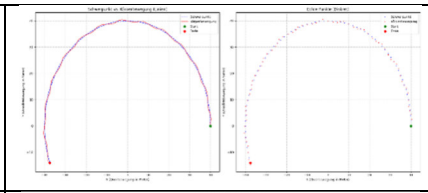
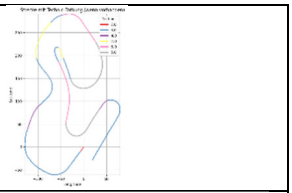
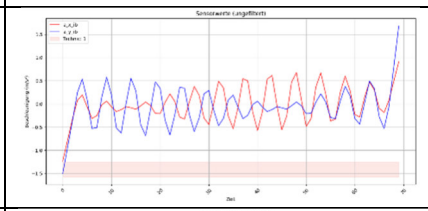
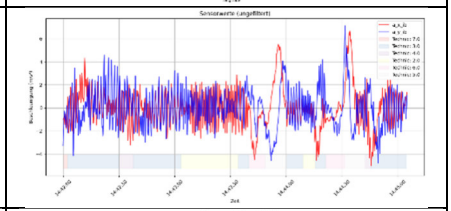
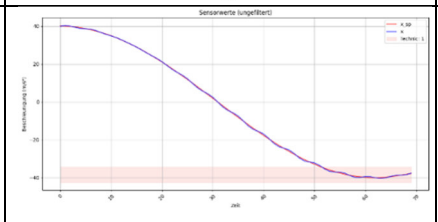
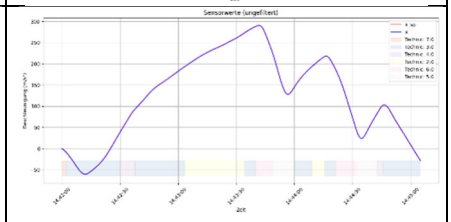
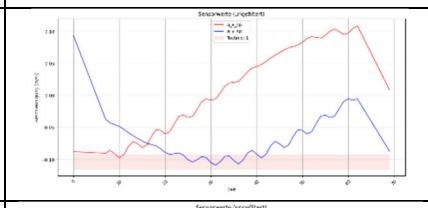
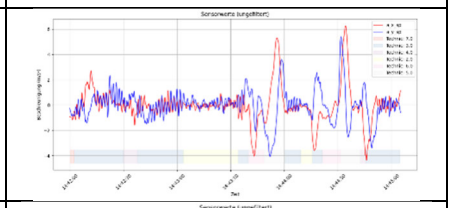
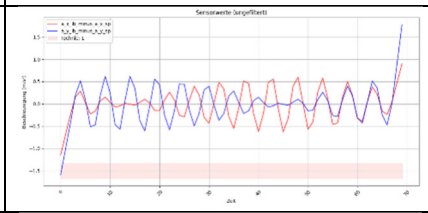
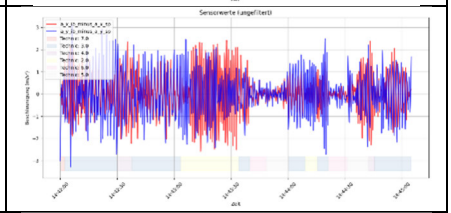
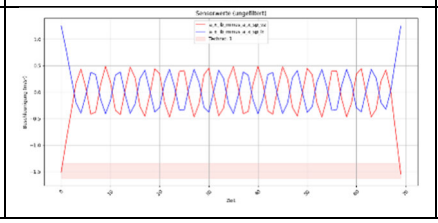
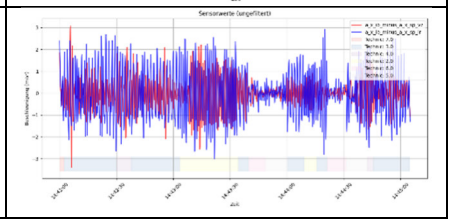
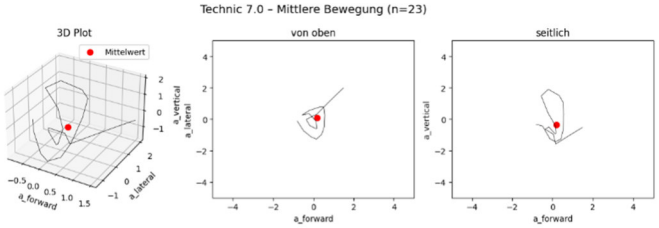
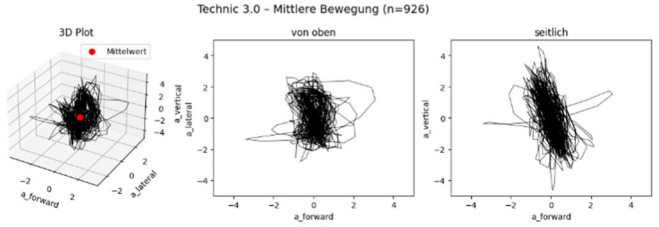
Preprocessing

