**Supplemental Data**

Additional sensitivity data are presented here. Increasing the number of healthy surfaces used to generate the “generic” healthy reference surface had a minor effect on the maximum positive distance between the diseased bone surface and the predicted healthy surface, corresponding to absolute distance errors of 0 to 129 m (Table S1). Varying the specific healthy surfaces used to generate the generic healthy reference surface had a variable effect, depending on the deformities in the diseased surface. The percent differences summarized in Table S2 correspond to absolute distance errors of 25 to 260 m. Note that the mean maximum positive distance for this calculation are not exactly the same as in Table S1, because in Table S2 it represents the mean, based on each of the nine three-surface combinations.

The algorithm was able to accurately quantify erosions and periosteal growth (Figure S1). The predicted height/depth of erosions and growths, both alone and in combination, was closely related to the actual height/depth. However, the algorithm was less accurate in measuring periosteal growth height than erosion depth.

Table S1: The effect of number of healthy surfaces used to generate the generic healthy reference surface. Here, sensitivity was calculated as the percent difference between the outcome of interest (max positive distance) when calculated with the candidate healthy reference, versus the average value. i.e., percent difference = (candidate dist – mean dist)/mean dist.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number of healthy surfaces used in reference surface | **% difference of max positive distance** | | | | |
| **Diseased Surface**  **1** | | **Diseased Surface**  **2** | | **Diseased Surface**  **3** |
| 2 | 4% | 1% | | 2% | |
| 3 | 26% | 5% | | 2% | |
| 4 | 3% | 4% | | 3% | |
| 5 | 0% | 2% | | 1% | |
| 6 | 2% | 5% | | 3% | |
| 7 | 1% | 1% | | 2% | |
| 8 | 2% | 1% | | 5% | |
| 9 | 4% | 2% | | 1% | |
| 10 | 16% | 4% | | 3% | |
| 11 | 4% | 5% | | 3% | |
| 12 | 5% | 3% | | 6% | |
| Mean max positive distance | 0.498 mm | 1.167 mm | | 0.513 mm | |

Table S2: The effect of specific combinations of three healthy surfaces, denoted as combinations A-I, were used to generate the generic healthy reference surface. Sensitivity was calculated as the percent difference between the outcome of interest (max positive distance) when calculated with the candidate healthy reference, versus the average value. i.e., percent difference = (candidate dist – mean dist)/mean dist.

|  |  |  |  |
| --- | --- | --- | --- |
| **Three-surface combinations to generate the healthy reference surface** | **% difference of max positive distance** | | |
| **Diseased Surface 1** | **Diseased Surface 2** | **Diseased Surface**  **3** |
| A | 5% | 18% | 6% |
| B | 6% | 20% | 6% |
| C | 7% | 20% | 6% |
| D | 15% | 3% | 7% |
| E | 7% | 14% | 6% |
| F | 11% | 13% | 6% |
| G | 34% | 16% | 6% |
| H | 17% | 16% | 6% |
| I | 8% | 13% | 7% |
| Mean max positive distance | 0.506 mm | 1.316 mm | 0.628 mm |

Figure S1: Results from a one-to-one comparison of the predicted deformity values to the actual deformity values. Erosion depths are illustrated in blue and periosteal bone growths in red. The black line represents a perfect prediction to the actual value equivalent and the dashed grey line shows the linear regression of all predicted data points.

