

# Selim Engin

engin003@umn.edu | <https://ksengin.github.io/>

## EDUCATION

---

### University of Minnesota

*Ph.D. in Computer Science and Engineering*

Advisor: Prof. Volkan Isler

Minneapolis, MN

*Sept 2016 - Oct 2022*

### Sabanci University

*B.Sc. in Mechatronics Engineering, with high honors*

Istanbul, Turkey

*Sept 2012 - June 2016*

## EXPERIENCE

---

### Sony R&D US Laboratory

*Senior Research Scientist*

San Jose, CA

*Feb 2024 - present*

### Samsung Research Artificial Intelligence Center

*Senior Research Scientist*

New York City, NY

*Oct 2022 - Feb 2024*

- Registration of user-captured smartphone videos to LiDAR maps obtained by robot vacuums
- Generalizable 3D scene reconstruction from a single view through inpainting with vision-language models
- Instance-level text and pose control for diffusion-based neural image generation
- Physics-aware object pose refinement at the scene level for creating physically plausible digital twins

### Sony R&D US Laboratory

*Research Intern*

San Mateo, CA (online)

*Jun 2021 - Aug 2021*

- Generative models for motion prediction and in-betweening to animate human characters

### Samsung Research Artificial Intelligence Center

*Research Intern*

New York City, NY

*Jan 2019 - Aug 2019*

- Single-view and multi-view 3D object reconstruction, and object part decomposition from images
- Built a multi-camera rig and a turntable setup for scanning objects

### Robotic Sensor Networks Lab

*Graduate Student*

Minneapolis, MN

*Sept 2016 - Oct 2022*

- Methods for target tracking and zero-sum multi-agent games using compressed state representations
- Field experiments and algorithm design for connectivity formation and target localization
- Self-supervised learning methods for novel view synthesis and 3D reconstruction

## PUBLICATIONS

---

\* indicates equal contribution. Paper titles direct to page links.

1. J-J. Chao\*, **S. Engin\***, N. Chavan-Dafle, B. Lee, V. Isler, VioLA: Aligning Videos to 2D LiDAR Scans, *International Conference on Robotics and Automation, ICRA 2024*.
2. I. Kasahara, S. Agrawal, **S. Engin**, N. Chavan-Dafle, S. Song, V. Isler, RIC: Rotate-Inpaint-Complete for Generalizable Scene Reconstruction, *International Conference on Robotics and Automation, ICRA 2024*.
3. S. Agrawal, N. Chavan-Dafle, I. Kasahara, **S. Engin**, J. Huh, V. Isler, Real-time Simultaneous Multi-Object 3D Shape Reconstruction, 6DoF Pose Estimation and Dense Grasp Prediction, *IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2023*.
4. **S. Engin**, V. Isler, Neural Optimal Control using Learned System Dynamics, *International Conference on Robotics and Automation, ICRA 2023*.

5. J-J. Chao, **S. Engin**, N. Hani, V. Isler, Category-Level Global Camera Pose Estimation with Multi-Hypothesis Point Cloud Correspondences, *International Conference on Robotics and Automation, ICRA 2023*.
6. **S. Engin**, Q. Jiang, V. Isler, Learning to Play Pursuit-Evasion with Visibility Constraints, *IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2021*.
7. **S. Engin**, V. Isler, Establishing Fault-Tolerant Connectivity of Mobile Robot Networks, *IEEE Transactions on Control of Network Systems, TCNS 2021*.
8. N. Hani, **S. Engin**, J-J. Chao, V. Isler, Continuous Object Representation Networks: Novel View Synthesis without Target View Supervision, *Conference on Neural Information Processing Systems, NeurIPS 2020*.
9. **S. Engin**, V. Isler, Active Localization of Multiple Targets Using Noisy Relative Measurements, *Workshop on the Algorithmic Foundations of Robotics, WAFR 2020* (invited to IJRR special issue).
10. **S. Engin**, E. Mitchell, D. Lee, V. Isler, D. D. Lee, Higher Order Function Networks for View Planning and Multi-View Reconstruction, *International Conference on Robotics and Automation, ICRA 2020*.
11. E. Mitchell, **S. Engin**, V. Isler, D. D. Lee, Higher Order Function Networks for Learning Composable 3D Object Representations, *International Conference on Learning Representations, ICLR 2020*.
12. **S. Engin**, V. Isler, Asynchronous Network Formation in Unknown and Unbounded Environments, *International Conference on Robotics and Automation, ICRA 2019*.
13. **S. Engin**, V. Isler, Minimizing Movement to Establish the Connectivity of Randomly Deployed Robots, *International Conference on Automated Planning and Scheduling, ICAPS 2018*.
14. H. Bayram, N. Stefan, **S. Engin**, V. Isler, Tracking Wildlife with Multiple UAVs: System Design, Safety and Field Experiments, *IEEE International Symposium on Multi-Robot and Multi-Agent Systems, MRS 2017*.

---

## PATENTS

- Higher-order function networks for learning composable three-dimensional (3d) object and operating method thereof (Patent No.: US 10,922,877)

---

## HONORS

- Highlighted Reviewer at ICLR (2022)
- Cedar Creek Ecosystem Science Reserve Fellowship (2018)
- University of Minnesota CSE Fellowship (2017)
- Sabancı University Scholarship (2012-16)

---

## TEACHING EXPERIENCE

- CSCI 1133 - Introduction to Computing and Programming Concepts (Spring 2017, Fall 2017): GitHub organization setup for the class, assignment preparation, grading and auto-grading
- CSCI 5561 - Computer Vision: Grading and giving feedback for term projects

---

## PROFESSIONAL SERVICES

Reviewer for ICRA, IROS, NeurIPS, ICLR, WACV, ISER, WAFR

Journals: Transactions on Robotics, Robotics and Automation Letters, Artificial Intelligence (AIJ)

Session chair at: IROS 2021 (Machine Learning for Robot Control)

---

## TECHNICAL SKILLS

**Languages:** Python, C, C++, Matlab/Simulink

**Libraries and Frameworks:** PyTorch, Tensorflow, CUDA, Android Studio, ARCore, ROS, OpenCV, Open3D

**Simulation and Graphics:** PyBullet, MuJoCo, Nimble, V-REP, Gazebo, Habitat, Blender, SolidWorks, Unreal Engine