949842

47.76 46.71

143.71 139.24

first angle mean: 45.079998

first angle stdev: 6.82833

second angle mean: 137.86273

second angle stdev: 13.915623

47.0 45.92

144.59 139.5

first angle mean: 45.091362

first angle stdev: 6.80969

second angle mean: 137.90254

second angle stdev: 13.883981

46.25 45.45

144.99 138.81

first angle mean: 45.098175

first angle stdev: 6.7902102

second angle mean: 137.94423

second angle stdev: 13.85369

46.82 45.79

146.62 137.89

first angle mean: 45.108246

first angle stdev: 6.7715993

second angle mean: 137.99498

second angle stdev: 13.828955

49.48 45.65

149.19 136.82

first angle mean: 45.133663

first angle stdev: 6.7600617

second angle mean: 138.06006

second angle stdev: 13.814939

53.02 45.91

152.43 135.5

first angle mean: 45.17925

first angle stdev: 6.766957

second angle mean: 138.14313

second angle stdev: 13.817961

55.01 46.11

154.64 133.96

first angle mean: 45.235744

first angle stdev: 6.788282

second angle mean: 138.23792

second angle stdev: 13.834516

55.73 43.9

157.44 129.61

first angle mean: 45.29571

first angle stdev: 6.8149223

second angle mean: 138.34766

second angle stdev: 13.870654

54.25 37.58

157.78 122.48

first angle mean: 45.346592

first angle stdev: 6.8287816

second angle mean: 138.45807

second angle stdev: 13.9081

52.91 31.57

157.65 117.65

first angle mean: 45.389324

first angle stdev: 6.8330207

second angle mean: 138.5665

second angle stdev: 13.943155

51.42 29.15

161.28 114.45

first angle mean: 45.423203

first angle stdev: 6.828692

second angle mean: 138.6941

second angle stdev: 14.007194

48.31 31.75

163.59 114.38

first angle mean: 45.43933

first angle stdev: 6.812989

second angle mean: 138.83319

second angle stdev: 14.090728

47.25 34.01

164.76 113.62

first angle mean: 45.44939

first angle stdev: 6.795371

second angle mean: 138.97722

second angle stdev: 14.183062

47.89 35.74

164.68 108.91

first angle mean: 45.462875

first angle stdev: 6.7789874

second angle mean: 139.11922

second angle stdev: 14.271566

51.71 37.14

164.14 100.25

first angle mean: 45.4972

first angle stdev: 6.776092

second angle mean: 139.2567

second angle stdev: 14.351981

54.02 41.26

161.72 82.51

first angle mean: 45.54377

first angle stdev: 6.7866993

second angle mean: 139.37944

second angle stdev: 14.408196

53.93 43.65

163.24 76.94

first angle mean: 45.58935

first angle stdev: 6.7962565

second angle mean: 139.50912

second angle stdev: 14.475677

54.15 42.93

165.9 71.47

first angle mean: 45.63562

first angle stdev: 6.8068657

second angle mean: 139.65178

second angle stdev: 14.565609

55.29 42.42

168.1 70.0

first angle mean: 45.68753

first angle stdev: 6.825155

second angle mean: 139.80473

second angle stdev: 14.674604

53.98 42.06

169.24 70.34

first angle mean: 45.731873

first angle stdev: 6.833696

second angle mean: 139.96214

second angle stdev: 14.7919235

52.27 42.27

167.47 72.35

first angle mean: 45.766655

first angle stdev: 6.8320684

second angle mean: 140.10846

second angle stdev: 14.887601

50.71 43.63

162.97 74.35

first angle mean: 45.792805

first angle stdev: 6.823402

second angle mean: 140.22942

second angle stdev: 14.940504

50.14 45.9

160.92 76.55

first angle mean: 45.815685

first angle stdev: 6.812687

second angle mean: 140.33832

second angle stdev: 14.976151

48.85 46.94

160.69 78.78

first angle mean: 45.83157

first angle stdev: 6.798357

second angle mean: 140.44487

second angle stdev: 15.008932

50.01 46.92

159.84 82.31

first angle mean: 45.853333

first angle stdev: 6.787297

second angle mean: 140.54588

second angle stdev: 15.034754

52.15 49.71

157.93 85.86

first angle mean: 45.88596

first angle stdev: 6.7847676

second angle mean: 140.63596

second angle stdev: 15.047602

51.6 49.26

153.69 89.59

first angle mean: 45.915413

first angle stdev: 6.7796183

second angle mean: 140.70325

second angle stdev: 15.037853

51.34 51.65

150.27 96.11

first angle mean: 45.94323

first angle stdev: 6.7733035

second angle mean: 140.7523

second angle stdev: 15.014802

52.62 55.81

148.89 104.58

first angle mean: 45.977295

first angle stdev: 6.772729

second angle mean: 140.79382

second angle stdev: 14.987668

52.14 60.01

146.23 113.55

first angle mean: 46.008575

first angle stdev: 6.769699

second angle mean: 140.82143

second angle stdev: 14.95457

50.25 59.43

141.56 118.92

first angle mean: 46.03

first angle stdev: 6.7592726

second angle mean: 140.82515

second angle stdev: 14.916851

48.24 56.9

136.17 120.97

first angle mean: 46.041103

first angle stdev: 6.744078

second angle mean: 140.80176

second angle stdev: 14.882965

46.4 57.92

130.56 123.89

first angle mean: 46.0429

first angle stdev: 6.727245

second angle mean: 140.75055

second angle stdev: 14.8632765

43.67 60.41

124.72 128.88

first angle mean: 46.031094

first angle stdev: 6.7125664

second angle mean: 140.67079

second angle stdev: 14.869096

41.34 61.49

121.85 130.88

first angle mean: 46.00787

first angle stdev: 6.70402

second angle mean: 140.57762

second angle stdev: 14.890951

40.4 61.74

121.94 130.04

first angle mean: 45.980247

first angle stdev: 6.6990027

second angle mean: 140.48581

second angle stdev: 14.911432

42.8 61.68

124.62 126.71

first angle mean: 45.964653

first angle stdev: 6.686254

second angle mean: 140.40804

second angle stdev: 14.916057

46.14 61.22

128.39 124.42

first angle mean: 45.96551

first angle stdev: 6.669937

second angle mean: 140.34941

second angle stdev: 14.9031725

47.02 60.92

129.26 125.2

first angle mean: 45.970627

first angle stdev: 6.654132

second angle mean: 140.29558

second angle stdev: 14.886922

47.62 60.36

128.82 126.95

first angle mean: 45.9786

first angle stdev: 6.6390247

second angle mean: 140.24014

second angle stdev: 14.872219

50.3 59.18

128.31 128.73

first angle mean: 45.99937

first angle stdev: 6.6297884

second angle mean: 140.18279

second angle stdev: 14.859358

56.35 59.27

125.36 130.09

first angle mean: 46.048897

first angle stdev: 6.652364

second angle mean: 140.11186

second angle stdev: 14.8590145

48.05 59.15

120.54 135.81

first angle mean: 46.058426

first angle stdev: 6.6379356

second angle mean: 140.01866

second angle stdev: 14.884701

37.51 59.22

116.18 139.14

first angle mean: 46.01791

first angle stdev: 6.6481614

second angle mean: 139.90569

second angle stdev: 14.939371

30.8 59.79

112.6 142.05

first angle mean: 45.94613

first angle stdev: 6.713926

second angle mean: 139.77689

second angle stdev: 15.021067

28.72 63.22

111.22 145.24

first angle mean: 45.865253

first angle stdev: 6.8008657

second angle mean: 139.6428

second angle stdev: 15.112372

30.78 66.18

110.67 145.58

first angle mean: 45.79476

first angle stdev: 6.862511

second angle mean: 139.50743

second angle stdev: 15.205946

30.08 63.95

109.03 144.4

first angle mean: 45.721672

first angle stdev: 6.9295244

second angle mean: 139.36568

second angle stdev: 15.311616

28.9robot count: 2

62.56

106.29 143.21

first angle mean: 45.6438

first angle stdev: 7.0071373

second angle mean: 139.21254

second angle stdev: 15.440257

28.3 61.88

102.14 140.43

first angle mean: 45.56387

first angle stdev: 7.088972

second angle mean: 139.0417

second angle stdev: 15.607923

27.66 62.07

102.34 140.19

first angle mean: 45.481743

first angle stdev: 7.175421

second angle mean: 138.87335

second angle stdev: 15.768336

27.35 63.93

103.54 141.21

first angle mean: 45.39895

first angle stdev: 7.262637

second angle mean: 138.712

second angle stdev: 15.911622

27.39 66.65

104.78 141.54

first angle mean: 45.31709

first angle stdev: 7.3466754

second angle mean: 138.55777

second angle stdev: 16.038662

28.91 67.25

104.69 141.92

first angle mean: 45.24285

first angle stdev: 7.412285

second angle mean: 138.40453

second angle stdev: 16.162962

30.76 67.17

105.01 142.5

first angle mean: 45.177612

first angle stdev: 7.458891

second angle mean: 138.2541

second angle stdev: 16.280828

31.58 64.2

104.82 141.48

first angle mean: 45.116634

first angle stdev: 7.497398

second angle mean: 138.10417

second angle stdev: 16.397165

42.43 61.03

93.4 140.72

first angle mean: 45.104645

first angle stdev: 7.482788

second angle mean: 137.90459

second angle stdev: 16.62975

41.96 61.9

93.62 141.86

first angle mean: 45.090668

first angle stdev: 7.469071

second angle mean: 137.70778

second angle stdev: 16.852205

39.42 65.23

93.59 142.82

first angle mean: 45.06558

first angle stdev: 7.462026

second angle mean: 137.51257

second angle stdev: 17.067934

37.33 69.07

93.32 142.68

first angle mean: 45.031498

first angle stdev: 7.463175

second angle mean: 137.31789

second angle stdev: 17.27995

37.48 67.64

94.38 142.65

first angle mean: 44.998383

first angle stdev: 7.463491

second angle mean: 137.12956

second angle stdev: 17.473915

38.52 60.68

93.19 139.58

first angle mean: 44.97009

first angle stdev: 7.459419

second angle mean: 136.93768

second angle stdev: 17.674799

43.96 62.18

95.68 137.87

first angle mean: 44.9657

first angle stdev: 7.4434814

second angle mean: 136.7583

second angle stdev: 17.844017

47.87 63.52

101.65 135.71

first angle mean: 44.97827

first angle stdev: 7.4297996

second angle mean: 136.60632

second angle stdev: 17.953924

48.77 60.75

106.91 134.68

first angle mean: 44.994614

first angle stdev: 7.41793

second angle mean: 136.47832

second angle stdev: 18.02051

52.56 57.22

110.37 132.94

first angle mean: 45.027084

first angle stdev: 7.4184985

second angle mean: 136.36627

second angle stdev: 18.062613

57.07 54.05

112.89 128.35

first angle mean: 45.078545

first angle stdev: 7.444197

second angle mean: 136.26595

second angle stdev: 18.088917

59.02 54.3

116.31 125.59

first angle mean: 45.137875

first angle stdev: 7.48357

second angle mean: 136.18102

second angle stdev: 18.09707

57.35 55.51

117.21 120.65

first angle mean: 45.189617

first angle stdev: 7.5097117

second angle mean: 136.10063

second angle stdev: 18.100683

54.82 55.59

117.42 118.13

first angle mean: 45.230255

first angle stdev: 7.5198064

second angle mean: 136.02182

second angle stdev: 18.102999

53.22 54.52

120.25 116.91

first angle mean: 45.263824

first angle stdev: 7.5217676

second angle mean: 135.95555

second angle stdev: 18.09371

52.48 51.59

121.98 115.8

first angle mean: 45.294014

first angle stdev: 7.5204544

second angle mean: 135.89708

second angle stdev: 18.078339

53.18 49.3

123.88 115.41

first angle mean: 45.326878

first angle stdev: 7.521942

second angle mean: 135.847

second angle stdev: 18.057238

54.14 47.88

124.65 113.19

first angle mean: 45.36344

first angle stdev: 7.527669

second angle mean: 135.80054

second angle stdev: 18.034103

55.87 49.23

124.95 112.35

first angle mean: 45.406864

first angle stdev: 7.5422745

second angle mean: 135.7557

second angle stdev: 18.01026

56.65 50.76

123.75 111.53

first angle mean: 45.45313

first angle stdev: 7.561075

second angle mean: 135.70631

second angle stdev: 17.98959

58.29 51.67

123.73 109.61

first angle mean: 45.50574

first angle stdev: 7.590003

second angle mean: 135.65721

second angle stdev: 17.968985

59.78 51.8

127.12 106.23

first angle mean: 45.564

first angle stdev: 7.6289754

second angle mean: 135.62238

second angle stdev: 17.940535

61.44 50.07

132.22 104.35

first angle mean: 45.628536

first angle stdev: 7.680175

second angle mean: 135.60855

second angle stdev: 17.905342

61.37 47.34

134.21 100.14

first angle mean: 45.69227

first angle stdev: 7.729517

second angle mean: 135.60289

second angle stdev: 17.869282

61.24 45.81

133.33 98.12

first angle mean: 45.754963

first angle stdev: 7.776588

second angle mean: 135.5937