The following data represent the raw data used for demonstrating the precision with which erosion depth and periosteal growth height of known artificial defects can be recovered using the algorithm. Relative errors are calculated as (predicted – true)/true. Each ID represents a unique healthy surface.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predicting erosion depth for three types of erosions** | | | | | | |  |  |  |  |  |  |
| **ID** | **Erosion 1 true depth (mm)** | | **Erosion 1 predicted depth (mm)** | | **Relative error erosion 1** | | **Erosion 2 true depth (mm)** | **Erosion 2 predicted depth (mm)** | **Relative error Erosion 2** | **Erosion 3 true depth (mm)** | **Erosion 3 predicted depth (mm)** | **Relative error Erosion 3** |
| RA901 | 4.13 | | 4.03 | | 0.02 | | 3.79 | 3.55 | 0.06 | 2.23 | 2.33 | 0.05 |
| RA902 | 4.19 | | 3.95 | | 0.06 | | 3.69 | 3.31 | 0.10 | 2.60 | 2.67 | 0.03 |
| RA903 | 4.46 | | 4.39 | | 0.02 | | 3.76 | 3.52 | 0.06 | 2.67 | 2.49 | 0.07 |
| RA904 | 4.57 | | 4.24 | | 0.07 | | 3.42 | 3.01 | 0.12 | 2.22 | 2.35 | 0.06 |
| RA905 | 4.78 | | 4.66 | | 0.03 | | 3.81 | 3.32 | 0.13 | 2.03 | 2.02 | 0.01 |
| RA906 | 4.58 | | 4.31 | | 0.06 | | 3.61 | 3.39 | 0.06 | 2.15 | 2.16 | 0.00 |
| RA907 | 4.88 | | 4.81 | | 0.01 | | 3.76 | 3.60 | 0.04 | 2.90 | 3.08 | 0.06 |
| RA909 | 4.34 | | 4.38 | | 0.01 | | 3.76 | 3.58 | 0.05 | 1.92 | 2.05 | 0.07 |
| RA910 | 4.61 | | 4.67 | | 0.01 | | 4.07 | 3.85 | 0.06 | 2.23 | 2.26 | 0.01 |
| RA912 | 4.71 | | 4.45 | | 0.05 | | 4.11 | 3.98 | 0.03 | 2.35 | 2.46 | 0.05 |
| **average** |  | |  | | **0.03** | |  |  | **0.07** |  |  | **0.04** |
|  |  | |  | |  | |  |  |  |  |  |  |
| **Predicting periosteal growth height for three types of erosions** | | | | | | | |  |  |  |  |  |
| **ID** | **Growth 1 true height (mm)** | **Growth 1 predicted height (mm)** | | **Relative error Growth 1** | | **Growth 2 true height (mm)** | | **Growth 2 predicted height (mm)** | **Relative error Growth 2** | **Growth 3 true height (mm)** | **Growth 3 predicted height (mm)** | **Relative error Growth 3** |
| RA901 | 1.58 | 1.46 | | 0.08 | | 0.75 | | 0.91 | 0.22 | 1.00 | 0.72 | 0.28 |
| RA902 | 1.68 | 1.49 | | 0.11 | | 0.85 | | 0.74 | 0.13 | 1.15 | 0.96 | 0.17 |
| RA903 | 1.61 | 1.44 | | 0.11 | | 1.07 | | 0.79 | 0.26 | 1.06 | 0.93 | 0.13 |
| RA904 | 1.71 | 1.47 | | 0.14 | | 0.64 | | 0.74 | 0.17 | 0.96 | 0.89 | 0.07 |
| RA905 | 1.93 | 1.76 | | 0.09 | | 0.79 | | 0.74 | 0.06 | 1.20 | 1.02 | 0.15 |
| RA906 | 1.93 | 1.71 | | 0.12 | | 0.97 | | 0.88 | 0.10 | 1.55 | 1.03 | 0.33 |
| RA907 | 1.73 | 1.68 | | 0.03 | | 0.85 | | 0.50 | 0.42 | 0.84 | 0.60 | 0.28 |
| RA909 | 1.85 | 1.65 | | 0.11 | | 0.82 | | 0.62 | 0.25 | 1.18 | 0.49 | 0.58 |
| RA910 | 1.87 | 1.60 | | 0.14 | | 0.82 | | 0.42 | 0.49 | 1.02 | 0.51 | 0.50 |
| RA912 | 1.92 | 1.83 | | 0.05 | | 1.08 | | 0.93 | 0.14 | 1.21 | 0.87 | 0.28 |
| **average** |  |  | | **0.10** | |  | |  | **0.22** |  |  | **0.28** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Multiple Erosions - 3 erosion types on a single surface** | | | |  |  |
| **ID** | **True maximum erosion depth (mm)** | **Predicted maximum erosions depth (mm)** | **Relative error maximum erosion depth** | **RMSE between deformed and non-deformed predicted surfaces** | **RMSE between healthy portion of deformed and non-deformed predicted surfaces** |
