Demonstration, Tactile Correction and Multiple Training Data Sources for Robot Motion Control

Brenna Argall and Aude Billard, École Polytechnique Fédérale de Lausanne (EPFL)

Tactile Policy Correction

Policy learning from demonstration.

Policy correction through tactile interface.

Learning from Multiple Sources

Source characterization.

Open design decisions.
Combining Laser and Vision for 3D Urban Classification

B. Douillard, A. Brooks, F. Ramos, H. Durrant-Whyte
Abundance of genomic data available

Most analysis approaches use either microarray measurements or text analysis

We present a model that builds both sources of information into a factor regression model

Built on infinite hierarchical Bayesian factor regression model

Combined model can be seen as approximation to pLSI-style graphical model

Reconstruction error curves show improvement over using plain regression model
Using odometry and invariant visual features for a Monte-Carlo based robot localization method

Jesús Martínez Gómez
SIMD group (Intelligent Systems and Data mining)
University of Castilla-La Mancha, Albacete, Spain

Proposal

- Particle-filter-based localization method using:
  - SIFT for the update phase
    - Training images are processed offline to extract their points
  - Additional image processing
    - Hough transform with lines and square detection
  - Population initialization if the system becomes unstable
    - The stability of the system is estimated

Experiments

- Performed using the IDOL2 database

NIPS 2009 - Learning from Multiple Sources with Applications to Robotics
Poster Session
Multi-Kernel Gaussian Processes
Arman Melkumyan, Fabio Ramos
Australian Centre for Field Robotics, University of Sydney, Australia

Previous approach: Same Kernel
Class K for All the Multiple Outputs

Our approach: Different Kernel Classes
for Different Outputs

Artificial Dataset

Geology Dataset

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<th>Kernel for Fe</th>
<th>Kernel for SiO₂</th>
<th>Kernel for Al₂O₃</th>
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