1. Create Pseudo-Truth Data

p_1

p_2

p_n

Model and agent parameters are fixed for all experiments

Pedestrian Model

Truth Data
Locations of agents at each time step
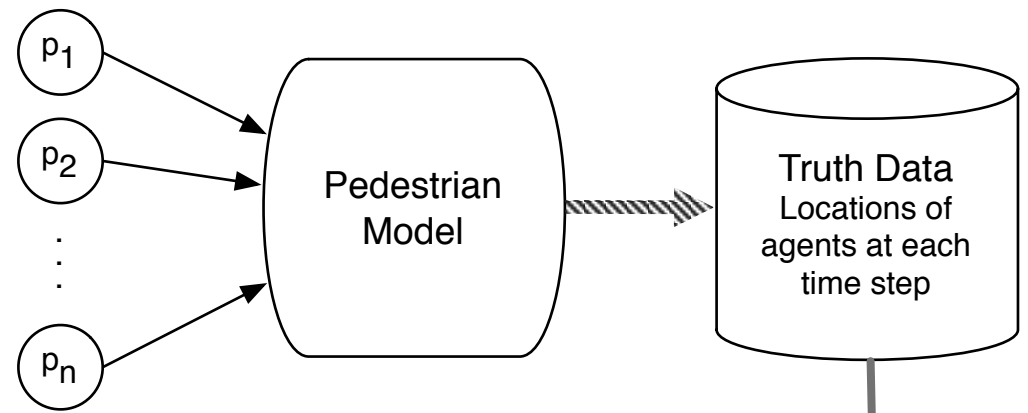
2. Data Assimilation Framework

Prior estimates of the system state are generated by running the model multiple times

Posterior state estimates are generated by the probabilistic model using MCMC sampling

Forecasts should have reduced uncertainty

Pedestrian Model

$x1$
y_1
$x2$
y_2
.
.
x_N
y_N

Observe Truth Data and Run Probabilistic Model

$x1$
y_1
$x2$
y_2
.
.
x_N
y_N

Pedestrian Model

$x1$
y_1
$x2$
y_2
.
.
x_N
y_N

Prior state estimate

Posterior state estimate

Forecast state estimate

$t-1$

t

$t+1$

Previous time period

Current time period

Forecasts