Evaluating the detectionspace - statistical report

by Milo Marsfeldt Skovfoged, Alexander Schiller Rasmussen

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##Introduction (This doesent become a headline - why?)

This is the statistical report associated with the paper “Evaluating the detection space” by Milo Marsfeldt Skovfoged & Alexander Schiller rasmussen. The field of study lies in research on behalf of visually impaired/blind navigation through environments to find an ideal distance and Field of Detection (FOD) for the most progressive travel-route avoiding collisions as much as possible. This report gives an overview of how data for the study was gathered and analysed, in regrads to different points of interrest.

## Data information

Here goes the explanaion of our data in regards to what we logged and how is is structured.

## testID day Scenario FOD Range   
## Min. : 1.0 Min. :1 Min. : 1.00 Baseline : 60 Min. :1.000   
## 1st Qu.:105.8 1st Qu.:1 1st Qu.: 5.75 Corridor :180 1st Qu.:2.000   
## Median :210.5 Median :2 Median :10.50 WholeRoom:180 Median :3.000   
## Mean :210.5 Mean :2 Mean :10.50 Mean :2.714   
## 3rd Qu.:315.2 3rd Qu.:3 3rd Qu.:15.25 3rd Qu.:4.000   
## Max. :420.0 Max. :3 Max. :20.00 Max. :4.000   
## avgSpeed medianSpeed maxSpeed minSpeed objectDetected   
## Min. :0.3595 Min. :0.2511 Min. :1.243 Min. :0 Min. : 0.000   
## 1st Qu.:0.5723 1st Qu.:0.5986 1st Qu.:1.835 1st Qu.:0 1st Qu.: 6.000   
## Median :0.6434 Median :0.6898 Median :2.069 Median :0 Median : 8.000   
## Mean :0.6337 Mean :0.6842 Mean :2.078 Mean :0 Mean : 9.152   
## 3rd Qu.:0.7012 3rd Qu.:0.7587 3rd Qu.:2.318 3rd Qu.:0 3rd Qu.:12.000   
## Max. :0.9803 Max. :1.2506 Max. :2.988 Max. :0 Max. :28.000   
## objectCollisions Time totalTimeTraining timeFDRtrain   
## Min. :0.000 Min. : 8.016 Min. : 18 Min. : 10.00   
## 1st Qu.:0.000 1st Qu.:12.136 1st Qu.:1737 1st Qu.: 77.75   
## Median :1.000 Median :13.625 Median :3154 Median :145.50   
## Mean :1.124 Mean :13.971 Mean :3090 Mean :147.41   
## 3rd Qu.:2.000 3rd Qu.:15.160 3rd Qu.:4522 3rd Qu.:213.25   
## Max. :6.000 Max. :25.143 Max. :5868 Max. :347.00   
## timeFDtrain timeDtrain   
## Min. : 11.0 Min. : 11.0   
## 1st Qu.: 171.5 1st Qu.: 507.5   
## Median : 360.0 Median : 997.5   
## Mean : 391.1 Mean :1004.4   
## 3rd Qu.: 604.0 3rd Qu.:1492.2   
## Max. :1031.0 Max. :2182.0

Here goes exlanation of the plot:

## Predicition of course completion time

##   
## Call:  
## lm(formula = log(Time) ~ log(totalTimeTraining) + FOD \* log(Range),   
## data = daggByScen)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.61521 -0.10031 -0.00213 0.09866 0.60136   
##   
## Coefficients: (1 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 3.261427 0.067658 48.204 < 2e-16 \*\*\*  
## log(totalTimeTraining) -0.092431 0.008905 -10.380 < 2e-16 \*\*\*  
## FODCorridor 0.110393 0.051164 2.158 0.03153 \*   
## FODWholeRoom 0.001559 0.050812 0.031 0.97553   
## log(Range) 0.112188 0.042365 2.648 0.00840 \*\*   
## FODCorridor:log(Range) -0.162275 0.059798 -2.714 0.00693 \*\*   
## FODWholeRoom:log(Range) NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.1612 on 414 degrees of freedom  
## Multiple R-squared: 0.2572, Adjusted R-squared: 0.2482   
## F-statistic: 28.67 on 5 and 414 DF, p-value: < 2.2e-16

## `geom\_smooth()` using method = 'loess' and formula 'y ~ x'

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 294.19

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 3779.8

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 1.0605e+006

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

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## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
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## singularities as well. 1.0605e+006

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 1622

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 1930

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 1.6952e+006

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

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## 1622

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## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
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## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition  
## number 0

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : There are other near  
## singularities as well. 1.6952e+006

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 1919

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 1896

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 2.7561e+005

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at  
## 1919

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius 1896

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition  
## number 0

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : There are other near  
## singularities as well. 2.7561e+005

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 2170

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 1107

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 1.7451e+006

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at  
## 2170

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius 1107

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition  
## number 0

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : There are other near  
## singularities as well. 1.7451e+006

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 632.24

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 2371.8

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 6.9156e+006

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at  
## 632.24

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius  
## 2371.8

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition  
## number 0

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : There are other near  
## singularities as well. 6.9156e+006

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 977.67

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 1481.3

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 1.1788e+007

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at  
## 977.67

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius  
## 1481.3

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition  
## number 0

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : There are other near  
## singularities as well. 1.1788e+007

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : pseudoinverse used at 1329

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : neighborhood radius 1409

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =  
## parametric, : There are other near singularities as well. 6.9539e+006

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : span too small. fewer  
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at  
## 1329

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius 1409

## Warning in predLoess(object$y, object$x, newx = if  
## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
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## (is.null(newdata)) object$x else if (is.data.frame(newdata))  
## as.matrix(model.frame(delete.response(terms(object)), : There are other near  
## singularities as well. 6.9539e+006

## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning -  
## Inf  
  
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