



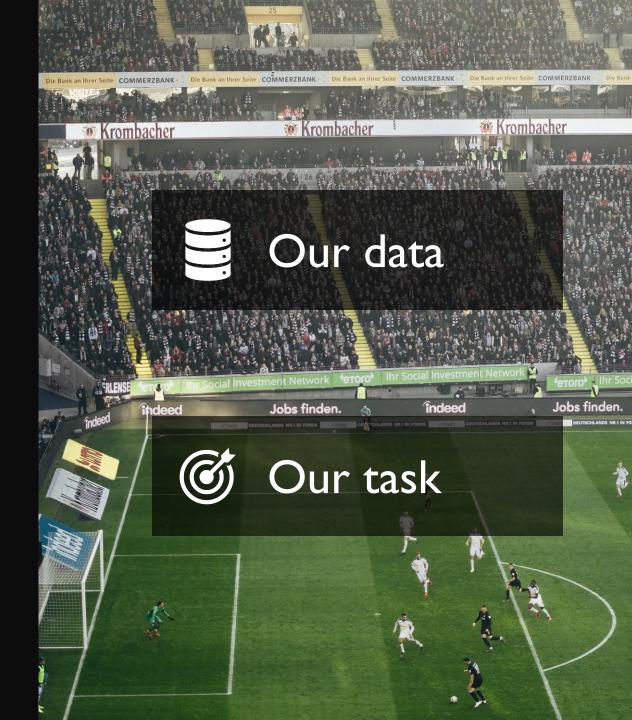
PREDICTION ON SOCCER

The Big Data Theory

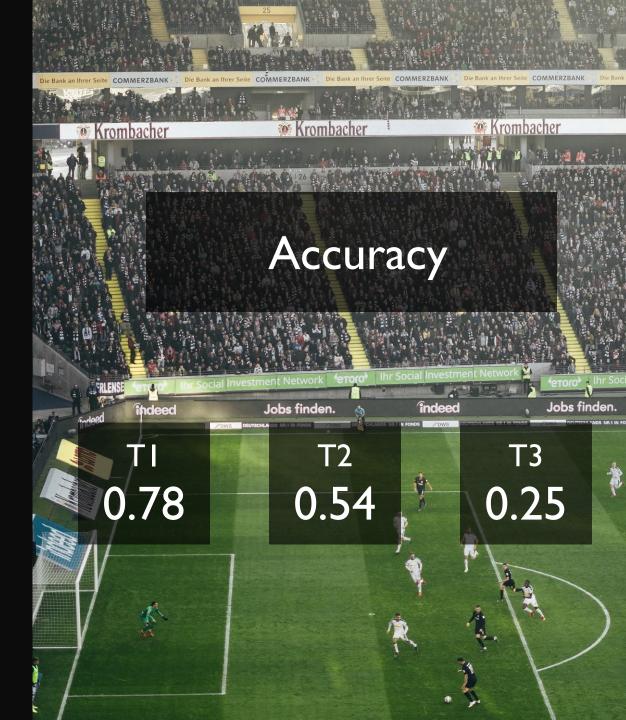
R. Manetti, G. Martini, N. Ozgoli, M. Razzaghnoori



DO YOU REMEMBER?



SCORING



THE MODEL

Did score in second half?

```
numPass ≤ 279.5
                            entropy = 1.0
                         samples = 100.0%
                         value = [0.48, 0.52]
                             class = yes
                       True
                                         False
           percBallPoss ≤ 41.54
                                         entropy = 0.9
               entropy = 1.0
                                      samples = 19.3%
             samples = 80.7\%
                                      value = [0.31, 0.69]
            value = [0.52, 0.48]
                                         class = yes
                 class = no
  numShot ≤ 3.5
                       meanPrevScore ≤ 1.61
  entropy = 0.97
                            entropy = 1.0
samples = 23.3%
                          samples = 57.4\%
value = [0.61, 0.39]
                         value = [0.48, 0.52]
    class = no
                             class = yes
  entropy = 0.99
                            entropy = 1.0
                                                  entropy = 0.96
 samples = 12.3%
                         samples = 45.5%
                                                 samples = 11.9%
value = [0.56, 0.44]
                          value = [0.5, 0.5]
                                                value = [0.39, 0.61]
     class = no
                             class = no
                                                    class = yes
```

entropy = 0.92

samples = 11.0%

value = [0.66, 0.34]