| RA901 | 4.13 | 3.90 | 0.05 | 0.06 | 0.03 |
| RA902 | 4.19 | 4.15 | 0.01 | 0.03 | 0.02 |
| RA903 | 4.46 | 4.43 | 0.01 | 0.05 | 0.03 |
| RA904 | 4.57 | 4.26 | 0.07 | 0.08 | 0.04 |
| RA905 | 4.78 | 4.75 | 0.01 | 0.06 | 0.04 |
| RA906 | 4.58 | 4.20 | 0.08 | 0.05 | 0.02 |
| RA907 | 4.88 | 4.92 | 0.01 | 0.02 | 0.01 |
| RA909 | 4.34 | 4.33 | 0.00 | 0.08 | 0.05 |
| RA910 | 4.61 | 4.58 | 0.01 | 0.08 | 0.05 |
| RA912 | 4.71 | 4.41 | 0.06 | 0.09 | 0.04 |
| **average** |  |  | **0.03** | **0.06** | **0.03** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Multiple growths - 3 growth types on a single surface** | | | |  |  |
| **ID** | **True maximum growth height (mm)** | **Predicted maximum growths height (mm)** | **Relative error maximum growth height** | **RMSE between deformed and non-deformed predicted surfaces** | **RMSE between healthy portion of deformed and non-deformed predicted surfaces** |
| RA901 | 1.58 | 1.44 | 0.09 | 0.18 | 0.09 |
| RA902 | 1.68 | 1.40 | 0.16 | 0.21 | 0.10 |
| RA903 | 1.61 | 1.10 | 0.32 | 0.09 | 0.04 |
| RA904 | 1.71 | 1.32 | 0.23 | 0.12 | 0.05 |
| RA905 | 1.93 | 1.72 | 0.11 | 0.11 | 0.07 |
| RA906 | 1.93 | 1.02 | 0.47 | 0.03 | 0.02 |
| RA907 | 1.73 | 1.24 | 0.28 | 0.05 | 0.03 |
| RA909 | 1.85 | 1.61 | 0.13 | 0.20 | 0.14 |
| RA910 | 1.87 | 1.55 | 0.17 | 0.08 | 0.04 |
| RA912 | 1.92 | 1.85 | 0.03 | 0.08 | 0.04 |
| **average** |  |  | **0.20** | **0.12** | **0.06** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Multiple erosion and growth combination - 3 erosion types and 3 growth types on a single surface** | | | | | | |  |  |
| **ID** | **True maximum erosion depth (mm)** | **Predicted maximum erosions depth (mm)** | **Relative error maximum erosion depth** | **True maximum growth height (mm)** | **Predicted maximum growths height (mm)** | **Relative error maximum growth height** | **RMSE between deformed and non-deformed predicted surfaces** | **RMSE between healthy portion of deformed and non-deformed predicted surfaces** |
| RA901 | 4.13 | 4.12 | 0.00 | 1.58 | 1.44 | 0.09 | 0.04 | 0.03 |
| RA902 | 4.19 | 4.35 | 0.04 | 1.68 | 1.58 | 0.06 | 0.02 | 0.01 |
| RA903 | 4.46 | 4.46 | 0.00 | 2.49 | 1.70 | 0.32 | 0.15 | 0.08 |
| RA904 | 4.57 | 3.90 | 0.15 | 1.71 | 1.03 | 0.40 | 0.11 | 0.07 |
| RA905 | 4.78 | 4.67 | 0.02 | 1.93 | 1.54 | 0.20 | 0.14 | 0.08 |
| RA906 | 4.58 | 4.36 | 0.05 | 1.93 | 2.20 | 0.14 | 0.02 | 0.01 |
| RA907 | 4.90 | 4.84 | 0.01 | 1.73 | 1.31 | 0.25 | 0.02 | 0.01 |
| RA909 | 4.32 | 4.19 | 0.03 | 1.85 | 1.27 | 0.32 | 0.07 | 0.03 |
| RA910 | 4.61 | 4.85 | 0.05 | 1.87 | 1.47 | 0.21 | 0.08 | 0.06 |
| RA912 | 4.71 | 4.26 | 0.09 | 1.92 | 1.65 | 0.14 | 0.12 | 0.07 |
| **average** |  |  | **0.05** |  |  | **0.21** | **0.08** | **0.05** |

Sensitivity and specificity of detecting the presence/absence of multiple erosions and abnormal periosteal growths that were artificially created on various healthy surfaces. Each healthy surface has a designator of “RAXXX” where XXX is the subject number. The yellow highlighted row (cut-off 0.6 mm) indicates the final choice for best sensitivity and specificity, over all of the tested healthy surfaces. A total of 4 healthy surfaces were tested, each with 6 total artificial deformities (3 erosions, 3 growths).

