

Graduate Student Presentations

For CS498GC 4-credit students: You'll give a 15-minute presentation + 5-minute Q&A on an assigned, state-of-the-art SLAM paper.

Please check your assigned SLAM paper and date in the table below.

TL;DR - Key Requirements

- Slides due exactly 1 week before your presentation date (see deadlines below)
- Mandatory TA office hours for slides feedback: attend one week prior to your talk
- Talk length: 15 minutes + 5 minutes Q&A (strict timing; 4 talks/day)

Deadlines at a Glance

Presentation Date	Slides Due (1 week prior)
Fri, Nov 21	Thu, Nov 14
Wed, Dec 3	Tue, Nov 26
Fri, Dec 5	Thu, Nov 28
Wed, Dec 10	Tue, Dec 3

Find your exact assignment (paper, date, deadline) in the table below.

What We Want You to Learn (and Show)

- Methodology & architecture** — explain the system diagram and motivate each design choice
- Novelty** — what's truly new and why it matters
- Limitations** — be specific and evidence-based (failure cases, assumptions, compute/data constraints)
- Improvements** — concrete ideas to address those limitations

Prof. Girish's suggested questions for a compelling talk:

- Why is it important?
- Why is it hard?
- How is it novel?
- Why does it work?

Suggested Slide Outline (Target: 15 minutes)

- Problem & motivation** (tie explicitly to mobile robotics/SLAM)
- Prior art** (2–3 key related works; cite fairly but highlight shortcomings)
- Key contribution & approach** (detailed system/architecture diagram with time estimates)
- Technical depth** (walk us through the math/algorithms; highlight novel formulations)
- Results** (datasets, metrics, comparison tables, visualizations; be critical)
- Demo/video** (if available—real-world robot footage is gold!)
- Limitations** (specific failure cases from the paper or your analysis)
- Future work & your ideas** (thoughtful proposals for addressing those limitations)
- Q&A prep** (anticipate technical questions on losses, hyperparameters, training)

Target: ~15 slides for 15 minutes

Grading Rubric

- Technical Understanding (40%)**
 - Accurate explanation of algorithms
 - Depth of insight into methodology
 - Critical analysis (not just summary)
- Clarity & Organization (30%)**
 - Logical flow and narrative
 - Clear, uncluttered slides
 - Effective diagrams & figures
- Critical Analysis (20%)**
 - Thoughtful limitations discussion
 - Creative future work ideas
 - Connecting to broader SLAM/robotics context
- Q&A Performance (10%)**
 - Demonstrating deep understanding
 - Handling questions thoughtfully
 - Admitting unknowns gracefully

Paper Assignments

Student #	Name	Paper Title	Paper Link	Submission Deadline	Presentation Date
1	Aryan Chauhan	MASt3R-SLAM: Real-Time Dense SLAM with 3D Reconstruction Priors	CVPR 2025	Nov 14	Nov 21 (Fri)
2	KartEEK Gandiboyina	cuVSLAM: CUDA Accelerated Visual Odometry and Mapping	NVIDIA arXiv Preprint	Nov 14	Nov 21 (Fri)
3	Het Patel	Open-Vocabulary Online Semantic Mapping for SLAM	arXiv Preprint 2024	Nov 26	Dec 3 (Wed)
4	Ruben Hernandez	VSS-SLAM: VoxelizeD Surfel Splatting for Geometrically Accurate SLAM	ICRA 2025	Nov 26	Dec 3 (Wed)
5	Yangkun Liu	SCE-LIO: An Enhanced Lidar Inertial Odometry by Constructing Submap Constraints	IEEE RAL	Nov 26	Dec 3 (Wed)
6	Nadeem Mohammed	FMCW-LIO: A Doppler LiDAR-Inertial Odometry	IEEE RAL	Nov 26	Dec 3 (Wed)
7	Keisuke Ogawa	WildGS-SLAM: Monocular Gaussian Splatting SLAM in Dynamic Environments	CVPR 2025	Nov 28	Dec 5 (Fri)
8	Tianyu Ren	DRAWER: Interactive 3D Scene Generation from a Single Image	CVPR 2025	Nov 28	Dec 5 (Fri)
9	William Schafer	GS-SLAM: Dense Visual SLAM with 3D Gaussian Splatting	CVPR 2024	Nov 28	Dec 5 (Fri)
10	Yingxue Wang	RTG-SLAM: Real-time 3D Reconstruction at Scale using Gaussian Splatting	ACM SIGGRAPH 2024	Nov 28	Dec 5 (Fri)
11	Tongmiao Xu	Wheat3DGS: In-field 3D Reconstruction, Instance Segmentation and Phenotyping of Wheat Heads with Gaussian Splatting	arXiv Preprint 2024	Dec 3	Dec 10 (Wed)
12	Hariprasad Yuvaraj	Adaptive Mobile Manipulation for Articulated Objects In the Open World	arXiv Preprint 2024	Dec 3	Dec 10 (Wed)
13	Xiayu Zhao	VLFM: Vision-Language Frontier Maps for Zero-Shot Semantic Navigation	ICRA 2024	Dec 3	Dec 10 (Wed)
14	Krishna Teja Kolla	Multimodal Spatial Language Maps for Robot Navigation and Manipulation	IJRR 2025	Dec 3	Dec 10 (Wed)