class = no

THE MODEL

Outcome

```
scoreTW ≤ 0.5
                                                entropy = 0.96
                                              samples = 100.0%
                                              value = [0.62, 0.38]
                                                  class = lost
                                                              False
                                            True
                               numSaveAttempt ≤ 3.5
                                                             scoreTW ≤ 1.5
                                    entropy = 0.74
                                                             entropy = 0.97
                                  samples = 56.5%
                                                            samples = 43.5\%
                                 value = [0.79, 0.21]
                                                            value = [0.4, 0.6]
                                     class = lost
                                                               class = won
          numPass ≤ 264.5
                                                         numSaveAttempt ≤ 1.5
                                   entropy = 0.19
                                                                                       entropy = 0.68
            entropy = 0.81
                                                              entropy = 1.0
                                  samples = 10.9%
                                                                                      samples = 11.6%
          samples = 45.5%
                                                            samples = 31.9%
                                 value = [0.97, 0.03]
                                                                                     value = [0.18, 0.82]
         value = [0.75, 0.25]
                                                           value = [0.49, 0.51]
                                     class = lost
                                                                                        class = won
             class = lost
                                                              class = won
 entropy = 0.73
                        entropy = 0.97
                                                       entropy = 0.89
                                                                              entropy = 0.96
samples = 34.5%
                       samples = 11.0%
                                                                             samples = 18.1%
                                                     samples = 13.8%
                      value = [0.61, 0.39]
value = [0.8, 0.2]
                                                    value = [0.31, 0.69]
                                                                            value = [0.62, 0.38]
  class = lost
                          class = lost
                                                        class = won
                                                                                class = lost
```

EXPLAINABILITY

Global

Local



```
numPass ≤ 279.5
                            entropy = 1.0
                         samples = 100.0\%
                         value = [0.48, 0.52]
                             class = yes
                       True
                                          False
           percBallPoss ≤ 41.54
                                         entropy = 0.9
               entropy = 1.0
                                      samples = 19.3%
             samples = 80.7%
                                      value = [0.31, 0.69]
            value = [0.52, 0.48]
                                          class = yes
                 class = no
  numShot \leq 3.5
                        meanPrevScore ≤ 1.61
  entropy = 0.97
                            entropy = 1.0
samples = 23.3\%
                          samples = 57.4\%
value = [0.61, 0.39]
                         value = [0.48, 0.52]
    class = no
                             class = yes
                            entropy = 1.0
```

entropy = 0.99 samples = 12.3% value = [0.56, 0.44] class = no entropy = 1.0 samples = 45.5% value = [0.5, 0.5] class = no



```
numPass ≤ 279.5
                            entropy = 1.0
                         samples = 100.0\%
                         value = [0.48, 0.52]
                             class = yes
                       True
                                          False
           percBallPoss ≤ 41.54
                                         entropy = 0.9
               entropy = 1.0
                                      samples = 19.3%
             samples = 80.7%
                                      value = [0.31, 0.69]
            value = [0.52, 0.48]
                                          class = yes
                 class = no
  numShot \leq 3.5
                        meanPrevScore ≤ 1.61
  entropy = 0.97
                            entropy = 1.0
samples = 23.3\%
                          samples = 57.4\%
value = [0.61, 0.39]
                         value = [0.48, 0.52]
    class = no
                             class = yes
                            entropy = 1.0
```

entropy = 0.99 samples = 12.3% value = [0.56, 0.44] class = no entropy = 1.0 samples = 45.5% value = [0.5, 0.5] class = no



```
numPass ≤ 279.5
                            entropy = 1.0
                         samples = 100.0\%
                         value = [0.48, 0.52]
                             class = yes
                       True
                                          False
           percBallPoss ≤ 41.54
                                         entropy = 0.9
               entropy = 1.0
                                       samples = 19.3%
             samples = 80.7%
                                      value = [0.31, 0.69]
            value = [0.52, 0.48]
                                          class = yes
                 class = no
  numShot \leq 3.5
                        meanPrevScore ≤ 1.61
  entropy = 0.97
                            entropy = 1.0
samples = 23.3%
                          samples = 57.4\%
value = [0.61, 0.39]
                          value = [0.48, 0.52]
    class = no
                             class = yes
```

entropy = 0.99 samples = 12.3% value = [0.56, 0.44] class = no entropy = 1.0 samples = 45.5% value = [0.5, 0.5] class = no



numPass ≤ 279.5 entropy = 1.0 samples = 100.0% value = [0.48, 0.52] class = yes

True

percBallPoss ≤ 41.54 entropy = 1.0 samples = 80.7% value = [0.52, 0.48] class = no False

entropy = 0.9 samples = 19.3% value = [0.31, 0.69] class = yes

numShot ≤ 3.5 entropy = 0.97 samples = 23.3% value = [0.61, 0.39] class = no meanPrevScore ≤ 1.61 entropy = 1.0 samples = 57.4% value = [0.48, 0.52] class = yes

