**Table S1: List and Description of Hand-crafted Features for the Surgical Pattern Recognition Models**

|  |  |
| --- | --- |
| **Feature Name** | **Description** |
| Duration Force | Duration of force application in one task segment |
| Mean Force | Average of force values in one task segment |
| Maximum Force | Maximum of force values in one task segment |
| Minimum Force | Minimum of force values in one task segment |
| Range Force | Range of force values in one task segment |
| Median Force | Median of force values in one task segment |
| Force Standard Deviation | Standard deviation of force values in one task segment |
| Force Coefficient of Variance | Coefficient of variation of force values in one task segment |
| Force Distribution Skewness | The extent to which the force data distribution deviates from a normal distribution |
| Force Distribution Kurtosis | The extent to which the force data distribution is tailed in a normal distribution |
| Force Distribution Normality Test | Shapiro-Wilk test of normality in force data distribution |
| Force Profile Peaks Count | Number of force peaks in one task segment |
| Force Profile Maximum Peak Value | Force peak maximum value in one task segment |
| Force Time Series Frequency | Dominant time-series harmonics extracted from Fast Fourier Transform (FFT) of force value in one task segment |
| Force Time Series Period Length | Average time length of force cycles in one task segment |
| Force 1st Derivative Standard Deviation | Standard deviation for the first derivative of the force signal in one task segment |
| Force Profile Flat Spots | Maximum run length for each section of force time-series when divided into ten equal-sized intervals |
| Force Profile Trend Strength | Force time-series trend in one task segment |
| Force Profile Linearity | Force time-series linearity index (from Teräsvirta’s nonlinearity test) in one task segment |
| Force Profile Stability | Force time-series stability index (variance of the means) in one task segment |
| Force Profile Lumpiness | Force time-series lumpiness index (variance of the variances) in one task segment |
| Force Profile Crossing Points | Number of zero crossings in in one task segment |
| Force Profile Entropy | Force time-series forecastability in one task segment (low values indicate a high signal-to-noise ratio) |
| Force Profile Heterogeneity | Force time-series heterogeneity in one task segment (based on autoregressive conditional heteroskedasticity (ARCH) effects) |
| Force Profile Spikiness | Force time series spikiness index (variance of the leave-one-out variances of the remainder component) in one task segment |
| Force Profile First Autocorrelation Minimum | Time of first minimum of the autocorrelation function in force time-series signal from one task segment |
| Force Profile First Autocorrelation Zero | Time of first zero crossing of the autocorrelation function in force time-series signal from one task segment |
| Autocorrelation Function E1 | First autocorrelation coefficient from force time-series signal in one task segment |
| Autocorrelation Function E5 | Sum of the first ten squared autocorrelation coefficients from force time-series signal in one task segment |