Paper Categories Summary

All graduate students have been assigned state-of-the-art papers from CVPR 2025, SIGGRAPH 2024, ICRA 2024/2025, and IJRR 2025, covering:

- Visual SLAM:** VSS-SLAM, DynaVINS++
- Neural SLAM & 3D Gaussian Splatting:** WildGS-SLAM, GS-SLAM, RTG-SLAM
- LiDAR SLAM:** SCE-LIO, FMCW-LIO
- Semantic SLAM:** Open-Vocabulary Online Semantic Mapping
- Vision-Language Navigation:** VLFM
- Multimodal Language Navigation:** Spatial Language Maps
- Robotic Applications:** DRAWER, Adaptive Mobile Manipulation
- Specialized Applications:** Wheat3DGS, cuVSLAM
- Real-Time Systems:** MASt3R-SLAM

Presentation Schedule Summary

November 21 (Friday) - Before Thanksgiving

2 Presentations:

- Aryan Chauhan - MASt3R-SLAM
- KartEEK Gandiboyina - cuVSLAM

Submission deadline: Nov 14

December 3 (Wednesday)

4 Presentations:

- Het Patel - Open-Vocabulary Online Semantic Mapping
- Ruben Hernandez - VSS-SLAM
- Yangkun Liu - SCE-LIO
- Nadeem Mohammed - FMCW-LIO

Submission deadline: Nov 26

December 5 (Friday)

4 Presentations:

- Keisuke Ogawa - WildGS-SLAM
- Tianyu Ren - DRAWER
- William Schafer - GS-SLAM
- Yingxue Wang - RTG-SLAM

Submission deadline: Nov 28

December 10 (Wednesday) - Last Day of Instruction

4 Presentations:

- Tongmiao Xu - Wheat3DGS
- Hariprasad Yuvaraj - Adaptive Mobile Manipulation
- Xiayu Zhao - VLFM
- Krishna Teja Kolla - Multimodal Spatial Language Maps

Submission deadline: Dec 3

Quick Links & Resources

- Presentations Table:** papers, dates, deadlines (above)
- Syllabus & weekly schedule** (presentation weeks noted)
- Policies** (integrity, AI-assistant use, late policy)
- Logistics** (meeting times, platforms, grade distribution)
- TA Office Hours:** Wed 1:30–2:30 PM @ SC 4407
- Questions:** Use Campuswire or email ksa5@illinois.edu

If you have conflicts or accessibility needs, please reach out early via Campuswire or email.

All papers and presentation dates assigned! Start reading your assigned paper early with focus on methodology, loss functions, and novel contributions. Remember to attend TA office hours 1 week before your presentation for slide feedback.