entropy = 0.92 samples = 11.0% value = [0.66, 0.34] class = no entropy = 0.99 samples = 12.3% value = [0.56, 0.44] class = no entropy = 1.0 samples = 45.5% value = [0.5, 0.5] class = no



```
scoreTW ≤ 0.5
                                       entropy = 0.96
                                    samples = 100.0%
                                    value = [0.62, 0.38]
                                        class = lost
                                   True
                                                    False
                      numSaveAttempt ≤ 3.5
                                                   scoreTW ≤ 1.5
                          entropy = 0.74
                                                    entropy = 0.97
                        samples = 56.5%
                                                  samples = 43.5%
                        value = [0.79, 0.21]
                                                   value = [0.4, 0.6]
                           class = lost
                                                     class = won
numPass ≤ 264.5
                                               numSaveAttempt ≤ 1.5
                          entropy = 0.19
                                                                             entropy = 0.68
  entropy = 0.81
                                                    entropy = 1.0
                        samples = 10.9%
                                                                            samples = 11.6%
samples = 45.5%
                                                  samples = 31.9%
                        value = [0.97, 0.03]
                                                                           value = [0.18, 0.82]
value = [0.75, 0.25]
                                                 value = [0.49, 0.51]
                           class = lost
                                                                               class = won
   class = lost
                                                     class = won
              entropy = 0.97
                                             entropy = 0.89
                                                                     entropy = 0.96
             samples = 11.0%
                                           samples = 13.8%
                                                                   samples = 18.1%
                                                                   value = [0.62, 0.38]
            value = [0.61, 0.39]
                                           value = [0.31, 0.69]
                class = lost
                                              class = won
                                                                      class = lost
```

entropy = 0.73samples = 34.5%value = [0.8, 0.2]class = lost

```
scoreTW ≤ 0.5
                                       entropy = 0.96
                                    samples = 100.0%
                                    value = [0.62, 0.38]
                                        class = lost
                                   True
                                                    False
                      numSaveAttempt ≤ 3.5
                                                   scoreTW ≤ 1.5
                          entropy = 0.74
                                                    entropy = 0.97
                        samples = 56.5%
                                                  samples = 43.5%
                        value = [0.79, 0.21]
                                                   value = [0.4, 0.6]
                           class = lost
                                                     class = won
numPass ≤ 264.5
                                               numSaveAttempt ≤ 1.5
                          entropy = 0.19
                                                                             entropy = 0.68
  entropy = 0.81
                                                    entropy = 1.0
                        samples = 10.9%
                                                                            samples = 11.6%
samples = 45.5%
                                                  samples = 31.9%
                        value = [0.97, 0.03]
                                                                           value = [0.18, 0.82]
value = [0.75, 0.25]
                                                 value = [0.49, 0.51]
                           class = lost
                                                                               class = won
   class = lost
                                                     class = won
              entropy = 0.97
                                             entropy = 0.89
                                                                     entropy = 0.96
             samples = 11.0%
                                           samples = 13.8%
                                                                   samples = 18.1%
                                                                   value = [0.62, 0.38]
            value = [0.61, 0.39]
                                           value = [0.31, 0.69]
                class = lost
                                              class = won
                                                                       class = lost
```

entropy = 0.73samples = 34.5%value = [0.8, 0.2]class = lost

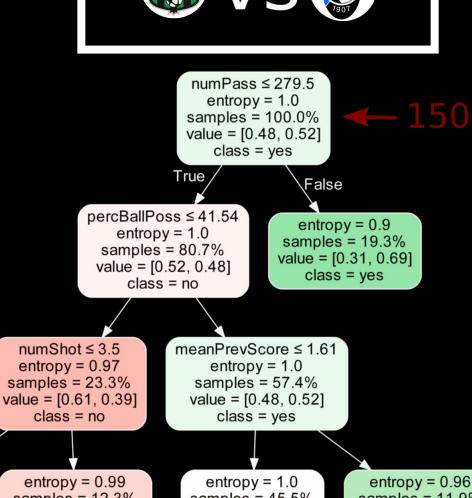
JUVENTUS Chievalleroum

```
scoreTW ≤ 0.5
                                                 entropy = 0.96
                                               samples = 100.0%
                                               value = [0.62, 0.38]
                                                  class = lost
                                                              False
                                            True
                                                              scoreTW ≤ 1.5
                                numSaveAttempt ≤ 3.5
                                                              entropy = 0.97
                                    entropy = 0.74
                                  samples = 56.5%
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                                 value = [0.79, 0.21]
                                                             value = [0.4, 0.6]
                                     class = lost
                                                               class = won
          numPass ≤ 264.5
                                                          numSaveAttempt ≤ 1.5
                                    entropy = 0.19
                                                                                        entropy = 0.68
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                                  value = [0.97, 0.03]
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                                                     value = [0.31, 0.69]
                                                                             value = [0.62, 0.38]
  class = lost
                          class = lost
                                                        class = won
                                                                                 class = lost
```