The final two pages show the mean data for all surfaces and the resulting ROC curve.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Combination of erosions and growths -- RA902** | | | | |  |  |  |  |  |
| **Cut off (mm)** | **True deformities detected** | **false deformities detected** | **True positive** | **False negative** | **True Negative** | **False positive** | **sensitivity** | **specificity** | **specificity rate (1-spec)** |
| 0 | 6 | 16 | 6 | 0 | 0 | 16 | 1 | 0 | 1 |
| 0.1 | 6 | 15 | 6 | 0 | 1 | 15 | 1 | 0.0625 | 0.9375 |
| 0.2 | 6 | 15 | 6 | 0 | 1 | 15 | 1 | 0.0625 | 0.9375 |
| 0.3 | 6 | 14 | 6 | 0 | 2 | 14 | 1 | 0.125 | 0.875 |
| 0.4 | 6 | 11 | 6 | 0 | 5 | 11 | 1 | 0.3125 | 0.6875 |
| 0.6 | 6 | 6 | 6 | 0 | 10 | 6 | 1 | 0.625 | 0.375 |
| 0.8 | 4 | 0 | 4 | 2 | 16 | 0 | 0.666667 | 1 | 0 |
| 1 | 3 | 0 | 3 | 3 | 16 | 0 | 0.5 | 1 | 0 |
| 1.2 | 3 | 0 | 3 | 3 | 16 | 0 | 0.5 | 1 | 0 |
| 1.4 | 3 | 0 | 3 | 3 | 16 | 0 | 0.5 | 1 | 0 |
| 1.6 | 3 | 0 | 3 | 3 | 16 | 0 | 0.5 | 1 | 0 |
| 1.8 | 3 | 0 | 3 | 3 | 16 | 0 | 0.5 | 1 | 0 |
| 2 | 3 | 0 | 3 | 3 | 16 | 0 | 0.5 | 1 | 0 |
| 2.2 | 2 | 0 | 2 | 4 | 16 | 0 | 0.333333 | 1 | 0 |
| 2.4 | 2 | 0 | 2 | 4 | 16 | 0 | 0.333333 | 1 | 0 |
| 2.6 | 2 | 0 | 2 | 4 | 16 | 0 | 0.333333 | 1 | 0 |
| 2.8 | 1 | 0 | 1 | 5 | 16 | 0 | 0.166667 | 1 | 0 |
| 3 | 1 | 0 | 1 | 5 | 16 | 0 | 0.166667 | 1 | 0 |
| 3.2 | 1 | 0 | 1 | 5 | 16 | 0 | 0.166667 | 1 | 0 |
| 3.4 | 1 | 0 | 1 | 5 | 16 | 0 | 0.166667 | 1 | 0 |
| 3.6 | 1 | 0 | 1 | 5 | 16 | 0 | 0.166667 | 1 | 0 |
| 3.8 | 1 | 0 | 1 | 5 | 16 | 0 | 0.166667 | 1 | 0 |
| 4 | 0 | 0 | 0 | 6 | 16 | 0 | 0 | 1 | 0 |
| 4.2 | 0 | 0 | 0 | 6 | 16 | 0 | 0 | 1 | 0 |
| 4.4 | 0 | 0 | 0 | 6 | 16 | 0 | 0 | 1 | 0 |
| 4.6 | 0 | 0 | 0 | 6 | 16 | 0 | 0 | 1 | 0 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Combination of erosions and growths -- RA903** | | | | |  |  |  |  |  |
| **Cut off (mm)** | **True deformities detected** | **false deformities detected** | **True positive** | **False negative** | **True Negative** | **False positive** | **sensitivity** | **specificity** | **specificity rate (1-spec)** |
| 0 | 6 | 19 | 6 | 0 | 0 | 19 | 1 | 0 | 1 |
| 0.1 | 6 | 18 | 6 | 0 | 1 | 18 | 1 | 0.052632 | 0.947368 |
| 0.2 | 6 | 16 | 6 | 0 | 3 | 16 | 1 | 0.157895 | 0.842105 |
| 0.3 | 6 | 14 | 6 | 0 | 5 | 14 | 1 | 0.263158 | 0.736842 |
| 0.4 | 6 | 6 | 6 | 0 | 13 | 6 | 1 | 0.684211 | 0.315789 |
| 0.6 | 5 | 1 | 5 | 1 | 18 | 1 | 0.833333 | 0.947368 | 0.052632 |
| 0.8 | 5 | 0 | 5 | 1 | 19 | 0 | 0.833333 | 1 | 0 |