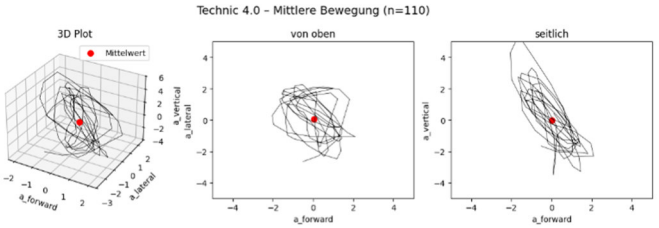
$x(t), y(t),$		
• Gemessene Beschleunigung $a_{x,\mathrm{ib}}(t) = \mathrm{Savgol}\,(x(t),\ \mathrm{window} = w_a,\ \mathrm{deriv} = 2,\ \delta = \Delta t)$ $a_{y,\mathrm{ib}}(t) = \mathrm{Savgol}\,(y(t),\ \mathrm{window} = w_a,\ \mathrm{deriv} = 2,\ \delta = \Delta t)$		
• Schwerpunkts Linie $x_{\mathrm{sp}}(t) = \mathrm{Savgol}(x(t), \mathrm{window} = w_s)$ $y_{\mathrm{sp}}(t) = \mathrm{Savgol}(y(t), \mathrm{window} = w_s)$ • Tangentenwinkel von sp $\phi(t) = \arctan 2\left(\frac{d}{dt}y_{\mathrm{sp}}(t), \frac{d}{dt}x_{\mathrm{sp}}(t)\right)$		
• Schwerpunktsbeschleunigung $a_{x,\mathrm{sp}}(t) = \mathrm{Savgol}\,(x(t),\ \mathrm{window} = w_s,\ \mathrm{deriv} = 2,\ \delta = \Delta t)$ $a_{y,\mathrm{sp}}(t) = \mathrm{Savgol}\,(y(t),\ \mathrm{window} = w_s,\ \mathrm{deriv} = 2,\ \delta = \Delta t)$		
• Gemessene Beschleunigung minus Schwerpunkts Linie $\Delta a_x(t) = a_{x,\mathrm{ib}}(t) - a_{x,\mathrm{sp}}(t)$ $\Delta a_y(t) = a_{y,\mathrm{ib}}(t) - a_{y,\mathrm{sp}}(t)$		
• Vor-/rückwärts und Links/Rechts Beschleunigung $\begin{bmatrix} a_{\mathrm{vz}}(t) \\ a_{\mathrm{lr}}(t) \end{bmatrix} = \begin{bmatrix} \cos(\phi(t)) & \sin(\phi(t)) \\ -\sin(\phi(t)) & \cos(\phi(t)) \end{bmatrix} \cdot \begin{bmatrix} \Delta a_x(t) \\ \Delta a_y(t) \end{bmatrix}$		

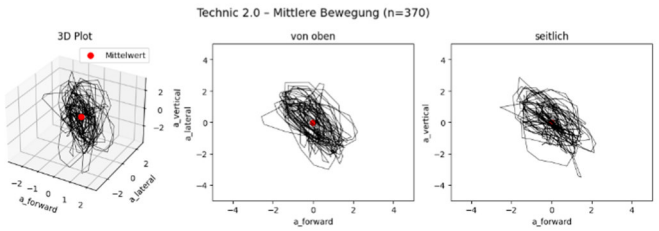
Cycling

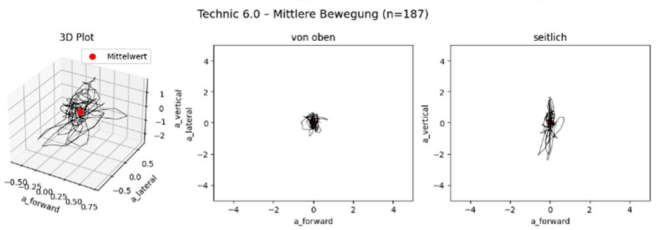
Leere Techniken

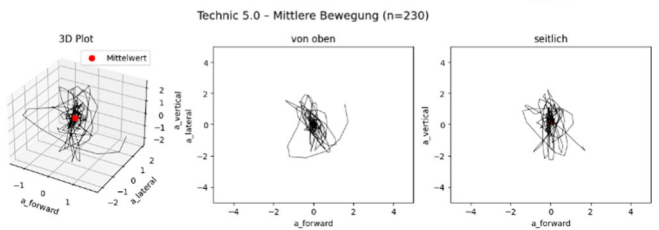












Techniken mit Mittelwert pro Zyklus (wie Stöggle)