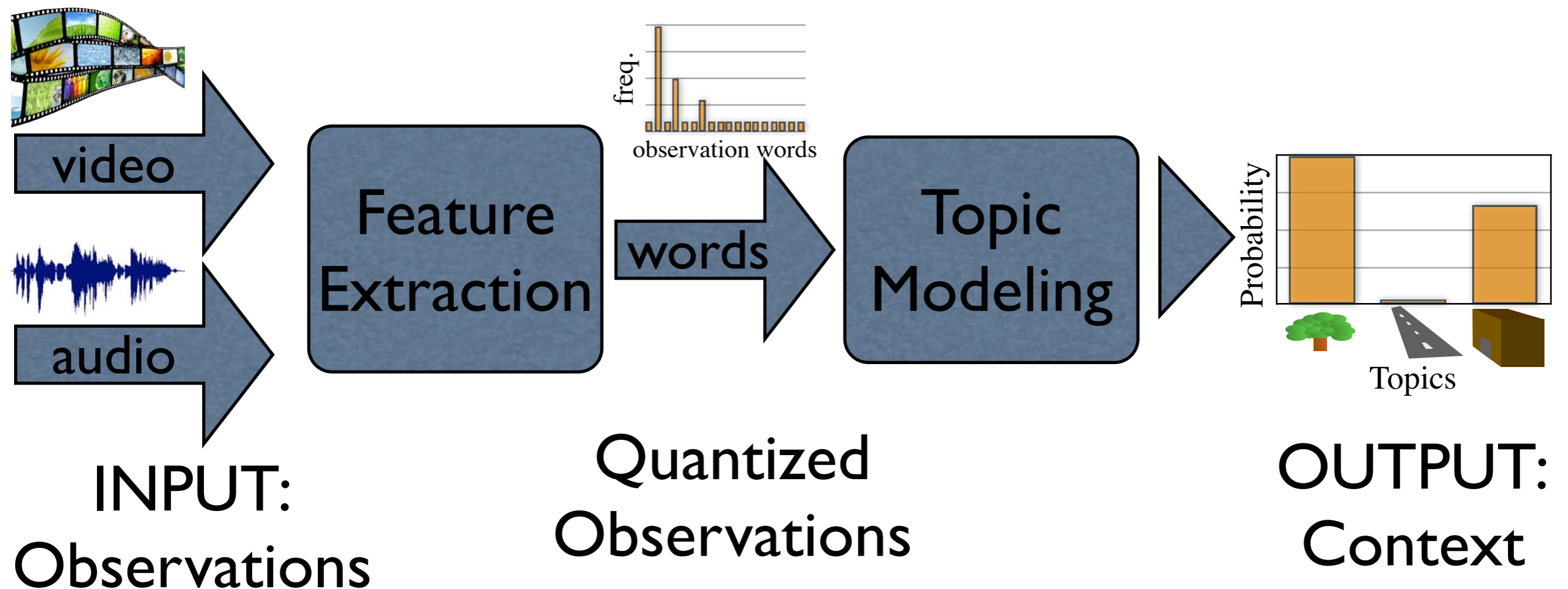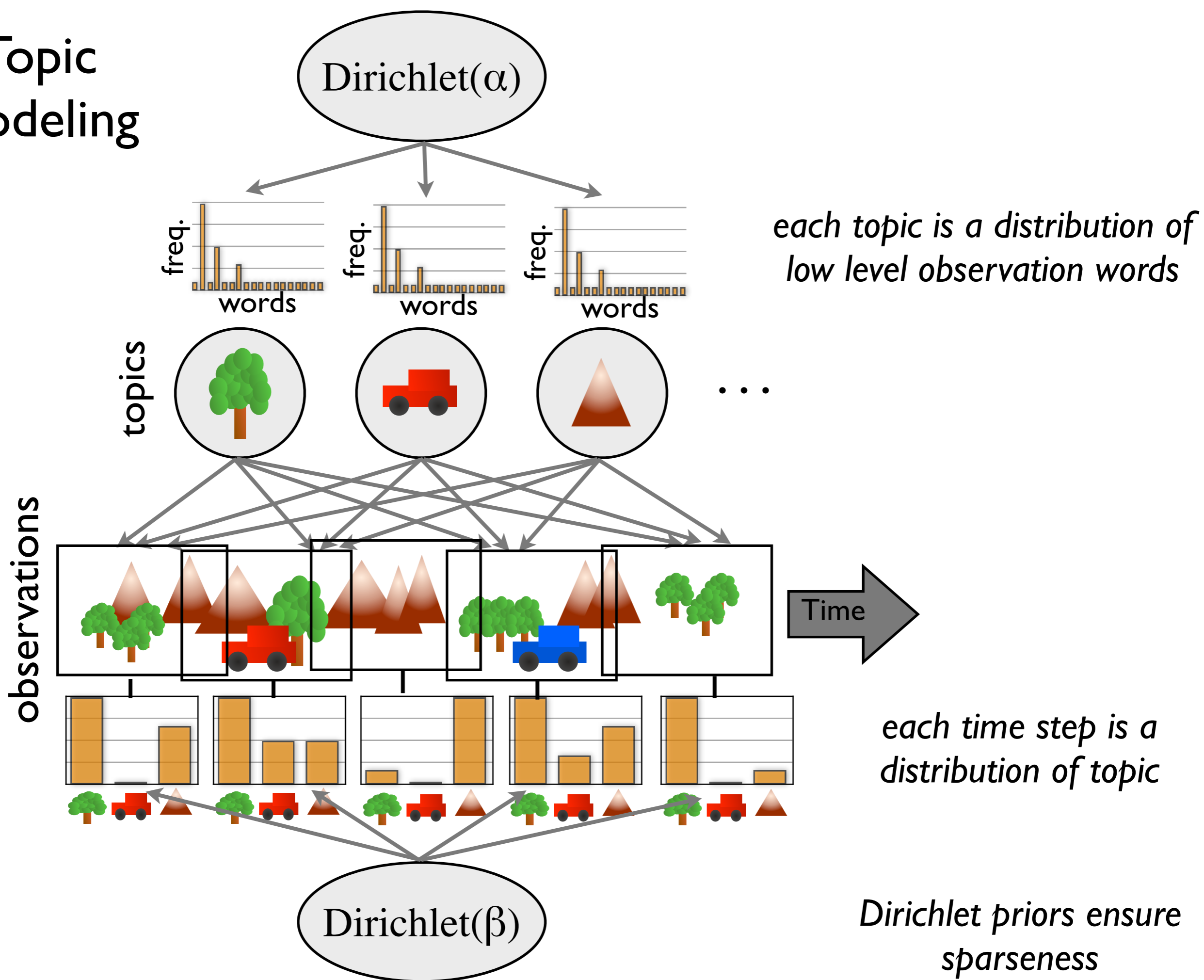# Semantic Perception for Robots

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Intuition: Observations which co-occur often, probably have the same underlying cause(context).

Topic Modeling

each topic is a distribution of
low level observation words

topics

observations

Time

each time step is a
distribution of topic

Dirichlet(α)

Dirichlet(β)

Dirichlet priors ensure
sparseness

google: girdhar, rost

- Automatically evolve models for different context labels from streaming sensor data -- **NO TRAINING**.

- Many feature extractors already implemented:

  - ORB words, SIFT words, HSV words, MFCC words (audio)

- Applications:

  - Loop Closing and environment recognition (ICRA2013, using just audio)

  - Summarization (IJRR2013, using vision)

  - Surprise Detection (IJRR2013, using vision)

  - Exploration

- Realtime ROS based implementation!

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