JUVENTUS Christofleroum

```
scoreTW ≤ 0.5
                                                 entropy = 0.96
                                               samples = 100.0%
                                               value = [0.62, 0.38]
                                                  class = lost
                                                              False
                                            True
                                                              scoreTW ≤ 1.5
                                numSaveAttempt ≤ 3.5
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                                                              entropy = 0.97
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                                                             value = [0.4, 0.6]
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                                     class = lost
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          numPass ≤ 264.5
                                                          numSaveAttempt ≤ 1.5
                                    entropy = 0.19
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                                                            samples = 31.9%
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  class = lost
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                                                                                 class = lost
```





entropy = 0.99 samples = 12.3% value = [0.56, 0.44] class = no entropy = 1.0 samples = 45.5% value = [0.5, 0.5] class = no



numPass ≤ 279.5 entropy = 1.0samples = 100.0%value = [0.48, 0.52]class = yes True False percBallPoss ≤ 41.54 entropy = 0.9entropy = 1.0samples = 19.3% samples = 80.7% value = [0.31, 0.69]value = [0.52, 0.48]class = yes class = no meanPrevScore ≤ 1.61 numShot ≤ 3.5 entropy = 0.97entropy = 1.0samples = 23.3% samples = 57.4%value = [0.61, 0.39]value = [0.48, 0.52]class = no class = yes

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numPass ≤ 279.5 entropy = 1.0 samples = 100.0% value = [0.48, 0.52] class = yes

True

False

oss ≤ 41.54
entropy = 0.9

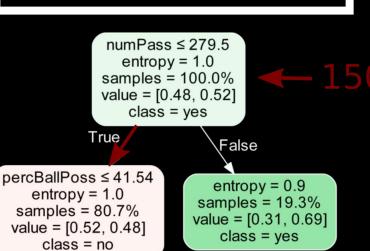
percBallPoss ≤ 41.54 entropy = 1.0 samples = 80.7% value = [0.52, 0.48] class = no

entropy = 0.9 samples = 19.3% value = [0.31, 0.69] class = yes

numShot ≤ 3.5 entropy = 0.97 samples = 23.3% value = [0.61, 0.39] class = no meanPrevScore ≤ 1.61 entropy = 1.0 samples = 57.4% value = [0.48, 0.52] class = yes

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¥33,8%

numShot ≤ 3.5 entropy = 0.97 samples = 23.3% value = [0.61, 0.39] class = no

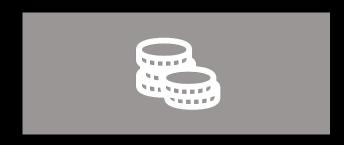
5

entropy = 0.99 samples = 12.3% value = [0.56, 0.44] class = no meanPrevScore ≤ 1.61 entropy = 1.0 samples = 57.4% value = [0.48, 0.52] class = yes

entropy = 1.0 samples = 45.5% value = [0.5, 0.5] class = no entropy = 0.96 samples = 11.9% value = [0.39, 0.61] class = yes

entropy = 0.92 samples = 11.0% value = [0.66, 0.34] class = no

TO WHAT END?



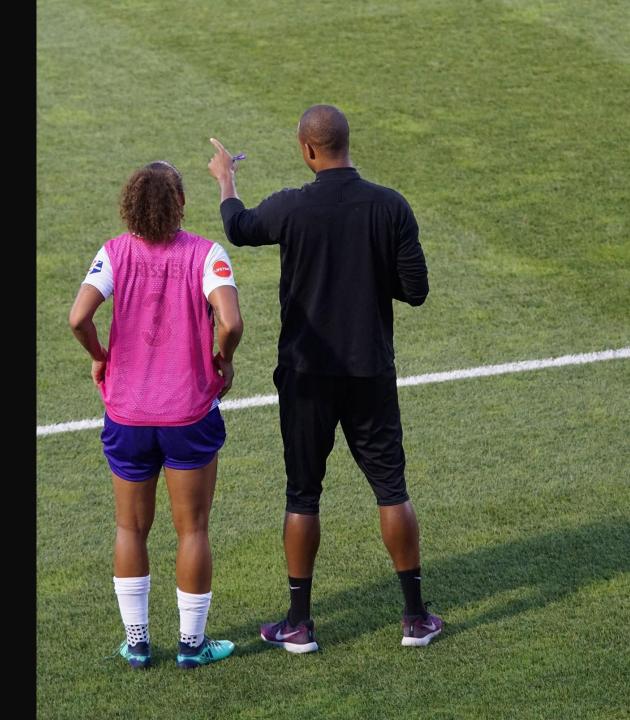




BETTING TIPS



COACH ASSISTANT



FRAUD DETECTION





THANK YOU

In football as in watchmaking (and in data mining, ed.), talent and elegance mean nothing without rigour and precision.

L. Messi