second angle stdev: 17.8338

60.48 42.43

133.57 95.14

first angle mean: 45.814095

first angle stdev: 7.8166323

second angle mean: 135.58559

second angle stdev: 17.798412

58.86 40.74

133.92 90.55

first angle mean: 45.86628

first angle stdev: 7.8443227

second angle mean: 135.57892

second angle stdev: 17.76309

56.38 42.93

133.97 82.84

first angle mean: 45.90817

first angle stdev: 7.856646

second angle mean: 135.57251

second angle stdev: 17.72796

57.47 45.82

134.29 77.23

first angle mean: 45.95405

first angle stdev: 7.8746614

second angle mean: 135.56743

second angle stdev: 17.692934

57.64 46.34

134.09 72.86

first angle mean: 46.00024

first angle stdev: 7.893214

second angle mean: 135.56157

second angle stdev: 17.658176

57.45 45.0

133.7 74.05

first angle mean: 46.045315

first angle stdev: 7.910224

second angle mean: 135.55426

second angle stdev: 17.623768

57.33 42.66

131.96 75.72

first angle mean: 46.08957

first angle stdev: 7.9261394

second angle mean: 135.54016

second angle stdev: 17.590612

55.95 42.27

127.82 72.29

first angle mean: 46.128086

first angle stdev: 7.93452

second angle mean: 135.51001

second angle stdev: 17.562826

56.65 43.26

125.76 69.65

first angle mean: 46.169025

first angle stdev: 7.9461145

second angle mean: 135.47206

second angle stdev: 17.53913

59.0 39.95

128.47 70.08

first angle mean: 46.218758

first angle stdev: 7.9706745

second angle mean: 135.44492

second angle stdev: 17.510513

59.97 38.37

129.24 72.27

first angle mean: 46.271854

first angle stdev: 8.000852

second angle mean: 135.42097

second angle stdev: 17.480911

59.76 38.59

130.12 71.65

first angle mean: 46.32373

first angle stdev: 8.028976

second angle mean: 135.40057

second angle stdev: 17.450348

58.38 39.5

130.42 72.22

first angle mean: 46.369923

first angle stdev: 8.048121

second angle mean: 135.3815

second angle stdev: 17.419603

58.16 40.56

130.33 73.29

first angle mean: 46.414925

first angle stdev: 8.065579

second angle mean: 135.36221

second angle stdev: 17.389118

55.2 42.59

129.53 74.85

first angle mean: 46.448326

first angle stdev: 8.068367

second angle mean: 135.34004

second angle stdev: 17.359737

54.34 47.49

130.29 74.71

first angle mean: 46.478218

first angle stdev: 8.06765

second angle mean: 135.3209

second angle stdev: 17.329607

57.43 51.11

130.99 78.01

first angle mean: 46.519547

first angle stdev: 8.080362

second angle mean: 135.30457

second angle stdev: 17.298916

55.39 49.39

129.8 82.38

first angle mean: 46.552895

first angle stdev: 8.083409

second angle mean: 135.28387

second angle stdev: 17.269655

52.03 47.0

125.72 90.77

first angle mean: 46.573406

first angle stdev: 8.0751915

second angle mean: 135.24805

second angle stdev: 17.24718

51.19 46.54

121.86 94.36

first angle mean: 46.590633

first angle stdev: 8.065025

second angle mean: 135.19809

second angle stdev: 17.234314

51.93 49.33

118.65 97.62

first angle mean: 46.61048

first angle stdev: 8.056575

second angle mean: 135.13658

second angle stdev: 17.231705

54.72 55.95

119.16 105.03

first angle mean: 46.64052

first angle stdev: 8.056716

second angle mean: 135.07742

second angle stdev: 17.227123

56.28 57.45

121.67 106.53

first angle mean: 46.676086

first angle stdev: 8.063049

second angle mean: 135.02794

second angle stdev: 17.214516

54.91 57.23

121.55 105.87

first angle mean: 46.70636

first angle stdev: 8.063627

second angle mean: 134.97838

second angle stdev: 17.202192

53.11 56.21

120.21 106.3

first angle mean: 46.729816

first angle stdev: 8.058136

second angle mean: 134.92429

second angle stdev: 17.19382

52.43 55.22

117.96 108.18

first angle mean: 46.75062

first angle stdev: 8.050759

second angle mean: 134.86237

second angle stdev: 17.192879

50.55 53.11

115.46 110.3

first angle mean: 46.76444

first angle stdev: 8.039362

second angle mean: 134.79182

second angle stdev: 17.201283

47.35 51.99

113.32 112.49

first angle mean: 46.76656

first angle stdev: 8.024861

second angle mean: 134.71402

second angle stdev: 17.21849

46.21 55.98

112.51 116.65

first angle mean: 46.76455

first angle stdev: 8.010433

second angle mean: 134.63385

second angle stdev: 17.238895

48.05 61.48

111.71 121.53

first angle mean: 46.769173

first angle stdev: 7.996383

second angle mean: 134.5514

second angle stdev: 17.262505

51.57 62.0

113.79 124.64

first angle mean: 46.78638

first angle stdev: 7.9871945

second angle mean: 134.47699

second angle stdev: 17.276152

54.21 59.39

116.87 124.98

first angle mean: 46.81289

first angle stdev: 7.9852085

second angle mean: 134.41412

second angle stdev: 17.27723

53.18 57.13

117.8 125.95

first angle mean: 46.835552

first angle stdev: 7.98

second angle mean: 134.35498

second angle stdev: 17.274815

49.64 57.32

114.91 127.73

first angle mean: 46.845497

first angle stdev: 7.967582

second angle mean: 134.28603

second angle stdev: 17.282852

47.25 57.78

112.67 128.55

first angle mean: 46.846924

first angle stdev: 7.953529

second angle mean: 134.20964

second angle stdev: 17.299908

45.12 59.73

109.28 130.16

first angle mean: 46.840843

first angle stdev: 7.9401727

second angle mean: 134.12186

second angle stdev: 17.332443

43.48 61.01

106.34 132.89

first angle mean: 46.829052

first angle stdev: 7.9287214

second angle mean: 134.0244

second angle stdev: 17.37982

42.83 62.28

105.36 136.95

first angle mean: 46.815067

first angle stdev: 7.918368

second angle mean: 133.92416

second angle stdev: 17.43172

43.49 63.28

105.62 139.09

first angle mean: 46.803482

first angle stdev: 7.906988

second angle mean: 133.82555

second angle stdev: 17.481068

42.56 65.68

104.74 138.97

first angle mean: 46.78875

first angle stdev: 7.8971944

second angle mean: 133.72455

second angle stdev: 17.534363

40.59 66.7

99.43 137.42

first angle mean: 46.7673

first angle stdev: 7.891919

second angle mean: 133.60588

second angle stdev: 17.619465

39.18 65.97

93.42 133.98

first angle mean: 46.74114

first angle stdev: 7.8908453

second angle mean: 133.46732

second angle stdev: 17.746113

37.4 65.66

90.78 134.59

first angle mean: 46.709038

first angle stdev: 7.8962197

second angle mean: 133.3206

second angle stdev: 17.890854

36.35 66.96

89.58 138.4

first angle mean: 46.67356

first angle stdev: 7.905884

second angle mean: 133.17084

second angle stdev: 18.042068

35.23 65.79

87.23 138.77

first angle mean: 46.634506

first angle stdev: 7.9205494

second angle mean: 133.01402

second angle stdev: 18.209446

35.01 66.45

87.07 142.34

first angle mean: 46.594967

first angle stdev: 7.93598

second angle mean: 132.85776

second angle stdev: 18.374207

38.08 66.6

90.7 143.6

first angle mean: 46.5661

first angle stdev: 7.9379616

second angle mean: 132.71486

second angle stdev: 18.50598

39.69 67.14

89.29 144.55

first angle mean: 46.54287

first angle stdev: 7.9345794

second angle mean: 132.56815

second angle stdev: 18.645735

39.11 67.5

92.81 145.97

first angle mean: 46.517845

first angle stdev: 7.932904

second angle mean: 132.43427

second angle stdev: 18.756256

37.96 68.37

98.44 144.39

first angle mean: 46.48913

first angle stdev: 7.9350314

second angle mean: 132.3202

second angle stdev: 18.827679

35.76 68.68

98.53 143.14

first angle mean: 46.453243

first angle stdev: 7.9459324

second angle mean: 132.2072

second angle stdev: 18.897139

35.69 67.8

98.92 141.63

first angle mean: 46.417366

first angle stdev: 7.9568996

second angle mean: 132.09622

second angle stdev: 18.962927

35.61 66.4

103.06 141.12

first angle mean: 46.381462

first angle stdev: 7.9679775

second angle mean: 131.99977

second angle stdev: 19.00499

32.69 65.22

105.12 141.04

first angle mean: 46.336124

first angle stdev: 7.993566

second angle mean: 131.91075

second angle stdev: 19.036234

30.96 66.74

106.64 141.07

first angle mean: 46.285378

first angle stdev: 8.028942

second angle mean: 131.82735

second angle stdev: 19.059982

31.91 69.26

109.53 140.87

first angle mean: 46.23809

first angle stdev: 8.0578785

second angle mean: 131.75401

second angle stdev: 19.071392

32.47 66.98

116.42 138.76

first angle mean: 46.19295

first angle stdev: 8.083069

second angle mean: 131.70374

second angle stdev: 19.060268

35.14 63.6

121.77 137.64

first angle mean: 46.15683

first angle stdev: 8.094468

second angle mean: 131.67128

second angle stdev: 19.037542

38.36 59.46

123.2 134.88

first angle mean: 46.13143

first angle stdev: 8.093476

second angle mean: 131.64368

second angle stdev: 19.01264

46.58 57.79

124.4 133.55

first angle mean: 46.13289

first angle stdev: 8.080368

second angle mean: 131.62015

second angle stdev: 18.986221

52.5 60.59

126.38 132.0

first angle mean: 46.153496

first angle stdev: 8.075383

second angle mean: 131.60321

second angle stdev: 18.957813

53.85robot count: 3

62.37

129.25 130.35

first angle mean: 46.17832

first angle stdev: 8.074151

second angle mean: 131.59561

second angle stdev: 18.92768

51.02 61.31

132.11 129.8

first angle mean: 46.19389

first angle stdev: 8.065819

second angle mean: 131.59726

second angle stdev: 18.897247

47.48 59.38

134.19 126.59

first angle mean: 46.19801

first angle stdev: 8.05321

second angle mean: 131.60558

second angle stdev: 18.867508

47.35 56.59

135.58 121.41

first angle mean: 46.201694

first angle stdev: 8.040598

second angle mean: 131.61829

second angle stdev: 18.83868

48.09 54.79

135.18 119.41

first angle mean: 46.207706

first angle stdev: 8.028489

second angle mean: 131.62962

second angle stdev: 18.809729

48.84 53.94

134.39 119.97

first angle mean: 46.21606

first angle stdev: 8.017103

second angle mean: 131.63838

second angle stdev: 18.780489

48.69 53.79

135.07 121.05

first angle mean: 46.223892

first angle stdev: 8.005614

second angle mean: 131.64925

second angle stdev: 18.751741

51.07 55.26

136.35 120.4

first angle mean: 46.239178

first angle stdev: 7.9975953

second angle mean: 131.66406

second angle stdev: 18.723997

54.18 56.49

139.18 117.05

first angle mean: 46.264153

first angle stdev: 7.9973783

second angle mean: 131.6877

second angle stdev: 18.699268

54.07 57.51

144.0 113.35

first angle mean: 46.28862

first angle stdev: 7.996748

second angle mean: 131.72629

second angle stdev: 18.68262

54.64 58.9

147.11 112.24

first angle mean: 46.314716

first angle stdev: 7.997838

second angle mean: 131.77437

second angle stdev: 18.673155

53.78 56.2

150.36 109.73

first angle mean: 46.337975

first angle stdev: 7.9962

second angle mean: 131.83226

second angle stdev: 18.672794

52.38 54.35

152.91 108.72

first angle mean: 46.356735

first angle stdev: 7.9908495

second angle mean: 131.89774

second angle stdev: 18.680628

50.85 49.22

155.73 104.3

first angle mean: 46.370647

first angle stdev: 7.9823737

second angle mean: 131.97151

second angle stdev: 18.698622

49.49 43.58

157.45 96.43

first angle mean: 46.380276

first angle stdev: 7.971924

second angle mean: 132.05016

second angle stdev: 18.72316

49.54 42.73

160.9 86.14

first angle mean: 46.39

first angle stdev: 7.9615736

second angle mean: 132.13892

second angle stdev: 18.762493

50.38 47.69

161.9 80.07

first angle mean: 46.402237

first angle stdev: 7.9524145

second angle mean: 132.23022

second angle stdev: 18.805847

51.34 50.71

161.38 81.99

first angle mean: 46.417336

first angle stdev: 7.944925

second angle mean: 132.31935

second angle stdev: 18.845926

49.37 49.47

160.69 85.78

first angle mean: 46.426342

first angle stdev: 7.9344745

second angle mean: 132.40584

second angle stdev: 18.882069

51.61 46.09

162.12 78.84

first angle mean: 46.442097

first angle stdev: 7.927544

second angle mean: 132.49617