| 1 | 5 | 0 | 5 | 1 | 19 | 0 | 0.833333 | 1 | 0 |
| 1.2 | 4 | 0 | 4 | 2 | 19 | 0 | 0.666667 | 1 | 0 |
| 1.4 | 3 | 0 | 3 | 3 | 19 | 0 | 0.5 | 1 | 0 |
| 1.6 | 3 | 0 | 3 | 3 | 19 | 0 | 0.5 | 1 | 0 |
| 1.8 | 3 | 0 | 3 | 3 | 19 | 0 | 0.5 | 1 | 0 |
| 2 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 2.2 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 2.4 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 2.6 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 2.8 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 3 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 3.2 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 3.4 | 2 | 0 | 2 | 4 | 19 | 0 | 0.333333 | 1 | 0 |
| 3.6 | 1 | 0 | 1 | 5 | 19 | 0 | 0.166667 | 1 | 0 |
| 3.8 | 1 | 0 | 1 | 5 | 19 | 0 | 0.166667 | 1 | 0 |
| 4 | 1 | 0 | 1 | 5 | 19 | 0 | 0.166667 | 1 | 0 |
| 4.2 | 0 | 0 | 0 | 6 | 19 | 0 | 0 | 1 | 0 |
| 4.4 | 0 | 0 | 0 | 6 | 19 | 0 | 0 | 1 | 0 |
| 4.6 | 0 | 0 | 0 | 6 | 19 | 0 | 0 | 1 | 0 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Combination of erosions and growths-- RA901** | | | | |  |  |  |  |  |
| **Cut off (mm)** | **True deformities detected** | **false deformities detected** | **True positive** | **False negative** | **True Negative** | **False positive** | **sensitivity** | **specificity** | **specificity rate (1-spec)** |
| 0 | 6 | 25 | 6 | 0 | 0 | 25 | 1 | 0 | 1 |
| 0.1 | 6 | 24 | 6 | 0 | 1 | 24 | 1 | 0.04 | 0.96 |
| 0.2 | 6 | 23 | 6 | 0 | 2 | 23 | 1 | 0.08 | 0.92 |
| 0.3 | 6 | 9 | 6 | 0 | 16 | 9 | 1 | 0.64 | 0.36 |
| 0.4 | 5 | 4 | 5 | 1 | 21 | 4 | 0.833333 | 0.84 | 0.16 |
| 0.6 | 4 | 0 | 4 | 2 | 25 | 0 | 0.666667 | 1 | 0 |
| 0.8 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 1 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 1.2 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 1.4 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 1.6 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 1.8 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 2 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 2.2 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 2.4 | 3 | 0 | 3 | 3 | 25 | 0 | 0.5 | 1 | 0 |
| 2.6 | 2 | 0 | 2 | 4 | 25 | 0 | 0.333333 | 1 | 0 |
| 2.8 | 2 | 0 | 2 | 4 | 25 | 0 | 0.333333 | 1 | 0 |
| 3 | 2 | 0 | 2 | 4 | 25 | 0 | 0.333333 | 1 | 0 |
| 3.2 | 2 | 0 | 2 | 4 | 25 | 0 | 0.333333 | 1 | 0 |
| 3.4 | 1 | 0 | 1 | 5 | 25 | 0 | 0.166667 | 1 | 0 |
| 3.6 | 1 | 0 | 1 | 5 | 25 | 0 | 0.166667 | 1 | 0 |
| 3.8 | 1 | 0 | 1 | 5 | 25 | 0 | 0.166667 | 1 | 0 |
