

Learning for tracking mice position, velocity and acceleration

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1 Results

1.1 Simulated mouse motion

1.2 Real mouse motion

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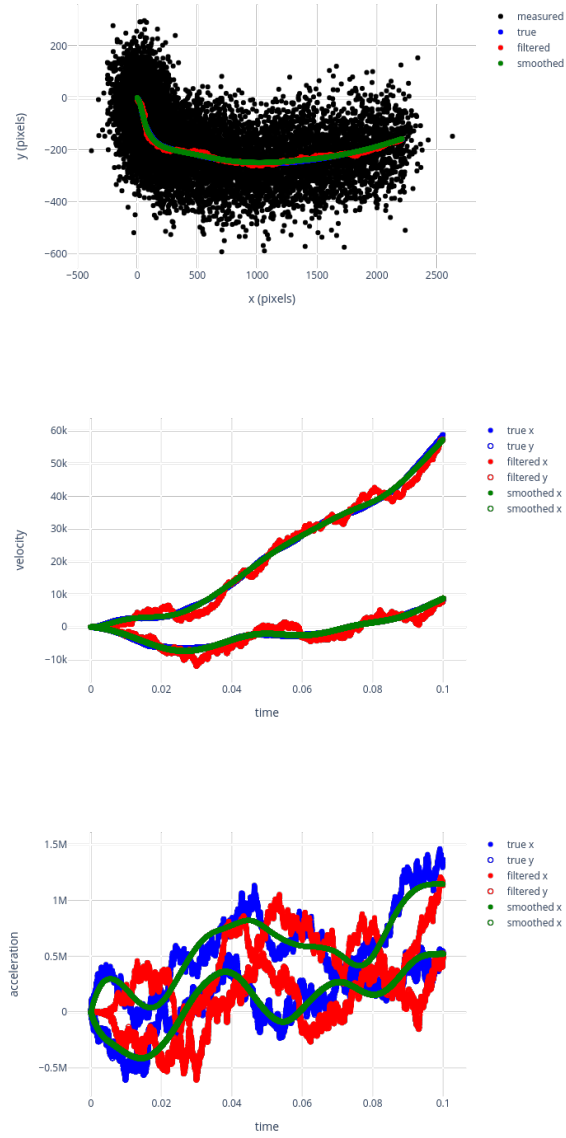


Figure 1: Filtered positions, velocities and accelerations using true parameters.