second angle stdev: 18.924173

53.95 44.52

163.52 75.33

first angle mean: 46.46485

first angle stdev: 7.9262733

second angle mean: 132.59018

second angle stdev: 18.972267

53.46 44.04

165.42 73.11

first angle mean: 46.48598

first angle stdev: 7.923597

second angle mean: 132.68936

second angle stdev: 19.029078

51.79 41.63

165.8 70.5

first angle mean: 46.50196

first angle stdev: 7.916992

second angle mean: 132.7891

second angle stdev: 19.086838

52.56 38.87

166.18 68.5

first angle mean: 46.52015

first angle stdev: 7.912043

second angle mean: 132.88936

second angle stdev: 19.145535

54.22 38.76

168.04 69.4

first angle mean: 46.5432

first angle stdev: 7.9113827

second angle mean: 132.9946

second angle stdev: 19.213076

53.16 41.24

167.13 71.49

first angle mean: 46.562954

first angle stdev: 7.9078083

second angle mean: 133.0965

second angle stdev: 19.274548

51.75 44.69

164.26 73.79

first angle mean: 46.578392

first angle stdev: 7.9010863

second angle mean: 133.18925

second angle stdev: 19.320566

50.75 46.94

161.55 75.48

first angle mean: 46.59077

first angle stdev: 7.892617

second angle mean: 133.2734

second angle stdev: 19.353456

50.3 48.58

159.34 77.48

first angle mean: 46.601746

first angle stdev: 7.8835077

second angle mean: 133.35052

second angle stdev: 19.376596

49.2 50.81

156.86 81.52

first angle mean: 46.60941

first angle stdev: 7.8731318

second angle mean: 133.41988

second angle stdev: 19.389957

50.03 51.23

156.79 81.69

first angle mean: 46.61947

first angle stdev: 7.8637276

second angle mean: 133.48863

second angle stdev: 19.40274

49.98 51.15

155.64 85.54

first angle mean: 46.629326

first angle stdev: 7.854291

second angle mean: 133.55357

second angle stdev: 19.41126

49.27 48.56

154.91 89.43

first angle mean: 46.637043

first angle stdev: 7.8440957

second angle mean: 133.61603

second angle stdev: 19.417131

48.88 48.16

152.92 94.29

first angle mean: 46.643585

first angle stdev: 7.8335867

second angle mean: 133.6723

second angle stdev: 19.416721

47.81 49.31

150.87 97.6

first angle mean: 46.646973

first angle stdev: 7.8224444

second angle mean: 133.72229

second angle stdev: 19.410574

46.9 49.96

149.29 99.55

first angle mean: 46.64771

first angle stdev: 7.8111105

second angle mean: 133.76741

second angle stdev: 19.400482

45.99 51.11

148.57 101.17

first angle mean: 46.645805

first angle stdev: 7.7998953

second angle mean: 133.8102

second angle stdev: 19.388718

46.02 52.54

147.95 104.31

first angle mean: 46.644

first angle stdev: 7.78872

second angle mean: 133.85095

second angle stdev: 19.375591

45.11 52.67

147.06 109.83

first angle mean: 46.6396

first angle stdev: 7.777955

second angle mean: 133.8889

second angle stdev: 19.36065

44.76 52.17

145.36 113.0

first angle mean: 46.634212

first angle stdev: 7.767453

second angle mean: 133.92178

second angle stdev: 19.342611

44.32 50.94

143.17 115.45

first angle mean: 46.627594

first angle stdev: 7.757333

second angle mean: 133.9482

second angle stdev: 19.321268

44.22 48.23

139.96 114.81

first angle mean: 46.62074

first angle stdev: 7.7473373

second angle mean: 133.96532

second angle stdev: 19.296385

45.96 48.44

137.76 113.37

first angle mean: 46.618862

first angle stdev: 7.7364044

second angle mean: 133.97609

second angle stdev: 19.270014

44.55 48.9

136.56 113.65

first angle mean: 46.613003

first angle stdev: 7.726221

second angle mean: 133.98343

second angle stdev: 19.24319

43.62 49.82

136.56 114.3

first angle mean: 46.604546

first angle stdev: 7.716936

second angle mean: 133.9907

second angle stdev: 19.216478

44.39 53.79

135.49 115.95

first angle mean: 46.598312

first angle stdev: 7.7069535

second angle mean: 133.99492

second angle stdev: 19.189558

44.36 54.83

135.46 114.67

first angle mean: 46.592022

first angle stdev: 7.697033

second angle mean: 133.99904

second angle stdev: 19.162745

43.82 56.49

135.87 113.35

first angle mean: 46.58426

first angle stdev: 7.687641

second angle mean: 134.00429

second angle stdev: 19.136143

45.1 56.03

136.2 112.78

first angle mean: 46.580112

first angle stdev: 7.6772966

second angle mean: 134.0104

second angle stdev: 19.109749

44.74 56.59

136.23 113.17

first angle mean: 46.574986

first angle stdev: 7.6672096

second angle mean: 134.0166

second angle stdev: 19.083473

45.11 55.91

134.92 114.92

first angle mean: 46.570915

first angle stdev: 7.6569414

second angle mean: 134.0191

second angle stdev: 19.057009

44.69 55.69

132.63 117.4

first angle mean: 46.565704

first angle stdev: 7.6469684

second angle mean: 134.01526

second angle stdev: 19.030737

45.65 55.89

131.68 120.9

first angle mean: 46.563175

first angle stdev: 7.63655

second angle mean: 134.0088

second angle stdev: 19.004827

45.19 57.33

131.22 124.43

first angle mean: 46.55939

first angle stdev: 7.6263638

second angle mean: 134.00111

second angle stdev: 18.979195

43.94 58.17

128.37 126.54

first angle mean: 46.552197

first angle stdev: 7.6171145

second angle mean: 133.98566

second angle stdev: 18.955399

40.42 58.04

122.5 129.99

first angle mean: 46.535397

first angle stdev: 7.613424

second angle mean: 133.9542

second angle stdev: 18.938932

37.43 57.96

118.29 135.09

first angle mean: 46.510517

first angle stdev: 7.6178575

second angle mean: 133.91139

second angle stdev: 18.93071

33.7 58.34

115.88 137.89

first angle mean: 46.475616

first angle stdev: 7.6367254

second angle mean: 133.86224

second angle stdev: 18.928253

32.06 63.44

112.32 141.56

first angle mean: 46.43644

first angle stdev: 7.663176

second angle mean: 133.80373

second angle stdev: 18.935755

32.48 64.36

112.08 143.51

first angle mean: 46.398617

first angle stdev: 7.687103

second angle mean: 133.74486

second angle stdev: 18.943773

31.24 63.52

110.32 143.33

first angle mean: 46.357655

first angle stdev: 7.716943

second angle mean: 133.68155

second angle stdev: 18.957205

30.32 65.69

107.59 142.0

first angle mean: 46.314426

first angle stdev: 7.7512646

second angle mean: 133.6112

second angle stdev: 18.97991

28.63 66.76

104.76 141.85

first angle mean: 46.266884

first angle stdev: 7.7948074

second angle mean: 133.53366

second angle stdev: 19.01316

28.66 68.07

104.63 144.24

first angle mean: 46.21968

first angle stdev: 7.837411

second angle mean: 133.45616

second angle stdev: 19.046385

33.02 65.91

105.95 144.64

first angle mean: 46.184387

first angle stdev: 7.85655

second angle mean: 133.38263

second angle stdev: 19.073866

34.1 65.49

105.55 144.92

first angle mean: 46.15217

first angle stdev: 7.870779

second angle mean: 133.3084

second angle stdev: 19.102419

36.14 62.73

104.51 145.96

first angle mean: 46.12553

first angle stdev: 7.8772016

second angle mean: 133.23181

second angle stdev: 19.134571

34.72 58.67

104.23 144.72

first angle mean: 46.095284

first angle stdev: 7.8885903

second angle mean: 133.15488

second angle stdev: 19.16731

33.08 57.73

103.49 142.46

first angle mean: 46.06085

first angle stdev: 7.9064646

second angle mean: 133.0764

second angle stdev: 19.202492

33.4 60.4

100.8 141.96

first angle mean: 46.027443

first angle stdev: 7.9226937

second angle mean: 132.99124

second angle stdev: 19.248487

39.29 61.77

93.39 143.25

first angle mean: 46.009716

first angle stdev: 7.919787

second angle mean: 132.88702

second angle stdev: 19.329908

43.44 62.43

93.85 144.03

first angle mean: 46.002964

first angle stdev: 7.91048

second angle mean: 132.78456

second angle stdev: 19.407574

45.5 61.9

93.56 144.09

first angle mean: 46.001648

first angle stdev: 7.900161

second angle mean: 132.68187

second angle stdev: 19.48551

47.37 61.65

93.49 142.96

first angle mean: 46.005222

first angle stdev: 7.89015

second angle mean: 132.57956

second angle stdev: 19.56256

43.6 61.47

88.5 142.68

first angle mean: 45.99896

first angle stdev: 7.880822

second angle mean: 132.46477

second angle stdev: 19.665802

44.01 61.07

85.09 141.81

first angle mean: 45.99379

first angle stdev: 7.871232

second angle mean: 132.3417

second angle stdev: 19.787714

41.37 60.7

86.66 140.42

first angle mean: 45.981815

first angle stdev: 7.864542

second angle mean: 132.22336

second angle stdev: 19.89803

38.94 62.07

90.61 139.86

first angle mean: 45.96362

first angle stdev: 7.8625064

second angle mean: 132.11583

second angle stdev: 19.984282

41.29 62.24

94.59 138.31

first angle mean: 45.95157

first angle stdev: 7.8559422

second angle mean: 132.01912

second angle stdev: 20.048996

43.62 62.96

96.23 137.92

first angle mean: 45.94558

first angle stdev: 7.846727

second angle mean: 131.92712

second angle stdev: 20.105051

46.01 62.91

101.78 138.36

first angle mean: 45.945744

first angle stdev: 7.836661

second angle mean: 131.84982

second angle stdev: 20.137056

50.07 60.12

107.85 135.58

first angle mean: 45.95629

first angle stdev: 7.829405

second angle mean: 131.78844

second angle stdev: 20.147787

50.72 56.38

110.46 131.94

first angle mean: 45.96844

first angle stdev: 7.823103

second angle mean: 131.73402

second angle stdev: 20.150814

51.52 56.13

113.01 128.23

first angle mean: 45.98257

first angle stdev: 7.818148

second angle mean: 131.68639

second angle stdev: 20.147255

52.74 55.87

114.1 125.29

first angle mean: 45.99972

first angle stdev: 7.8156195

second angle mean: 131.64174

second angle stdev: 20.141119

55.1 53.61

118.11 121.71

first angle mean: 46.02276

first angle stdev: 7.819104

second angle mean: 131.6075

second angle stdev: 20.127098

57.94 51.32

123.04 118.03

first angle mean: 46.052853

first angle stdev: 7.832096

second angle mean: 131.58586

second angle stdev: 20.106268

55.23 49.04

122.5 114.12

first angle mean: 46.07597

first angle stdev: 7.8357406

second angle mean: 131.56297

second angle stdev: 20.086092

52.68 48.14

122.55 112.43

first angle mean: 46.092564

first angle stdev: 7.8328705

second angle mean: 131.54031

second angle stdev: 20.065916

50.88 48.51

120.93 111.46

first angle mean: 46.104565

first angle stdev: 7.82671

second angle mean: 131.51373

second angle stdev: 20.047775

47.65 46.41

119.65 111.22

first angle mean: 46.10843

first angle stdev: 7.8173018

second angle mean: 131.48407

second angle stdev: 20.031462

43.92 44.44

117.78 111.19

first angle mean: 46.102966

first angle stdev: 7.808311

second angle mean: 131.4499

second angle stdev: 20.018143

44.88 44.31

117.8 112.12

first angle mean: 46.099926

first angle stdev: 7.798831

second angle mean: 131.41595

second angle stdev: 20.004787

47.81 46.32

118.27 112.81

first angle mean: 46.10417

first angle stdev: 7.7896137

second angle mean: 131.38332

second angle stdev: 19.990654

49.56 47.94

118.84 114.91

first angle mean: 46.11272

first angle stdev: 7.7818623

second angle mean: 131.35228

second angle stdev: 19.975624

50.06 47.27

119.34 115.2

first angle mean: 46.122467

first angle stdev: 7.7747173

second angle mean: 131.3226

second angle stdev: 19.959852

48.68 46.03

119.78 115.71

first angle mean: 46.128773

first angle stdev: 7.766172

second angle mean: 131.29417

second angle stdev: 19.943464

46.79 46.06

118.83 116.94

first angle mean: 46.130394

first angle stdev: 7.756694

second angle mean: 131.26357

second angle stdev: 19.928507

robot count: 4

45.89 46.22

118.12 116.7

first angle mean: 46.129807

first angle stdev: 7.7471914

second angle mean: 131.23135

second angle stdev: 19.914675

45.09 46.73

117.5 117.22

first angle mean: 46.127262

first angle stdev: 7.737885

second angle mean: 131.19777

second angle stdev: 19.901873

45.97 47.61

118.47 116.99

first angle mean: 46.126877

first angle stdev: 7.7284465

second angle mean: 131.16673