| 4 | 1 | 0 | 1 | 5 | 25 | 0 | 0.166667 | 1 | 0 |
| 4.2 | 1 | 0 | 1 | 5 | 25 | 0 | 0.166667 | 1 | 0 |
| 4.4 | 0 | 0 | 0 | 6 | 25 | 0 | 0 | 1 | 0 |
| 4.6 | 0 | 0 | 0 | 6 | 25 | 0 | 0 | 1 | 0 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Combination of erosions and growths-- RA904** | | | | |  |  |  |  |  |
| **Cut off (mm)** | **True deformities detected** | **false deformities detected** | **True positive** | **False negative** | **True Negative** | **False positive** | **sensitivity** | **specificity** | **specificity rate (1-spec)** |
| 0 | 6 | 10 | 6 | 0 | 0 | 10 | 1 | 0 | 1 |
| 0.1 | 6 | 8 | 6 | 0 | 2 | 8 | 1 | 0.2 | 0.8 |
| 0.2 | 6 | 8 | 6 | 0 | 2 | 8 | 1 | 0.2 | 0.8 |
| 0.3 | 6 | 7 | 6 | 0 | 3 | 7 | 1 | 0.3 | 0.7 |
| 0.4 | 6 | 5 | 6 | 0 | 5 | 5 | 1 | 0.5 | 0.5 |
| 0.6 | 6 | 1 | 6 | 0 | 9 | 1 | 1 | 0.9 | 0.1 |
| 0.8 | 6 | 0 | 6 | 0 | 10 | 0 | 1 | 1 | 0 |
| 1 | 5 | 0 | 5 | 1 | 10 | 0 | 0.833333 | 1 | 0 |
| 1.2 | 5 | 0 | 5 | 1 | 10 | 0 | 0.833333 | 1 | 0 |
| 1.4 | 4 | 0 | 4 | 2 | 10 | 0 | 0.666667 | 1 | 0 |
| 1.6 | 3 | 0 | 3 | 3 | 10 | 0 | 0.5 | 1 | 0 |
| 1.8 | 3 | 0 | 3 | 3 | 10 | 0 | 0.5 | 1 | 0 |
| 2 | 3 | 0 | 3 | 3 | 10 | 0 | 0.5 | 1 | 0 |
| 2.2 | 3 | 0 | 3 | 3 | 10 | 0 | 0.5 | 1 | 0 |
| 2.4 | 2 | 0 | 2 | 4 | 10 | 0 | 0.333333 | 1 | 0 |
| 2.6 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 2.8 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 3 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 3.2 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 3.4 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 3.6 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 3.8 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 4 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 4.2 | 1 | 0 | 1 | 5 | 10 | 0 | 0.166667 | 1 | 0 |
| 4.4 | 0 | 0 | 0 | 6 | 10 | 0 | 0 | 1 | 0 |
| 4.6 | 0 | 0 | 0 | 6 | 10 | 0 | 0 | 1 | 0 |

|  |  |  |
| --- | --- | --- |
| **MEAN DATA** | |  |
| **mean sensitvity** | **mean specificity** | **1-specificity** |
| 1 | 0 | 1 |
| 1 | 0.088783 | 0.911217 |
| 1 | 0.125099 | 0.874901 |
| 1 | 0.332039 | 0.667961 |
| 0.958333 | 0.584178 | 0.415822 |
| 0.875 | 0.868092 | 0.131908 |
| 0.75 | 1 | 0 |
| 0.666667 | 1 | 0 |
| 0.625 | 1 | 0 |
| 0.541667 | 1 | 0 |
| 0.5 | 1 | 0 |
| 0.5 | 1 | 0 |
| 0.458333 | 1 | 0 |
| 0.416667 | 1 | 0 |
| 0.375 | 1 | 0 |
| 0.291667 | 1 | 0 |
| 0.25 | 1 | 0 |
| 0.25 | 1 | 0 |
| 0.25 | 1 | 0 |
| 0.208333 | 1 | 0 |
| 0.166667 | 1 | 0 |
| 0.166667 | 1 | 0 |
| 0.125 | 1 | 0 |
| 0.083333 | 1 | 0 |
| 0 | 1 | 0 |
| 0 | 1 | 0 |