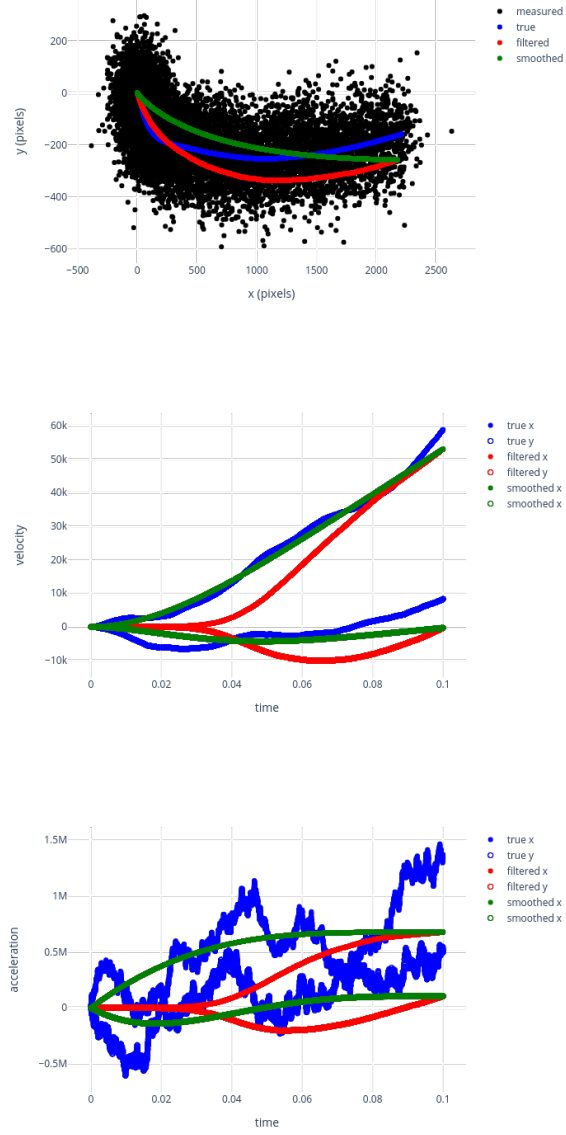


Figure 2: Effect of a poor selection of the discrete Wiener process model parameters σ_{ax} and σ_{ay} . Filtered positions, velocities and accelerations using parameters $\sigma_{ax} = \sigma_{ay} = 1e2$ (true $\sigma_{ax} = \sigma_{ay} = 1e4$)

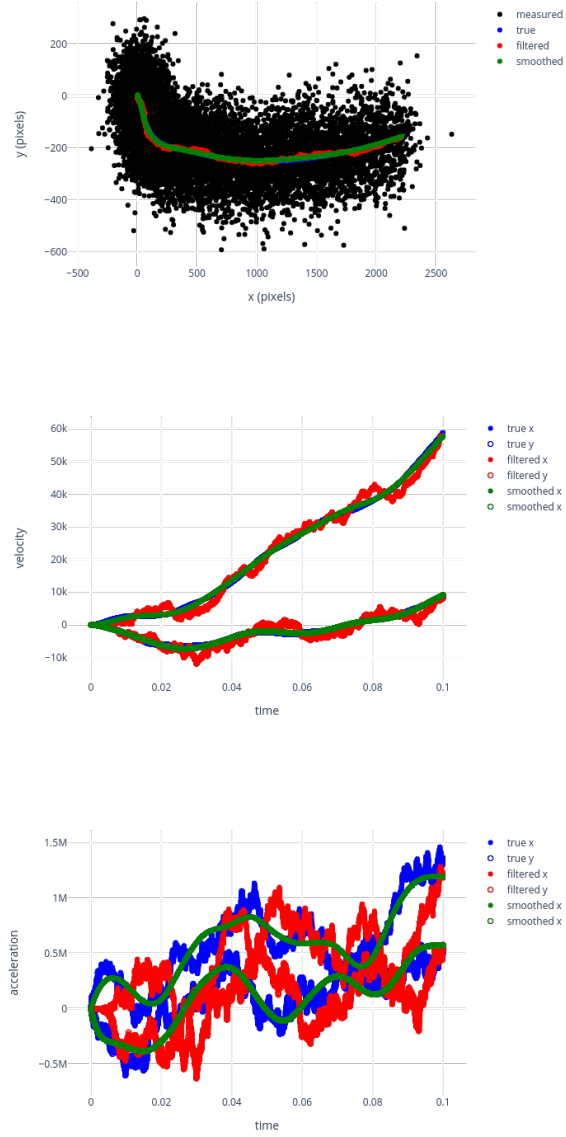


Figure 3: Effect of learning. Filtered positions, velocities and accelerations using learned parameters, with initial conditions set to the true parameters, with the exception of σ_{ax0} and σ_{ay0} that were set to $\sigma_{ax0} = \sigma_{ay0} = 1e4$, as in Figure 2