second angle stdev: 19.887499

46.83 48.71

119.28 115.96

first angle mean: 46.12859

first angle stdev: 7.719117

second angle mean: 131.13782

second angle stdev: 19.871922

47.2 47.77

120.5 114.79

first angle mean: 46.13119

first angle stdev: 7.7099237

second angle mean: 131.11198

second angle stdev: 19.85469

48.96 47.55

123.38 114.9

first angle mean: 46.13804

first angle stdev: 7.701839

second angle mean: 131.09326

second angle stdev: 19.83428

51.64 46.85

127.19 114.04

first angle mean: 46.15133

first angle stdev: 7.697271

second angle mean: 131.08385

second angle stdev: 19.811237

53.43 46.23

130.64 112.26

first angle mean: 46.16887

first angle stdev: 7.6962695

second angle mean: 131.08278

second angle stdev: 19.787365

53.8 44.64

131.04 109.46

first angle mean: 46.18721

first angle stdev: 7.696092

second angle mean: 131.08267

second angle stdev: 19.763569

52.97 40.12

130.0 104.8

first angle mean: 46.203476

first angle stdev: 7.6940145

second angle mean: 131.08008

second angle stdev: 19.73993

51.02 36.27

128.39 100.86

first angle mean: 46.215004

first angle stdev: 7.688407

second angle mean: 131.07362

second angle stdev: 19.71674

49.7 34.87

127.35 95.9

first angle mean: 46.22332

first angle stdev: 7.6811094

second angle mean: 131.06474

second angle stdev: 19.694035

49.87 35.48

128.66 90.28

first angle mean: 46.232002

first angle stdev: 7.674018

second angle mean: 131.05902

second angle stdev: 19.670925

51.85 39.49

132.25 85.71

first angle mean: 46.245346

first angle stdev: 7.669776

second angle mean: 131.06184

second angle stdev: 19.647635

54.88 43.02

136.24 85.16

first angle mean: 46.265804

first angle stdev: 7.6721787

second angle mean: 131.07411

second angle stdev: 19.625956

58.29 43.47

139.14 84.49

first angle mean: 46.294235

first angle stdev: 7.6853213

second angle mean: 131.09319

second angle stdev: 19.606657

60.8 41.34

137.92 80.38

first angle mean: 46.32844

first angle stdev: 7.7084336

second angle mean: 131.1093

second angle stdev: 19.586323

61.18 40.15

134.17 75.36

first angle mean: 46.363388

first angle stdev: 7.7329106

second angle mean: 131.11649

second angle stdev: 19.56383

61.83 38.12

134.18 68.45

first angle mean: 46.399693

first angle stdev: 7.7600102

second angle mean: 131.12367

second angle stdev: 19.541414

64.95 37.79

138.02 62.91

first angle mean: 46.44314

first angle stdev: 7.802611

second angle mean: 131.13983

second angle stdev: 19.521366

68.85 34.47

141.8 58.37

first angle mean: 46.49549

first angle stdev: 7.8682146

second angle mean: 131.16473

second angle stdev: 19.505339

72.48 31.25

144.43 53.95

first angle mean: 46.55606

first angle stdev: 7.9583106

second angle mean: 131.19566

second angle stdev: 19.493092

75.2 30.05

144.24 52.32

first angle mean: 46.622673

first angle stdev: 8.0679035

second angle mean: 131.226

second angle stdev: 19.480547

77.11 30.88

142.13 52.26

first angle mean: 46.69341

first angle stdev: 8.190946

second angle mean: 131.2513

second angle stdev: 19.465006

76.61 29.85

141.36 53.38

first angle mean: 46.762665

first angle stdev: 8.30682

second angle mean: 131.2747

second angle stdev: 19.44853

72.05 30.11

139.46 55.49

first angle mean: 46.821064

first angle stdev: 8.38554

second angle mean: 131.2936

second angle stdev: 19.430033

66.98 32.17

138.71 58.22

first angle mean: 46.86751

first angle stdev: 8.431457

second angle mean: 131.31068

second angle stdev: 19.410892

61.93 36.57

136.03 63.88

first angle mean: 46.90214

first angle stdev: 8.452598

second angle mean: 131.32155

second angle stdev: 19.389887

58.49 41.42

131.98 70.41

first angle mean: 46.92872

first angle stdev: 8.461076

second angle mean: 131.32306

second angle stdev: 19.367664

57.46 44.95

130.42 75.98

first angle mean: 46.952816

first angle stdev: 8.466357

second angle mean: 131.32098

second angle stdev: 19.34554

57.47 46.33

128.71 79.17

first angle mean: 46.97683

first angle stdev: 8.471571

second angle mean: 131.31502

second angle stdev: 19.323845

58.95 47.15

128.04 83.09

first angle mean: 47.0041

first angle stdev: 8.481146

second angle mean: 131.30756

second angle stdev: 19.302454

60.18 47.13

128.13 87.38

first angle mean: 47.034046

first angle stdev: 8.494705

second angle mean: 131.30034

second angle stdev: 19.281101

58.78 46.78

127.93 88.52

first angle mean: 47.060684

first angle stdev: 8.503442

second angle mean: 131.2927

second angle stdev: 19.259895

55.48 48.06

126.1 89.66

first angle mean: 47.079727

first angle stdev: 8.503232

second angle mean: 131.28094

second angle stdev: 19.239677

54.02 50.45

124.41 92.45

first angle mean: 47.095398

first angle stdev: 8.500012

second angle mean: 131.26544

second angle stdev: 19.220716

55.15 53.32

124.2 99.43

first angle mean: 47.113537

first angle stdev: 8.499016

second angle mean: 131.24953

second angle stdev: 19.20198

54.92 55.07

123.13 104.76

first angle mean: 47.13108

first angle stdev: 8.497505

second angle mean: 131.2313

second angle stdev: 19.184246

55.41 54.27

122.56 108.32

first angle mean: 47.149643

first angle stdev: 8.497001

second angle mean: 131.21184

second angle stdev: 19.167116

54.15 52.32

120.4 111.09

first angle mean: 47.165302

first angle stdev: 8.493933

second angle mean: 131.18765

second angle stdev: 19.152477

51.64 52.64

117.23 114.48

first angle mean: 47.175293

first angle stdev: 8.487076

second angle mean: 131.1565

second angle stdev: 19.142426

49.11 54.28

114.76 116.56

first angle mean: 47.1796

first angle stdev: 8.478109

second angle mean: 131.11996

second angle stdev: 19.136713

47.97 55.03

112.38 116.74

first angle mean: 47.181355

first angle stdev: 8.468766

second angle mean: 131.07834

second angle stdev: 19.135796

48.05 56.62

110.54 118.15

first angle mean: 47.18328

first angle stdev: 8.459471

second angle mean: 131.03279

second angle stdev: 19.138964

49.56 58.24

109.02 120.78

first angle mean: 47.188538

first angle stdev: 8.450846

second angle mean: 130.98409

second angle stdev: 19.145737

50.41 59.5

107.75 123.57

first angle mean: 47.19565

first angle stdev: 8.442866

second angle mean: 130.9328

second angle stdev: 19.155655

48.89 62.58

102.39 128.45

first angle mean: 47.199383

first angle stdev: 8.433937

second angle mean: 130.86993

second angle stdev: 19.181276

46.28 64.07

100.2 132.52

first angle mean: 47.197365

first angle stdev: 8.424774

second angle mean: 130.80252

second angle stdev: 19.213942

41.9 65.91

99.75 135.42

first angle mean: 47.185745

first angle stdev: 8.419178

second angle mean: 130.73442

second angle stdev: 19.247751

39.11 67.03

98.41 137.2

first angle mean: 47.16807

first angle stdev: 8.418424

second angle mean: 130.6637

second angle stdev: 19.285917

37.8 68.55

93.85 139.26

first angle mean: 47.147617

first angle stdev: 8.420589

second angle mean: 130.58331

second angle stdev: 19.341331

37.58 65.64

89.49 138.05

first angle mean: 47.126778

first angle stdev: 8.423232

second angle mean: 130.49379

second angle stdev: 19.415022

38.3 68.12

89.08 139.5

first angle mean: 47.107582

first angle stdev: 8.4241085

second angle mean: 130.40376

second angle stdev: 19.489588

38.25 70.95

89.02 142.12

first angle mean: 47.08837

first angle stdev: 8.425051

second angle mean: 130.314

second angle stdev: 19.56341

40.08 70.1

92.66 145.18

first angle mean: 47.073204

first angle stdev: 8.422228

second angle mean: 130.23248

second angle stdev: 19.620419

39.29 67.43

88.24 145.48

first angle mean: 47.056393

first angle stdev: 8.420883

second angle mean: 130.14178

second angle stdev: 19.695932

38.86 65.21

85.49 146.1

first angle mean: 47.03873

first angle stdev: 8.420387

second angle mean: 130.04556

second angle stdev: 19.78336

36.14 65.45

91.58 143.67

first angle mean: 47.015293

first angle stdev: 8.426467

second angle mean: 129.96283

second angle stdev: 19.842247

33.17 66.81

91.97 141.62

first angle mean: 46.98558

first angle stdev: 8.441768

second angle mean: 129.8813

second angle stdev: 19.898764

31.06 66.05

71.53 140.36

first angle mean: 46.951477

first angle stdev: 8.464796

second angle mean: 129.75636

second angle stdev: 20.059618

30.37 63.37

71.76 138.65

first angle mean: 46.91605

first angle stdev: 8.490342

second angle mean: 129.63243

second angle stdev: 20.216335

32.63 63.7

75.34 140.48

first angle mean: 46.885586

first angle stdev: 8.506846

second angle mean: 129.51668

second angle stdev: 20.349457

32.85 61.73

76.63 140.29

first angle mean: 46.85573

first angle stdev: 8.522366

second angle mean: 129.40414

second angle stdev: 20.473343

32.87 61.45

84.68 137.53

first angle mean: 46.82603

first angle stdev: 8.537618

second angle mean: 129.30919

second angle stdev: 20.554941

34.87 62.81

87.03 137.68

first angle mean: 46.800697

first angle stdev: 8.5462675

second angle mean: 129.21962

second angle stdev: 20.624975

39.93 65.91

92.62 139.54

first angle mean: 46.78617

first angle stdev: 8.54306

second angle mean: 129.14224

second angle stdev: 20.671629

40.89 65.32

97.12 139.32

first angle mean: 46.773735

first angle stdev: 8.538331

second angle mean: 129.07468

second angle stdev: 20.702017

42.67 63.66

99.98 138.46

first angle mean: 46.765095

first angle stdev: 8.531413

second angle mean: 129.01344

second angle stdev: 20.723166

46.11 63.5

103.76 135.88

first angle mean: 46.763718

first angle stdev: 8.522499

second angle mean: 128.96037

second angle stdev: 20.733652

46.78 61.12

106.42 133.32

first angle mean: 46.76375

first angle stdev: 8.51356

second angle mean: 128.91313

second angle stdev: 20.737553

50.4 58.94

109.02 131.14

first angle mean: 46.77136

first angle stdev: 8.506273

second angle mean: 128.8715

second angle stdev: 20.735779

54.95 57.73

111.2 127.63

first angle mean: 46.788433

first angle stdev: 8.505585

second angle mean: 128.83461

second angle stdev: 20.72982

59.13 54.83

115.61 123.84

first angle mean: 46.814144

first angle stdev: 8.515334

second angle mean: 128.80707

second angle stdev: 20.716993

59.31 53.21

117.93 119.26

first angle mean: 46.840122

first angle stdev: 8.525498

second angle mean: 128.78445

second angle stdev: 20.701376

54.79 51.93

116.7 115.95

first angle mean: 46.85662

first angle stdev: 8.524328

second angle mean: 128.75938

second angle stdev: 20.6872

51.66 49.59

116.23 114.24

first angle mean: 46.866566

first angle stdev: 8.518298

second angle mean: 128.73344

second angle stdev: 20.673618

50.98 47.74

115.99 114.07

first angle mean: 46.875065

first angle stdev: 8.511543

second angle mean: 128.7071

second angle stdev: 20.660357

51.23 46.31

116.43 113.41

first angle mean: 46.88404

first angle stdev: 8.505058

second angle mean: 128.6818

second angle stdev: 20.646557

51.25 46.98

116.71 114.63

first angle mean: 46.893024

first angle stdev: 8.498607

second angle mean: 128.65717

second angle stdev: 20.632439

50.97 49.87

117.27 116.19

first angle mean: 46.901398

first angle stdev: 8.491882

second angle mean: 128.63379

second angle stdev: 20.61769

49.1 50.64

117.63 117.04

first angle mean: 46.9059

first angle stdev: 8.48376

second angle mean: 128.61124

second angle stdev: 20.602564

48.83 51.21

117.63 117.14

first angle mean: 46.909836

first angle stdev: 8.475527

second angle mean: 128.58878

second angle stdev: 20.587465

49.67 50.01

116.95 116.32

first angle mean: 46.915466

first angle stdev: 8.467791

second angle mean: 128.56503

second angle stdev: 20.573153

49.88 48.73

116.35 114.35

first angle mean: 46.92151

first angle stdev: 8.460218

second angle mean: 128.54015

second angle stdev: 20.559568

49.3 47.83

