Sassan Mokhtar

sassanmtr.github.io
Sassanmtr
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Skill

Python, MATLAB, ROS, IsaacSim, Pybullet, PyTorch, PyTorch Lightning, TensorFlow

Education

Freiburg University (currently enrolled)
M.Sc. in Computer Science
Focus: Artificial Intelligence, Robotics
Thesis title: Robot Manipulation of Articulated Objects
Current GPA: 1.5
Expected Graduation: January 2024

Heidelberg University
M.Sc. in Scientific Computing
Focus: Partial Differential Equations, Optimization
Thesis title: Analysis and Computation of Black-Scholes Equation with Local Volatility
GPA: 1.5
Graduation: March 2019

Shiraz University
B.Sc. in Applied Mathematics
Focus: Mathematical Analysis, Differential Equations
Graduation: August 2015

Experience

Autonomous Intelligent Systems, University of Freiburg *Jan 2023 - present*
Research Assistant

- Configuring a mobile manipulation robot for executing grasping tasks in a real-world setting

Robot Learning lab, University of Freiburg *Jan 2022 - present*
Research Assistant

- Generating a dataset in medical scenes for a range of Computer Vision tasks using Isaac Sim
- Generating a dataset for object detection task using Isaac Sim

Chair of Mathematics for Uncertainty Quantification, RWTH Aachen University *Oct 2019 - Jul 2020*
Research Accosiate

- Analysis of Stochastic Differential Equations
- Optimal importance sampling for rare events

Project

Policy Learning for Real-time Generative Grasp Synthesis
Robot Learning lab, University of Freiburg

- Design a realistic setup for mobile manipulation robot grasping in Isaac Sim
- Develop an interactive imitation learning model that outperforms existing models in this setup

Robot Skill Adaptation via Soft Actor-Critic Gaussian Mixture Models
Autonomous Intelligent Systems, University of Freiburg

- Learn a dynamical model with Gaussian mixture models from a few demonstrations

- Refine the learned Gaussian mixture model with the Soft Actor-Critic model
- Apply Autoencoder to process the input images in latent space

Optimal Importance Sampling Change of Measure for Large Sums of Random Variables
Chair of Mathematics for Uncertainty Quantification, RWTH Aachen University

- Evaluate different approaches based on Importance Sampling to estimate rare-event probabilities
- Develop an alternative change of measure using Exponential twisting that leads to the same performance as the optimal change of measure but without its computational limitations

Publication

Syn-Mediverse: A Multimodal Synthetic Dataset for Intelligent Scene Understanding of Healthcare Facilities | PDF | Webpage| Video
Robot Learning lab, University of Freiburg

- The first hyper-realistic multimodal synthetic dataset of diverse healthcare facilities
- Provide more than 1.5M annotations spanning five different scene understanding tasks
- Provide an online evaluation benchmark along with the public dataset

Reference

- *Prof. Abhinav Valada, Robot Learning Lab, University of Freiburg, Freiburg, Germany*
  E-mail: valada@cs.uni-freiburg.de
- *Prof. Guido Kanschat, Interdisciplinary Center for Scientific Computing (IWR), University of Heidelberg, Heidelberg, Germany*
  E-mail: kanschat@uni-heidelberg.de
- *Dr. Tim Welsche, Autonomous Intelligent Systems, University of Freiburg, Freiburg, Germany*
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