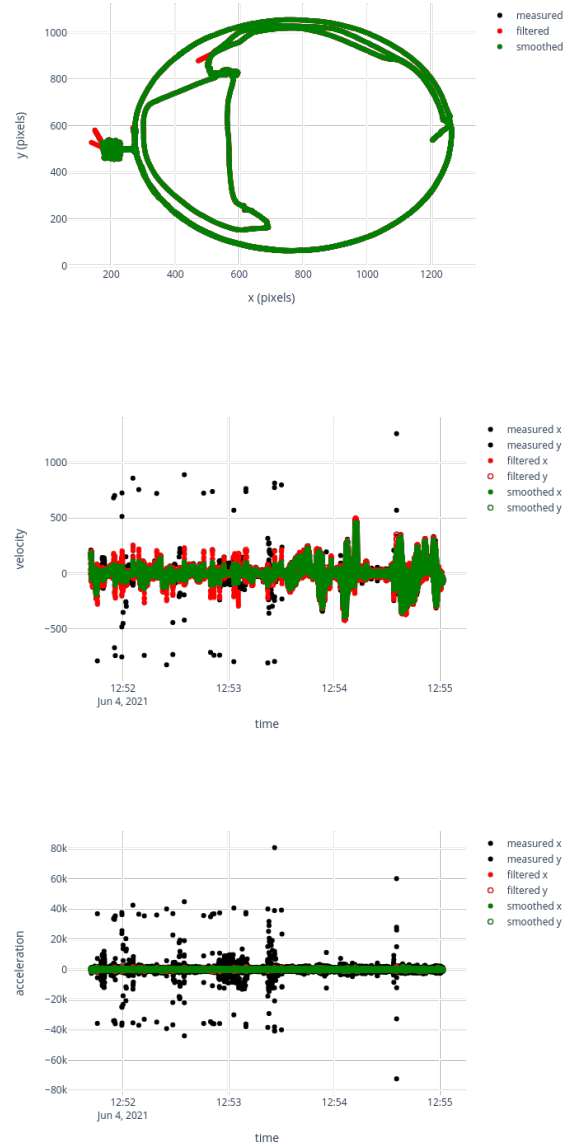


Figure 4: Filtered positions, velocities and accelerations using manually chosen parameters.

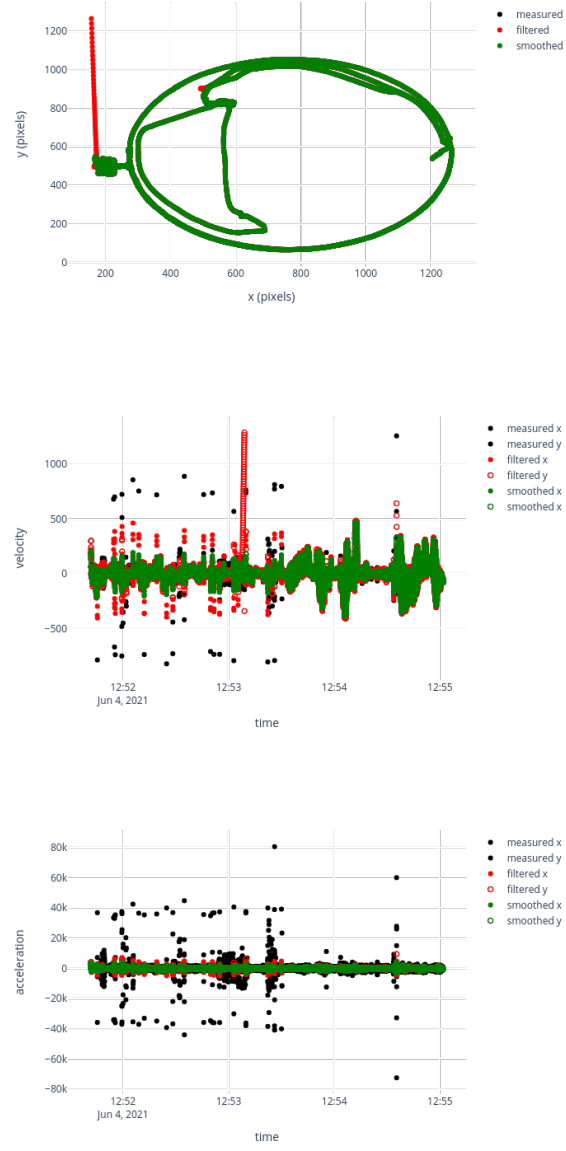


Figure 5: Filtered positions, velocities and accelerations using learned parameters.