115.63 113.42

first angle mean: 46.926342

first angle stdev: 8.452295

second angle mean: 128.51392

second angle stdev: 20.546892

49.0 47.21

115.59 112.77

first angle mean: 46.930546

first angle stdev: 8.444234

second angle mean: 128.48769

second angle stdev: 20.534277

50.97 47.67

116.8 112.05

first angle mean: 46.938725

first angle stdev: 8.437636

second angle mean: 128.46404

second angle stdev: 20.520208

53.94 47.8

121.17 108.48

first angle mean: 46.952866

first angle stdev: 8.434969

second angle mean: 128.4493

second angle stdev: 20.502087

60.23 48.2

129.28 103.9

first angle mean: 46.979637

first angle stdev: 8.447482

second angle mean: 128.45097

second angle stdev: 20.481441

65.3 49.27

133.71 99.13

first angle mean: 47.0165

first angle stdev: 8.478817

second angle mean: 128.46155

second angle stdev: 20.462183

65.45 47.69

133.41 94.91

first angle mean: 47.053516

first angle stdev: 8.510401

second angle mean: 128.47148

second angle stdev: 20.44283

61.89 44.29

132.19 91.27

first angle mean: 47.083244

first angle stdev: 8.52772

second angle mean: 128.47893

second angle stdev: 20.423014

59.41 39.93

131.25 87.49

first angle mean: 47.1079

first angle stdev: 8.536971

second angle mean: 128.48448

second angle stdev: 20.402954

59.85 39.95

132.84 82.34

first angle mean: 47.133335

first angle stdev: 8.547388

second angle mean: 128.49316

second angle stdev: 20.383509

61.15 41.0

134.97 78.89

first angle mean: 47.161255

first angle stdev: 8.56171

second angle mean: 128.50607

second angle stdev: 20.365244

61.85 41.43

137.26 74.23

first angle mean: 47.19046

first angle stdev: 8.578184

second angle mean: 128.52348

second angle stdev: 20.348728

60.36 39.52

138.08 70.69

first angle mean: 47.216587

first angle stdev: 8.5896845

second angle mean: 128.54243

second angle stdev: 20.332977

robot count: 561.09

38.09

138.13 67.67

first angle mean: 47.24406

first angle stdev: 8.603311

second angle mean: 128.56142

second angle stdev: 20.317307

63.41 37.56

139.01 66.29

first angle mean: 47.27601

first angle stdev: 8.62474

second angle mean: 128.58208

second angle stdev: 20.302525

65.79 34.6

140.38 62.61

first angle mean: 47.312523

first angle stdev: 8.655296

second angle mean: 128.60533

second angle stdev: 20.289246

67.59 30.2

141.48 55.47

first angle mean: 47.35244

first angle stdev: 8.693358

second angle mean: 128.63068

second angle stdev: 20.277298

67.14 26.08

142.32 50.47

first angle mean: 47.391315

first angle stdev: 8.728903

second angle mean: 128.65758

second angle stdev: 20.266436

66.34 24.61

142.44 49.35

first angle mean: 47.42847

first angle stdev: 8.760536

second angle mean: 128.6846

second angle stdev: 20.255735

64.53 25.71

141.4 50.1

first angle mean: 47.46194

first angle stdev: 8.7845335

second angle mean: 128.70949

second angle stdev: 20.243708

65.06 26.83

139.99 51.21

first angle mean: 47.496307

first angle stdev: 8.810277

second angle mean: 128.73154

second angle stdev: 20.230059

67.18 28.08

140.35 52.31

first angle mean: 47.534676

first angle stdev: 8.844403

second angle mean: 128.75417

second angle stdev: 20.21683

66.01 27.78

139.86 52.35

first angle mean: 47.570625

first angle stdev: 8.873222

second angle mean: 128.77577

second angle stdev: 20.203081

63.43 28.0

137.38 52.89

first angle mean: 47.601418

first angle stdev: 8.892055

second angle mean: 128.7925

second angle stdev: 20.187012

61.55 33.84

133.82 58.38

first angle mean: 47.628452

first angle stdev: 8.90459

second angle mean: 128.80223

second angle stdev: 20.168652

60.49 38.51

131.28 64.19

first angle mean: 47.653324

first angle stdev: 8.913904

second angle mean: 128.80704

second angle stdev: 20.149431

59.11 41.73

132.4 70.74

first angle mean: 47.67544

first angle stdev: 8.919484

second angle mean: 128.81396

second angle stdev: 20.130592

58.13 41.99

133.87 72.7

first angle mean: 47.69559

first angle stdev: 8.922673

second angle mean: 128.8237

second angle stdev: 20.11241

61.5 42.74

135.55 75.82

first angle mean: 47.722137

first angle stdev: 8.934582

second angle mean: 128.83664

second angle stdev: 20.095222

61.09 42.54

133.9 80.23

first angle mean: 47.747795

first angle stdev: 8.945159

second angle mean: 128.84636

second angle stdev: 20.077152

58.89 41.5

131.25 82.44

first angle mean: 47.769135

first angle stdev: 8.949858

second angle mean: 128.85097

second angle stdev: 20.058186

56.05 42.48

128.19 86.21

first angle mean: 47.78497

first angle stdev: 8.948612

second angle mean: 128.8497

second angle stdev: 20.03902

55.74 45.57

126.63 92.15

first angle mean: 47.800156

first angle stdev: 8.946809

second angle mean: 128.84546

second angle stdev: 20.020126

56.87 50.36

126.6 97.34

first angle mean: 47.817425

first angle stdev: 8.947028

second angle mean: 128.84119

second angle stdev: 20.00129

57.63 51.25

127.54 99.57

first angle mean: 47.836086

first angle stdev: 8.948733

second angle mean: 128.83871

second angle stdev: 19.98235

56.07 51.84

126.53 102.76

first angle mean: 47.85171

first angle stdev: 8.947417

second angle mean: 128.83434

second angle stdev: 19.963633

54.93 51.58

125.08 107.53

first angle mean: 47.865116

first angle stdev: 8.944237

second angle mean: 128.82721

second angle stdev: 19.945387

54.14 50.52

123.0 110.73

first angle mean: 47.876976

first angle stdev: 8.939935

second angle mean: 128.8162

second angle stdev: 19.928135

51.42 50.73

120.22 113.29

first angle mean: 47.88366

first angle stdev: 8.93282

second angle mean: 128.79997

second angle stdev: 19.912819

49.2 52.84

117.04 114.29

first angle mean: 47.88614

first angle stdev: 8.924587

second angle mean: 128.77783

second angle stdev: 19.900593

48.22 56.52

113.43 118.25

first angle mean: 47.88677

first angle stdev: 8.916207

second angle mean: 128.74898

second angle stdev: 19.892992

47.9 59.8

110.53 124.22

first angle mean: 47.88679

first angle stdev: 8.90784

second angle mean: 128.7148

second angle stdev: 19.889954

44.79 61.8

106.52 129.31

first angle mean: 47.880993

first angle stdev: 8.900502

second angle mean: 128.67323

second angle stdev: 19.894476

40.05 62.64

103.31 135.3

first angle mean: 47.866356

first angle stdev: 8.898611

second angle mean: 128.62582

second angle stdev: 19.906042

35.83 65.12

100.88 139.07

first angle mean: 47.8439

first angle stdev: 8.905466

second angle mean: 128.57407

second angle stdev: 19.923475

35.14 65.43

99.18 141.3

first angle mean: 47.820244

first angle stdev: 8.914012

second angle mean: 128.51932

second angle stdev: 19.945215

33.79 64.57

98.07 139.99

first angle mean: 47.794163

first angle stdev: 8.926205

second angle mean: 128.46274

second angle stdev: 19.969786

32.41 67.71

96.21 140.39

first angle mean: 47.76562

first angle stdev: 8.942459

second angle mean: 128.4029

second angle stdev: 19.999472

32.56 68.66

94.9 141.11

first angle mean: 47.737465

first angle stdev: 8.958062

second angle mean: 128.34085

second angle stdev: 20.032795

32.74 67.12

93.7 142.56

first angle mean: 47.709743

first angle stdev: 8.972933

second angle mean: 128.27681

second angle stdev: 20.069508

30.58 64.38

92.38 144.33

first angle mean: 47.67814

first angle stdev: 8.9947405

second angle mean: 128.21059

second angle stdev: 20.110073

29.39 64.41

91.95 146.95

first angle mean: 47.64446

first angle stdev: 9.020597

second angle mean: 128.14381

second angle stdev: 20.151606

31.94 64.49

91.93 147.21

first angle mean: 47.615585

first angle stdev: 9.037374

second angle mean: 128.07724

second angle stdev: 20.192747

37.35 63.39

92.21 145.55

first angle mean: 47.596752

first angle stdev: 9.039761

second angle mean: 128.01143

second angle stdev: 20.232523

40.28 61.32

92.69 143.83

first angle mean: 47.58335

first angle stdev: 9.036895

second angle mean: 127.94673

second angle stdev: 20.270325

38.45 59.68

92.31 143.59

first angle mean: 47.566658

first angle stdev: 9.037056

second angle mean: 127.881584

second angle stdev: 20.308926

34.16 60.62

91.94 145.01

first angle mean: 47.54219

first angle stdev: 9.04692

second angle mean: 127.815994

second angle stdev: 20.348286

31.7 61.86

92.63 146.48

first angle mean: 47.513332

first angle stdev: 9.063884

second angle mean: 127.75191

second angle stdev: 20.385033

30.93 63.37

93.42 147.06

first angle mean: 47.48318

first angle stdev: 9.083156

second angle mean: 127.68949

second angle stdev: 20.418941

32.46 63.07

93.05 146.48

first angle mean: 47.455917

first angle stdev: 9.097409

second angle mean: 127.62662

second angle stdev: 20.453611

33.67 62.28

92.05 145.81

first angle mean: 47.43094

first angle stdev: 9.108051

second angle mean: 127.56216

second angle stdev: 20.491

34.33 61.71

89.74 144.44

first angle mean: 47.407253

first angle stdev: 9.116819

second angle mean: 127.49377

second angle stdev: 20.53543

35.29 61.34

89.18 143.6

first angle mean: 47.38538

first angle stdev: 9.123098

second angle mean: 127.424614

second angle stdev: 20.581245

35.54 62.07

89.65 144.63

first angle mean: 47.364033

first angle stdev: 9.128708

second angle mean: 127.35656

second angle stdev: 20.625006

36.29 62.93

89.83 145.05

first angle mean: 47.34412

first angle stdev: 9.132558

second angle mean: 127.28906

second angle stdev: 20.667706

36.95 63.52

90.55 144.78

first angle mean: 47.32546

first angle stdev: 9.134959

second angle mean: 127.2231

second angle stdev: 20.707632

35.51 62.7

92.46 144.53

first angle mean: 47.304283

first angle stdev: 9.140442

second angle mean: 127.1608

second angle stdev: 20.74125

34.23 60.78

93.46 144.37

first angle mean: 47.280895

first angle stdev: 9.148959

second angle mean: 127.10052

second angle stdev: 20.771566

34.34 60.75

94.57 144.85

first angle mean: 47.257786

first angle stdev: 9.157101

second angle mean: 127.04244

second angle stdev: 20.798409

35.79 62.97

95.11 145.49

first angle mean: 47.237343

first angle stdev: 9.1617155

second angle mean: 126.98552

second angle stdev: 20.823475

36.04 63.77

96.39 144.76

first angle mean: 47.21742

first angle stdev: 9.165717

second angle mean: 126.931076

second angle stdev: 20.844862

35.03 64.15

96.89 143.74

first angle mean: 47.19577

first angle stdev: 9.171942

second angle mean: 126.877716

second angle stdev: 20.86472

33.57 65.38

97.16 141.58

first angle mean: 47.17161

first angle stdev: 9.181719

second angle mean: 126.82502

second angle stdev: 20.883673

34.75 62.65

98.84 139.65

first angle mean: 47.149628

first angle stdev: 9.1884365

second angle mean: 126.7755

second angle stdev: 20.898314

37.15 60.88

101.24 139.52

first angle mean: 47.13196

first angle stdev: 9.189916

second angle mean: 126.73037

second angle stdev: 20.907366

39.14 58.83

103.95 138.43

first angle mean: 47.117863

first angle stdev: 9.187929

second angle mean: 126.6902

second angle stdev: 20.910778

43.17 57.1

106.46 136.8

first angle mean: 47.110916

first angle stdev: 9.18133

second angle mean: 126.65459

second angle stdev: 20.909567

47.8 56.04

109.6 133.78

first angle mean: 47.112125

first angle stdev: 9.173304

second angle mean: 126.62462

second angle stdev: 20.903395

52.77 54.76

114.61 129.32

first angle mean: 47.122055

first angle stdev: 9.168312

second angle mean: 126.60354

second angle stdev: 20.891102

55.26 53.6

118.45 127.0

first angle mean: 47.136307

first angle stdev: 9.166596

second angle mean: 126.589264

second angle stdev: 20.875586

50.85 50.33

117.91 122.85

first angle mean: 47.142796

first angle stdev: 9.159895

second angle mean: 126.57408

second angle stdev: 20.86048

47.99 50.42

117.39 119.64

first angle mean: 47.144276

