• Autonomic vehicles perform mobility operations with walking speed to ensure safety
• Faster mobility requires specific knowledge of the environment
• Realization via a dynamic context model based on sensor data with uncertainties
• Using Data Stream Management Technology for Sensor Fusion

Processing

• **Union Operator**: Union and transmission of updated context models according to their timestamps

• **Store Operator**: Storing of new occupancy grid into the Context Store

• **Merge Operator**: Update of existent occupancy grid with new sensor data using Bayesian updater on each beam

\[
p_t(r | d, \psi) = \frac{p(d | r, \psi)p_t(r | \psi)}{\sum_{r'} p(d | r', \psi)p_t(r' | \psi)}
\]

• **Spread Operator**: Pessimistic prediction:

\[
1- \left( \prod_{(s',y) \in R_y} (1 - R(s',y) P(s',y|A(s,y)) \right) \cdot [1 - R(s,y) \lambda_s] (1 - P_{s,y})
\]

• **Context Store**: Storage of multiple occupancy grids with their time interval of validity

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