first angle stdev: 9.151966

second angle mean: 126.55805

second angle stdev: 20.845795

47.42 48.89

119.21 115.66

first angle mean: 47.144756

first angle stdev: 9.143998

second angle mean: 126.54524

second angle stdev: 20.829882

47.41 47.9

119.65 113.59

first angle mean: 47.145218

first angle stdev: 9.13605

second angle mean: 126.533264

second angle stdev: 20.813744

47.22 46.2

119.28 113.32

first angle mean: 47.145344

first angle stdev: 9.128117

second angle mean: 126.52067

second angle stdev: 20.797861

48.27 45.15

120.18 112.83

first angle mean: 47.147297

first angle stdev: 9.120323

second angle mean: 126.50967

second angle stdev: 20.781506

49.63 45.49

121.88 112.93

first angle mean: 47.15159

first angle stdev: 9.113014

second angle mean: 126.50166

second angle stdev: 20.76441

53.22 47.3

125.7 111.99

first angle mean: 47.16207

first angle stdev: 9.108627

second angle mean: 126.50028

second angle stdev: 20.746498

53.68 46.94

127.14 110.3

first angle mean: 47.17331

first angle stdev: 9.104788

second angle mean: 126.50139

second angle stdev: 20.728622

52.66 45.62

127.2 108.33

first angle mean: 47.182755

first angle stdev: 9.099792

second angle mean: 126.50258

second angle stdev: 20.710798

54.12 44.39

129.38 105.72

first angle mean: 47.194675

first angle stdev: 9.096509

second angle mean: 126.50753

second angle stdev: 20.69334

56.48 44.42

132.11 101.71

first angle mean: 47.210598

first angle stdev: 9.096822

second angle mean: 126.517136

second angle stdev: 20.676884

57.39 43.68

133.19 99.19

first angle mean: 47.22803

first angle stdev: 9.098769

second angle mean: 126.528564

second angle stdev: 20.661016

56.67 40.12

132.21 93.75

first angle mean: 47.24417

first angle stdev: 9.099353

second angle mean: 126.53828

second angle stdev: 20.644684

54.82 37.62

131.43 89.98

first angle mean: 47.2571

first angle stdev: 9.096961

second angle mean: 126.54662

second angle stdev: 20.62805

55.72 38.14

133.2 85.58

first angle mean: 47.271515

first angle stdev: 9.095907

second angle mean: 126.55796

second angle stdev: 20.612297

57.3 38.4

136.19 80.65

first angle mean: 47.28857

first angle stdev: 9.097558

second angle mean: 126.57434

second angle stdev: 20.598587

56.69 37.87

138.43 78.15

first angle mean: 47.30453

first angle stdev: 9.098068

second angle mean: 126.59447

second angle stdev: 20.58688

57.72 38.98

138.36 79.84

first angle mean: 47.322186

first angle stdev: 9.100446

second angle mean: 126.61441

second angle stdev: 20.575119

60.1 37.95

139.21 78.44

first angle mean: 47.343807

first angle stdev: 9.107897

second angle mean: 126.63572

second angle stdev: 20.56422

61.51 35.93

138.62 74.11

first angle mean: 47.367737

first angle stdev: 9.118775

second angle mean: 126.655975

second angle stdev: 20.552738

65.67 34.55

140.71 68.7

first angle mean: 47.398598

first angle stdev: 9.141978

second angle mean: 126.67967

second angle stdev: 20.543495

71.81 31.69

143.36 61.09

first angle mean: 47.439697

first angle stdev: 9.188939

second angle mean: 126.707756

second angle stdev: 20.537584

71.86 30.59

142.96 57.5

first angle mean: 47.48074

first angle stdev: 9.235545

second angle mean: 126.735054

second angle stdev: 20.531115

72.64 30.31

142.78 57.2

first angle mean: 47.522953

first angle stdev: 9.285067

second angle mean: 126.76198

second angle stdev: 20.52439

71.89 33.66

142.46 58.49

first angle mean: 47.56377

first angle stdev: 9.330646

second angle mean: 126.78828

second angle stdev: 20.517239

71.32 34.99

143.02 59.73

first angle mean: 47.603497

first angle stdev: 9.373234

second angle mean: 126.81543

second angle stdev: 20.510801

71.72 35.56

143.43 61.28

first angle mean: 47.643757

first angle stdev: 9.417016

second angle mean: 126.84316

second angle stdev: 20.504894

71.42 33.43

143.19 61.06

first angle mean: 47.683384

first angle stdev: 9.459017

second angle mean: 126.87041

second angle stdev: 20.498648

73.14 31.93

142.4 59.95

first angle mean: 47.72574

first angle stdev: 9.507923

second angle mean: 126.89624

second angle stdev: 20.491365

robot count: 6

72.71 31.26

138.17 57.01

first angle mean: 47.767242

first angle stdev: 9.55435

second angle mean: 126.91497

second angle stdev: 20.479485

72.29 31.12

135.81 54.41

first angle mean: 47.807907

first angle stdev: 9.59843

second angle mean: 126.92971

second angle stdev: 20.465698

71.02 31.04

135.49 53.85

first angle mean: 47.84634

first angle stdev: 9.6368

second angle mean: 126.94389

second angle stdev: 20.45171

70.14 31.51

135.67 52.74

first angle mean: 47.883186

first angle stdev: 9.671326

second angle mean: 126.95831

second angle stdev: 20.437874

69.68 32.21

134.51 51.95

first angle mean: 47.919155

first angle stdev: 9.703756

second angle mean: 126.97077

second angle stdev: 20.423306

68.9 32.2

133.83 51.68

first angle mean: 47.953724

first angle stdev: 9.733025

second angle mean: 126.98207

second angle stdev: 20.408371

67.93 31.78

132.18 51.96

first angle mean: 47.98658

first angle stdev: 9.758649

second angle mean: 126.99062

second angle stdev: 20.392668

67.36 31.04

132.6 52.73

first angle mean: 48.01839

first angle stdev: 9.782134

second angle mean: 126.99983

second angle stdev: 20.377186

68.5 31.03

134.33 55.65

first angle mean: 48.051968

first angle stdev: 9.809172

second angle mean: 127.01185

second angle stdev: 20.362635

66.73 34.48

136.15 59.36

first angle mean: 48.082535

first angle stdev: 9.830178

second angle mean: 127.0268

second angle stdev: 20.349318

60.85 36.52

134.44 66.87

first angle mean: 48.1034

first angle stdev: 9.835671

second angle mean: 127.038925

second angle stdev: 20.33489

57.03 40.04

130.46 78.47

first angle mean: 48.11796

first angle stdev: 9.834246

second angle mean: 127.0445

second angle stdev: 20.318766

57.14 43.13

129.74 80.71

first angle mean: 48.132652

first angle stdev: 9.832967

second angle mean: 127.04889

second angle stdev: 20.302504

58.03 45.31

130.54 82.85

first angle mean: 48.14875

first angle stdev: 9.833058

second angle mean: 127.05457

second angle stdev: 20.286478

58.89 45.27

132.71 84.58

first angle mean: 48.166187

first angle stdev: 9.834585

second angle mean: 127.06374

second angle stdev: 20.271284

60.47 44.24

132.61 85.81

first angle mean: 48.186127

first angle stdev: 9.839068

second angle mean: 127.07273

second angle stdev: 20.256079

58.67 43.94

129.01 87.91

first angle mean: 48.203094

first angle stdev: 9.840131

second angle mean: 127.075874

second angle stdev: 20.239834

55.31 45.17

126.31 91.7

first angle mean: 48.214573

first angle stdev: 9.836322

second angle mean: 127.07464

second angle stdev: 20.223503

53.66 46.63

125.23 94.75

first angle mean: 48.223354

first angle stdev: 9.830814

second angle mean: 127.07166

second angle stdev: 20.207323

54.27 49.79

124.9 99.89

first angle mean: 48.233093

first angle stdev: 9.825888

second angle mean: 127.06816

second angle stdev: 20.191233

55.8 53.44

125.35 104.74

first angle mean: 48.24526

first angle stdev: 9.822665

second angle mean: 127.0654

second angle stdev: 20.175112

54.94 53.16

124.61 107.44

first angle mean: 48.256004

first angle stdev: 9.818438

second angle mean: 127.06146

second angle stdev: 20.159155

53.06 50.15

122.9 107.94

first angle mean: 48.2637

first angle stdev: 9.8124485

second angle mean: 127.05479

second angle stdev: 20.143682

50.62 48.65

119.7 108.74

first angle mean: 48.26747

first angle stdev: 9.805047

second angle mean: 127.04302

second angle stdev: 20.129707

48.07 47.85

118.01 110.37

first angle mean: 48.267155

first angle stdev: 9.797216

second angle mean: 127.028595

second angle stdev: 20.116858

47.04 50.37

116.5 112.58

first angle mean: 48.265198

first angle stdev: 9.789523

second angle mean: 127.0118

second angle stdev: 20.1052

46.49 53.04

114.09 114.68

first angle mean: 48.26237

first angle stdev: 9.781982

second angle mean: 126.99122

second angle stdev: 20.095793

46.99 55.07

111.68 118.1

first angle mean: 48.26035

first angle stdev: 9.774334

second angle mean: 126.96687

second angle stdev: 20.089075

48.2 55.31

111.53 119.74

first angle mean: 48.260254

first angle stdev: 9.766574

second angle mean: 126.942375

second angle stdev: 20.08253

50.01 55.74

111.49 122.03

first angle mean: 48.263023

first angle stdev: 9.75908

second angle mean: 126.917885

second angle stdev: 20.076021

48.53 58.29

107.61 126.76

first angle mean: 48.26345

first angle stdev: 9.751362

second angle mean: 126.88734

second angle stdev: 20.074806

44.9 61.86

103.94 131.77

first angle mean: 48.258133

first angle stdev: 9.744573

second angle mean: 126.85108

second angle stdev: 20.079636

40.69 59.95

100.68 134.36

first angle mean: 48.246197

first angle stdev: 9.741515

second angle mean: 126.809814

second angle stdev: 20.090654

38.31 60.33

97.37 134.75

first angle mean: 48.23055

first angle stdev: 9.741812

second angle mean: 126.76345

second angle stdev: 20.108742

38.32 62.8

95.25 135.5

first angle mean: 48.214966

first angle stdev: 9.742067

second angle mean: 126.7139

second angle stdev: 20.131685

37.65 62.95

91.98 135.39

first angle mean: 48.198383

first angle stdev: 9.7434

second angle mean: 126.65936

second angle stdev: 20.162825

36.97 64.86

89.63 135.58

first angle mean: 48.180782

first angle stdev: 9.745888

second angle mean: 126.60133

second angle stdev: 20.200201

38.51 67.0

90.56 135.02

first angle mean: 48.16565

first angle stdev: 9.745759

second angle mean: 126.54492

second angle stdev: 20.234602

39.9 66.15

89.31 137.92

first angle mean: 48.152733

first angle stdev: 9.743613

second angle mean: 126.48674

second angle stdev: 20.272205

41.39 63.95

86.49 143.18

first angle mean: 48.14218

first angle stdev: 9.739668

second angle mean: 126.42435

second angle stdev: 20.3178

40.87 62.11

84.51 146.24

first angle mean: 48.130856

first angle stdev: 9.736303

second angle mean: 126.35906

second angle stdev: 20.369146

37.54 63.91

86.81 147.36

first angle mean: 48.114384

first angle stdev: 9.737678

second angle mean: 126.297554

second angle stdev: 20.41288

34.07 67.99

91.36 148.56

first angle mean: 48.092575

first angle stdev: 9.745816

second angle mean: 126.2433

second angle stdev: 20.443365

31.73 69.59

94.32 148.27

first angle mean: 48.067207

first angle stdev: 9.759514

second angle mean: 126.19381

second angle stdev: 20.466087

32.26 69.36

93.86 146.85

first angle mean: 48.04274

first angle stdev: 9.771738

second angle mean: 126.14376

second angle stdev: 20.48971

34.57 68.68

93.76 144.67

first angle mean: 48.021915

first angle stdev: 9.778518

second angle mean: 126.093704

second angle stdev: 20.513353

34.15 66.72

93.79 143.16

first angle mean: 48.000507

first angle stdev: 9.78613

second angle mean: 126.04386

second angle stdev: 20.536703

32.91 65.71

97.31 141.97

first angle mean: 47.977253

first angle stdev: 9.796485

second angle mean: 125.99958

second angle stdev: 20.551802

34.07 62.69

98.13 140.99

first angle mean: 47.95586

first angle stdev: 9.80411

second angle mean: 125.9567

second angle stdev: 20.565016

35.73 61.82

100.06 142.5

first angle mean: 47.93708

first angle stdev: 9.80827

second angle mean: 125.916916

second angle stdev: 20.574226

34.89 62.94

101.71 143.42

first angle mean: 47.91707

first angle stdev: 9.814036

second angle mean: 125.87979

second angle stdev: 20.580254

33.85 65.71

104.54 141.67

first angle mean: 47.895527

first angle stdev: 9.821934

second angle mean: 125.847115

second angle stdev: 20.581413

32.61 65.95

108.5 140.0

first angle mean: 47.872154

first angle stdev: 9.832578

second angle mean: 125.82059

second angle stdev: 20.57684

31.3 64.95

111.73 140.11

first angle mean: 47.846855

first angle stdev: 9.846351

second angle mean: 125.79908

second angle stdev: 20.568485

32.56 61.16

114.82 139.62

first angle mean: 47.82355

first angle stdev: 9.856902

second angle mean: 125.78235

second angle stdev: 20.557264

37.44 56.8

118.4 137.76

first angle mean: 47.807747

first angle stdev: 9.857713

second angle mean: 125.77111

second angle stdev: 20.543629

40.13 55.56

119.24 134.86

first angle mean: 47.796078

first angle stdev: 9.854759

second angle mean: 125.761185

second angle stdev: 20.529589

45.84 56.22

121.08 130.82

first angle mean: 47.79311

first angle stdev: 9.847573

second angle mean: 125.75408

second angle stdev: 20.514816

54.96 58.93

123.47 129.61

first angle mean: 47.803967

first angle stdev: 9.844058

second angle mean: 125.75062

second angle stdev: 20.499462

51.18 59.25

126.04 129.87

first angle mean: 47.80908

first angle stdev: 9.837484

second angle mean: 125.75105

second angle stdev: 20.483953

44.84 55.33

127.73 127.7

first angle mean: 47.804592

first angle stdev: 9.830728

second angle mean: 125.75405

second angle stdev: 20.46862

38.86 52.46

128.07 125.32

first angle mean: 47.7911

first angle stdev: 9.829442

second angle mean: 125.75754

second angle stdev: 20.453377

38.45 51.62

127.8 123.52

first angle mean: 47.777035

first angle stdev: 9.828714

second angle mean: 125.76061

second angle stdev: 20.438122

39.11 50.64

129.21 120.31

first angle mean: 47.764

first angle stdev: 9.827062

second angle mean: 125.7658

second angle stdev: 20.423185

40.89 50.41

131.28 118.73

first angle mean: 47.75368

first angle stdev: 9.823288

second angle mean: 125.774086

second angle stdev: 20.408964

44.95 49.99

136.19 117.23

first angle mean: 47.749477

first angle stdev: 9.816521

second angle mean: 125.789696

second angle stdev: 20.39764

47.9 49.69

142.06 114.46

first angle mean: 47.749702

first angle stdev: 9.809172

second angle mean: 125.81406

second angle stdev: 20.392073

49.28 47.41

148.72 110.61

first angle mean: 47.751987

first angle stdev: 9.802016

second angle mean: 125.84829

second angle stdev: 20.396032

50.7 44.36

154.61 106.26

first angle mean: 47.75639

first angle stdev: 9.79536

second angle mean: 125.89122

second angle stdev: 20.411028

50.61 41.07

158.57 100.65

first angle mean: 47.760643

first angle stdev: 9.788677

second angle mean: 125.93992

second angle stdev: 20.434734

49.21 37.24

159.84 94.62

first angle mean: 47.7628

first angle stdev: 9.78155

second angle mean: 125.99037

second angle stdev: 20.461294

49.55 37.34

162.3 88.43

first angle mean: 47.76545

first angle stdev: 9.774524

second angle mean: 126.04432

second angle stdev: 20.493866

49.13 39.74

164.73 82.49

first angle mean: 47.767475

first angle stdev: 9.76741

second angle mean: 126.10172

second angle stdev: 20.532719

51.0 40.81

167.07 76.33

first angle mean: 47.772266

first angle stdev: 9.760964

second angle mean: 126.16241

second angle stdev: 20.577919

53.22 40.99

167.74 73.82

first angle mean: 47.780327

first angle stdev: 9.755989

second angle mean: 126.22393

second angle stdev: 20.624691

53.51 39.42

170.93 68.02

first angle mean: 47.788788

first angle stdev: 9.751265

second angle mean: 126.28995

second angle stdev: 20.680845

53.11 36.45

171.98 62.68

first angle mean: 47.796635

first angle stdev: 9.74621

second angle mean: 126.357346

second angle stdev: 20.739841

50.25 29.72

168.83 57.19

first angle mean: 47.80025

first angle stdev: 9.739485

second angle mean: 126.4199

second angle stdev: 20.788465

51.5 26.71

167.78 54.84

first angle mean: 47.805695

first angle stdev: 9.733354

second angle mean: 126.48072

second angle stdev: 20.83355

61.43 26.03

169.04 53.39

first angle mean: 47.8257

first angle stdev: 9.740186

second angle mean: 126.54321

second angle stdev: 20.881935

71.48 25.9

171.57 52.54

first angle mean: 47.860382

first angle stdev: 9.775037

second angle mean: 126.60924

second angle stdev: 20.937628

61.43 26.65

171.54 52.11

first angle mean: 47.88025

first angle stdev: 9.781648

second angle mean: 126.67503

second angle stdev: 20.992708

54.05 27.94

170.76 51.74

first angle mean: 47.88927

first angle stdev: 9.777337

second angle mean: 126.73947

second angle stdev: 21.044874

47.33 29.81

167.77 54.04

first angle mean: 47.88845

first angle stdev: 9.770221

second angle mean: 126.79937

second angle stdev: 21.087776

48.61 35.35

165.17 59.6

first angle mean: 47.889507

first angle stdev: 9.763137

second angle mean: 126.8553

second angle stdev: 21.12319

52.19 40.06

166.0 65.38

first angle mean: 47.895763

first angle stdev: 9.757406

second angle mean: 126.91228

second angle stdev: 21.160501

53.77 43.75

165.8 70.21

first angle mean: 47.9043

first angle stdev: 9.75288

second angle mean: 126.9688

second angle stdev: 21.196955

56.46 47.83

165.14 77.23

first angle mean: 47.916718

first angle stdev: 9.751241

second angle mean: 127.02421

second angle stdev: 21.231354

52.84 46.34

163.52 79.54

first angle mean: 47.923855

first angle stdev: 9.745972

second angle mean: 127.0771

second angle stdev: 21.261341

50.76 44.97

161.76 82.58

first angle mean: 47.92796

first angle stdev: 9.739514

second angle mean: 127.1273

second angle stdev: 21.286821

49.11 47.03

157.81 87.84

first angle mean: 47.929665

first angle stdev: 9.732578

second angle mean: 127.17162

second angle stdev: 21.303343

48.41 46.68

155.35 87.6

first angle mean: 47.93036

first angle stdev: 9.725571

second angle mean: 127.21229

second angle stdev: 21.314823

47.21 44.01

153.89 87.01

first angle mean: 47.92932

first angle stdev: 9.718599

second angle mean: 127.25073

second angle stdev: 21.323486

47.24 45.73

152.19 91.43

first angle mean: 47.928326

first angle stdev: 9.71164

second angle mean: 127.28662

second angle stdev: 21.3291

47.4 47.52

150.28 95.23

first angle mean: 47.92757

first angle stdev: 9.704682

second angle mean: 127.31965

second angle stdev: 21.331558

48.03 50.25

148.43 99.96

first angle mean: 47.927715

first angle stdev: 9.697719

second angle mean: 127.34994

second angle stdev: 21.33122

robot count: 7

49.57 53.52

147.32 103.97

first angle mean: 47.93007

first angle stdev: 9.6909685

second angle mean: 127.37855

second angle stdev: 21.329311

48.83 54.36

146.56 107.07

first angle mean: 47.93136

first angle stdev: 9.684093

second angle mean: 127.40598

second angle stdev: 21.326378

47.82 53.18

144.85 109.75

first angle mean: 47.9312

first angle stdev: 9.677174

second angle mean: 127.430916

second angle stdev: 21.32132

49.12 51.36

140.21 110.91

first angle mean: 47.93289

first angle stdev: 9.670374

second angle mean: 127.449135

second angle stdev: 21.311565

47.66 50.13

137.25 110.88

first angle mean: 47.932503

first angle stdev: 9.663489

second angle mean: 127.4631

second angle stdev: 21.29959

44.53 50.72

134.6 112.48

first angle mean: 47.927666

first angle stdev: 9.657466

second angle mean: 127.47325

second angle stdev: 21.286135

44.5 54.95

132.32 116.68

first angle mean: 47.922794

first angle stdev: 9.651466

second angle mean: 127.48013

second angle stdev: 21.271793

43.56 58.1

129.26 119.86

first angle mean: 47.91661

first angle stdev: 9.646016

second angle mean: 127.48266

second angle stdev: 21.256807

43.37 57.93

126.78 122.08

first angle mean: 47.910168

first angle stdev: 9.640699

second angle mean: 127.48167

second angle stdev: 21.241764

44.91 58.4

124.05 125.49

first angle mean: 47.90593

first angle stdev: 9.63454

second angle mean: 127.476814

second angle stdev: 21.227129

49.11 59.66

122.55 129.55

first angle mean: 47.90763

first angle stdev: 9.627839

second angle mean: 127.46986

second angle stdev: 21.21294

45.99 61.05

120.72 133.29

first angle mean: 47.904922

first angle stdev: 9.621316

second angle mean: 127.460335

second angle stdev: 21.199488

39.89 60.26

117.01 134.89

first angle mean: 47.893635

first angle stdev: 9.619235

second angle mean: 127.44561

second angle stdev: 21.188179

35.01 61.23

114.05 139.38

first angle mean: 47.875515

first angle stdev: 9.624587

second angle mean: 127.42677

second angle stdev: 21.179224

32.69 63.09

112.26 142.57

first angle mean: 47.854183

first angle stdev: 9.6346245

second angle mean: 127.40547

second angle stdev: 21.171965

31.05 65.41

109.64 145.26

first angle mean: 47.830616

first angle stdev: 9.648383

second angle mean: 127.380554

second angle stdev: 21.167557

30.67 69.37

104.73 146.93

first angle mean: 47.80658

first angle stdev: 9.662959

second angle mean: 127.34882

second angle stdev: 21.169682

31.63 69.96

99.72 147.18

first angle mean: 47.78396

first angle stdev: 9.675106

second angle mean: 127.31018

second angle stdev: 21.180058

36.54 65.61

93.47 146.33

first angle mean: 47.768253

first angle stdev: 9.677462

second angle mean: 127.26292

second angle stdev: 21.20296

36.91 62.57

91.38 147.33

first angle mean: 47.75311

first angle stdev: 9.679196

second angle mean: 127.212875

second angle stdev: 21.230444

37.36 60.79

87.45 148.13

first angle mean: 47.738636

first angle stdev: 9.680217

second angle mean: 127.1575

second angle stdev: 21.267416

36.84 63.08

82.19 149.37

first angle mean: 47.723476

first angle stdev: 9.682006

second angle mean: 127.094955

second angle stdev: 21.318592

35.61 64.39

79.24 148.1

first angle mean: 47.70665

first angle stdev: 9.685792

second angle mean: 127.028496

second angle stdev: 21.378199

34.95 66.12

79.63 147.12

first angle mean: 47.68896

first angle stdev: 9.690709

second angle mean: 126.96276

second angle stdev: 21.436071

35.23 66.86

80.27 147.32

first angle mean: 47.671703

first angle stdev: 9.695074

second angle mean: 126.898094

second angle stdev: 21.491491

33.43 65.59

82.29 146.69

first angle mean: 47.652004

first angle stdev: 9.702814

second angle mean: 126.83638

second angle stdev: 21.540516

35.94 61.69

86.14 144.77

first angle mean: 47.635822

first angle stdev: 9.705863

second angle mean: 126.780174

second angle stdev: 21.578632

37.49 55.56

89.85 142.18

first angle mean: 47.621834

first angle stdev: 9.706473

second angle mean: 126.72925

second angle stdev: 21.60726

38.38 53.99

92.72 138.94

first angle mean: 47.609104

first angle stdev: 9.70584

second angle mean: 126.682396

second angle stdev: 21.629183

41.32 58.78

95.08 137.78

first angle mean: 47.600456

first angle stdev: 9.701962

second angle mean: 126.63892

second angle stdev: 21.646013

41.49 66.04

98.2 139.14

first angle mean: 47.59206

first angle stdev: 9.697939

second angle mean: 126.59987

second angle stdev: 21.65677

41.32 66.23

101.49 138.88

first angle mean: 47.58345

first angle stdev: 9.694064

second angle mean: 126.565414

second angle stdev: 21.661856

42.45 65.57

103.72 136.95

first angle mean: 47.576424

first angle stdev: 9.689282

second angle mean: 126.53412

second angle stdev: 21.6635

44.59 61.66

106.42 134.73

first angle mean: 47.57234

first angle stdev: 9.683282

second angle mean: 126.50661

second angle stdev: 21.661438

47.36 57.66

108.96 131.42

first angle mean: 47.57205

first angle stdev: 9.676669

second angle mean: 126.482635

second angle stdev: 21.656336

47.75 55.49

110.13 128.73

first angle mean: 47.57229

first angle stdev: 9.670069

second angle mean: 126.46033

second angle stdev: 21.649975

49.87 53.2

114.45 126.79

first angle mean: 47.57542

first angle stdev: 9.66385

second angle mean: 126.44397

second angle stdev: 21.639757

50.12 51.75

116.84 124.71

first angle mean: 47.57888

first angle stdev: 9.657729

second angle mean: 126.430885

second angle stdev: 21.62793

48.42 48.69

117.18 121.33

first angle mean: 47.580025

first angle stdev: 9.6512165

second angle mean: 126.41833

second angle stdev: 21.615917

48.76 49.49

117.72 119.1

first angle mean: 47.581627

first angle stdev: 9.644764

second angle mean: 126.406525

second angle stdev: 21.60362

48.15 48.71

119.21 115.71

first angle mean: 47.582397

first angle stdev: 9.638249

second angle mean: 126.396774

second angle stdev: 21.590603

49.23 45.02

122.31 113.16

first angle mean: 47.584625

first angle stdev: 9.631917

second angle mean: 126.391235

second angle stdev: 21.576511

51.19 43.88

124.89 110.74

first angle mean: 47.589497

first angle stdev: 9.626318

second angle mean: 126.38921

second angle stdev: 21.561998

54.27 45.7

128.39 109.51

first angle mean: 47.598515

first angle stdev: 9.622946

second angle mean: 126.391914

second angle stdev: 21.547571

53.61 47.91

126.91 108.91

first angle mean: 47.606617

first angle stdev: 9.618988

second angle mean: 126.39262

second angle stdev: 21.533052

53.5 49.01

126.37 108.12

first angle mean: 47.614548

first angle stdev: 9.614941

second angle mean: 126.39258

second angle stdev: 21.518559

54.72 47.51

128.0 107.32

first angle mean: 47.624096

first angle stdev: 9.612002

second angle mean: 126.394745

second angle stdev: 21.504173

56.14 46.32

129.03 107.15

first angle mean: 47.63553

first angle stdev: 9.610609

second angle mean: 126.39828

second angle stdev: 21.489952

57.27 46.42

129.74 105.33

first angle mean: 47.64844

first angle stdev: 9.610631

second angle mean: 126.40276

second angle stdev: 21.475891

57.88 44.14

131.57 102.32

first angle mean: 47.66214

first angle stdev: 9.61148

second angle mean: 126.40968

second angle stdev: 21.462343

55.85 39.78

130.57 98.13

first angle mean: 47.673088

first angle stdev: 9.609712

second angle mean: 126.415245

second angle stdev: 21.448532

54.02 36.99

130.35 95.19

first angle mean: 47.68156

first angle stdev: 9.606091

second angle mean: 126.4205

second angle stdev: 21.434689

55.34 36.54

133.03 90.68

first angle mean: 47.691772

first angle stdev: 9.60375

second angle mean: 126.42931

second angle stdev: 21.421753

57.26 36.82

135.82 86.81

first angle mean: 47.704514

first angle stdev: 9.603695

second angle mean: 126.4418

second angle stdev: 21.410225

counter:1

53.25 42.27

139.72 87.71

first angle mean: 47.711887

first angle stdev: 9.599435

second angle mean: 126.459465

second angle stdev: 21.401455

55.83 42.79

137.3 91.48

first angle mean: 47.72267

first angle stdev: 9.597613

second angle mean: 126.47386

second angle stdev: 21.390882

60.32 41.35

138.0 91.19

first angle mean: 47.739376

first angle stdev: 9.602198

second angle mean: 126.48915

second angle stdev: 21.38081

64.26 39.37

140.7 88.73

first angle mean: 47.761257

first angle stdev: 9.61463

second angle mean: 126.507965

second angle stdev: 21.372896

67.58 36.08

142.7 82.43

first angle mean: 47.78747

first angle stdev: 9.635232

second angle mean: 126.52939

second angle stdev: 21.366861

70.76 31.64

146.06 72.96

first angle mean: 47.81782

first angle stdev: 9.664951

second angle mean: 126.55519

second angle stdev: 21.364523

71.47 30.19

147.22 68.25

first angle mean: 47.849022

first angle stdev: 9.696653

second angle mean: 126.58245

second angle stdev: 21.363598

71.39 29.32

144.46 68.33

first angle mean: 47.88004

first angle stdev: 9.727816

second angle mean: 126.60601

second angle stdev: 21.359367

68.7 29.82

138.06 70.3

first angle mean: 47.907433

first angle stdev: 9.750666

second angle mean: 126.62107

second angle stdev: 21.349348

65.78 30.88

135.68 70.45

first angle mean: 47.93092

first angle stdev: 9.765743

second angle mean: 126.63299

second angle stdev: 21.33784

61.67 32.37

128.85 70.8

first angle mean: 47.948948

first angle stdev: 9.772

second angle mean: 126.63589

second angle stdev: 21.323984

65.85 33.48

137.21 73.1

first angle mean: 47.972412

first angle stdev: 9.787046

second angle mean: 126.64976

second angle stdev: 21.31344

66.06 36.59

141.73 75.39

first angle mean: 47.996082

first angle stdev: 9.802477

second angle mean: 126.669495

second angle stdev: 21.306463

62.83 40.71

136.39 79.72

first angle mean: 48.015476

first angle stdev: 9.810719

second angle mean: 126.68219

second angle stdev: 21.295431

58.46 42.54

131.57 84.4

first angle mean: 48.02911

first angle stdev: 9.8115635

second angle mean: 126.68858

second angle stdev: 21.282257

52.39 46.41

131.29 92.42

first angle mean: 48.034794

first angle stdev: 9.806428

second angle mean: 126.69458

second angle stdev: 21.269026

50.61 46.53

130.96 92.73

first angle mean: 48.038147

first angle stdev: 9.800482

second angle mean: 126.700134

second angle stdev: 21.255732

49.24 44.01

130.84 94.3

first angle mean: 48.03971

first angle stdev: 9.794203

second angle mean: 126.70551

second angle stdev: 21.242432

48.57 40.64

128.98 97.39

first angle mean: 48.0404

first angle stdev: 9.78786

second angle mean: 126.708466

second angle stdev: 21.22879

48.89 38.19

126.94 99.3

first angle mean: 48.041504

first angle stdev: 9.781558

second angle mean: 126.70877

second angle stdev: 21.215021

47.64 39.77

123.78 102.29

first angle mean: 48.040985

first angle stdev: 9.775231

second angle mean: 126.70496

second angle stdev: 21.201538

47.49 44.42

121.51 105.26

first angle mean: 48.04027

first angle stdev: 9.768927

second angle mean: 126.69825

second angle stdev: 21.188643

46.22 48.45

117.95 110.74

first angle mean: 48.03792

first angle stdev: 9.762833

second angle mean: 126.68696

second angle stdev: 21.177282

42.51 50.81

115.49 116.12

first angle mean: 48.030785

first angle stdev: 9.75855

second angle mean: 126.6725

second angle stdev: 21.16743

41.03 50.89

115.07 117.45

first angle mean: 48.021767

first angle stdev: 9.755494

second angle mean: 126.65755

second angle stdev: 21.157883

38.97 51.64

115.08 116.77

first angle mean: 48.010117

first angle stdev: 9.754614

second angle mean: 126.64265

second angle stdev: 21.148336

38.32 51.4

113.74 116.05

first angle mean: 47.99766

first angle stdev: 9.754523

second angle mean: 126.62607

second angle stdev: 21.139797

41.2 52.97

113.24 117.26

first angle mean: 47.988934

first angle stdev: 9.751298

second angle mean: 126.60889

second angle stdev: 21.13166

43.98 55.78

109.16 122.78

first angle mean: 47.983795

first angle stdev: 9.746101

second angle mean: 126.58651

second angle stdev: 21.127337

43.91 58.58

106.33 128.29

first angle mean: 47.978577

first angle stdev: 9.74095

second angle mean: 126.56058

second angle stdev: 21.12623

43.16 60.43

104.96 131.63

first angle mean: 47.972416

first angle stdev: 9.736241

second angle mean: 126.53295

second angle stdev: 21.126825

41.63 60.52

105.37 133.64

first angle mean: 47.964314

first angle stdev: 9.732658

second angle mean: 126.50593

second angle stdev: 21.126854

40.75 57.71

105.9 134.2

first angle mean: 47.955112

first angle stdev: 9.729857

second angle mean: 126.479645

second angle stdev: 21.12618

42.36 59.05

105.97 136.02

first angle mean: 47.94799

first angle stdev: 9.725705

second angle mean: 126.45352

second angle stdev: 21.125391

43.31 61.08

105.77 136.61

first angle mean: 47.942085

first angle stdev: 9.720923

second angle mean: 126.4272

second angle stdev: 21.124819

42.47 63.01

104.67 136.78

first angle mean: 47.93513

first angle stdev: 9.716701

second angle mean: 126.39956

second angle stdev: 21.125616

41.44 66.09

103.48 137.17

first angle mean: 47.92689

first angle stdev: 9.713286

second angle mean: 126.37047

second angle stdev: 21.127968

40.22 70.16

102.5 139.35

first angle mean: 47.91712

first angle stdev: 9.711

second angle mean: 126.34022

second angle stdev: 21.131647

39.32 71.46

101.94 141.1

first angle mean: 47.90624

first angle stdev: 9.709666

second angle mean: 126.30933

second angle stdev: 21.136082

39.14 68.52

102.2 140.5

first angle mean: 47.895157

first angle stdev: 9.708524

second angle mean: 126.27885

second angle stdev: 21.140083

40.11 65.31

102.21 139.78

first angle mean: 47.885326

first angle stdev: 9.706331

second angle mean: 126.24846

second angle stdev: 21.144014

39.71 65.95

101.59 138.22

first angle mean: 47.87502

first angle stdev: 9.704547

second angle mean: 126.21736

second angle stdev: 21.148792

37.12 68.16

99.93 138.48

first angle mean: 47.86147

first angle stdev: 9.705932

second angle mean: 126.18425

second angle stdev: 21.156023

37.61 68.33

97.06 139.98

first angle mean: 47.848576

first angle stdev: 9.706629

second angle mean: 126.14762

second angle stdev: 21.1679

39.91 65.65

95.58 142.09

first angle mean: 47.838608

first angle stdev: 9.704605

second angle mean: 126.109215

second angle stdev: 21.18229

39.33 61.37

94.82 142.33

first angle mean: 47.82793

first angle stdev: 9.703191

second angle mean: 126.06996

second angle stdev: 21.197954

36.9 58.62

94.38 141.93

first angle mean: 47.81423

first angle stdev: 9.704813

second angle mean: 126.03025

second angle stdev: 21.214312

35.53 58.66

93.32 143.35

first angle mean: 47.79886

first angle stdev: 9.708457

second angle mean: 125.9893

second angle stdev: 21.232552

34.57 61.85

91.5 146.86

first angle mean: 47.782326

first angle stdev: 9.71364

second angle mean: 125.94619

second angle stdev: 21.25424

34.1 65.17

90.68 149.1

first angle mean: 47.765244

first angle stdev: 9.71959

second angle mean: 125.902176

second angle stdev: 21.277441

35.03 68.32

88.68 149.36

first angle mean: 47.749367

first angle stdev: 9.72392

second angle mean: 125.85575

second angle stdev: 21.304703

35.59 67.36

88.56 148.23

first angle mean: 47.734222

first angle stdev: 9.72732

second angle mean: 125.80931

second angle stdev: 21.332024

34.03 66.3

93.42 146.54

first angle mean: 47.717175

first angle stdev: 9.733261

second angle mean: 125.76903

second angle stdev: 21.349295

31.73 63.78

100.32 145.13

first angle mean: 47.697315

first angle stdev: 9.7435

second angle mean: 125.73741

second angle stdev: 21.354853

30.62 59.75

106.22 143.8

first angle mean: 47.67613

first angle stdev: 9.755992

second angle mean: 125.713196

second angle stdev: 21.352657

29.98 58.4

107.65 143.27

first angle mean: 47.6542

first angle stdev: 9.7698

second angle mean: 125.69081

second angle stdev: 21.348883

30.18 62.17

106.1 143.05

first angle mean: 47.632576

first angle stdev: 9.783062

second angle mean: 125.66658

second angle stdev: 21.346785

30.14 66.25

105.66 140.58

first angle mean: 47.610954

first angle stdev: 9.796314

second angle mean: 125.64184

second angle stdev: 21.345163

30.23 67.66

106.67 140.63

first angle mean: 47.589497

first angle stdev: 9.809271

second angle mean: 125.61842

second angle stdev: 21.342384

30.98 69.21

111.65 140.6

first angle mean: 47.56901

first angle stdev: 9.820535

second angle mean: 125.60119

second angle stdev: 21.334854

32.49 66.45

114.68 139.52

first angle mean: 47.550446

first angle stdev: 9.828723

second angle mean: 125.587746

second angle stdev: 21.325153

35.01 60.33

117.43 140.03

first angle mean: 47.535015

first angle stdev: 9.832505

second angle mean: 125.577705

second angle stdev: 21.313951

37.8 56.96

119.42 137.01

first angle mean: 47.523064

first angle stdev: 9.832379

second angle mean: 125.57014

second angle stdev: robot count: 8

21.301947ROBOT: Exercise

hands\_behind\_and\_lean\_notool done

TRAINING: Exercise hands\_behind\_and\_lean\_notool43.97 done55.72

124.28 132.47

first angle mean: 47.518703

first angle stdev: 9.827132

second angle mean: 125.56856

second angle stdev: 21.288923