

Evaluating the Impact of an Interdisciplinary Workshop on Large Language Models: Advancing Community Engagement and AI Literacy in Engineering Education

Meiqin Li, University of Virginia

Dr. Meiqin Li is an Associate Professor at the University of Virginia. She joined UVA in 2017 after earning her Ph.D. in Applied Mathematics from Texas A&M University–College Station. Dr. Li has a strong interest in STEM education and community education, particularly in curriculum development and redesign, the integration of instructional technologies to support student success, the creation of inclusive and diverse learning environments, and the use of a variety of pedagogical approaches to foster student learning. In addition to her education-focused work, her research interests include numerical computation, optimization, nonlinear analysis, and data science.

Yangfeng Ji, University of Virginia

Prasanna V. Balachandran, University of Virginia

Sara Riggs, University of Virginia

Andrea Arulanand, University of Virginia

Adrina Khan

Evaluating the Educational and Community Impact of an Interdisciplinary Workshop on Large Language Models

1. Introduction

Large Language Models (LLMs) are reshaping engineering education, research, and community engagement. Their ability to process natural language, generate code, and support design thinking makes them valuable assets for students, faculty, entrepreneurs, etc.

University-level workshops and educational interventions involving large language models (LLMs) are beginning to emerge, but systematic, campus-wide studies remain relatively rare. In October 2024, we hosted the inaugural workshop on large language models for science and engineering that represents a growing category of initiatives focused on fostering multi-disciplinary and public engagement around AI technologies.

This workshop aims to build a cross-departmental community within the University of Virginia (UVA) Engineering, across additional schools, and industries by connecting students, faculty, researchers, entrepreneurs, around shared interests in LLM techniques, applications, infrastructure, and education. It brought together over 160 participants from seven engineering departments, five other schools at UVA and entrepreneurs. This study examines the educational and community-building impacts of an interdisciplinary LLM workshop, with particular attention to community-based LLM education, cross-disciplinary collaboration, inclusive engagement, and sustained learning. In doing so, the paper contributes to community engagement in engineering education by evaluating how a campus-wide workshop on large language models fosters learning, inclusive participation, and ongoing interdisciplinary collaboration.

1.1. Workshop Overview

By consulting LLM experts, we established that the workshop's agenda was centered around three key themes which sparked engaging discussions and idea exchange amongst the participants.

LLMs in Scientific Discovery and Engineering Design: This session explored in depth the application of LLMs to accelerate scientific research and optimize engineering design processes. Participants shared insights on how LLMs can be leveraged to analyze complex data, design experiments, and optimize engineering systems. Relevant events included keynote address and a panel discussion.

Current Progress of LLM Development: The workshop also provided a platform for researchers and engineers to share their latest advancements in LLM development. These included novel architectures, training algorithms, and optimization techniques that are pushing the boundaries of LLM capabilities. Relevant events included keynote, the four faculty talks, and one panel discussion.

LLM Practice and Applications: Practical sessions and demonstrations were included to provide attendees with hands-on experience using LLMs for various tasks. This allowed participants to gain a deeper understanding of the current state-of-the-art and share some use cases of using LLMs in practice. Relevant events include the tutorial on LLMs as well as the student lightning talks and poster presentations. Prof. XX and Prof. XX also led a discussion on how to broaden participation with LLMs.

<i>day 1 Schedule</i>	<i>day 2 Schedule</i>
<i>day1_A). Invited talk (Keynote)</i>	<i>day2_A). Invited talk (Keynote)</i>
<i>day1_B). Faculty talks</i>	<i>day2_B). Roundtable discussion on broadening participation in LLM</i>
<i>day1_C). Poster sessions</i>	<i>day2_C). Poster Presentation</i>
<i>day1_D). 1st panel discussion: LLM technologies</i>	<i>day2_D). Tutorial -- resources to LLM users</i>
<i>day1_E). 2nd panel discussion: LLM applications</i>	<i>day2_E). Students lightning talks</i>
<i>day1_F). Students lightning talks</i>	

Table 1: Workshop Schedule

A more detailed agenda is provided in website <https://uvanlp.org/uva-llm-workshop/2024/schedule.html>. A dedicated workshop webpage <https://uvanlp.org/uva-llm-workshop/2024/> was also created to host comprehensive information—including keynote details, faculty and student presentations, and event photos. In addition, we established a mailing list for all registered participants to strengthen connections within the emerging LLM community.

Although the webpage and mailing list were originally intended only for workshop communication, both have since proven valuable beyond their initial scope by facilitating ongoing engagement and collaboration. For instance, UVA Engineering School recently launched the AIML Seminar series on artificial intelligence and machine learning, for which the workshop mailing list provided an effective channel for outreach. Similarly, when our school introduced a new AI minor last fall, the same list served as a useful starting point for disseminating information and fostering discussion around its implementation. By offering a sustained space for communication, the workshop webpage and mailing list extend the workshop’s impact and help cultivate a lasting community of researchers and practitioners.

1.2. LLM Application on Education Research Review

Research on large language model (LLM) engagement in higher education is rapidly emerging, although campus-wide and community-oriented studies remain limited. A growing body of work has begun to explore structured LLM workshops, instructional interventions, and institutional adoption strategies.

Kozov *et al.* designed a multi-session workshop that guided students through LLM-based creative and computational tasks, demonstrating the value of project-based learning for AI literacy [1]. Outside formal curricula, Terzimehić *et al.* conducted a large-scale study of 776 university learners, showing widespread informal LLM adoption across learning contexts and the analysis revealed that students already engage heavily with LLMs for self-directed and informal learning activities, highlighting the need for institutional structures that support responsible and effective usage [2].

In broader AI education research, Zhang showed that structured guidance is essential for avoiding over-reliance on AI tools while ensuring meaningful academic gains [3]. The Community of Inquiry (COI) model, which is explained in Section 1.3, continues to provide a widely used framework for evaluating digital engagement and collaborative discourse, especially in text-based or asynchronous environments [4].

This workshop study builds on these foundations by examining a campus-wide, multidisciplinary LLM engagement event rather than a single course or survey population. It offers a distinct contribution: it integrates technical content, educational dialogue, and cross-departmental community building. Unlike prior studies focused on single classrooms or specific academic groups, this workshop brought together participants across the entire campus, industry, and the local communities, enabling shared exploration of LLM technologies, applications, ethics, and pedagogical implications.

1.3. Framework of Community Engagement and Learning Communities in Higher Education

While Section 1.2 reviews emerging research on LLM workshops, instructional interventions, and patterns of student adoption, this body of work also highlights a broader need for structures that support collaboration, responsible use, and sustained engagement with LLM technologies. To address these needs in designing our workshop, we intentionally grounded our approach in established frameworks of community engagement and learning communities. These frameworks were chosen because each aligns closely with the core aims of the workshop: fostering cross-disciplinary interaction, encouraging active participation and co-creation of knowledge, and supporting the long-term development of an inclusive LLM learning community. Accordingly, the following conceptual perspectives not only inform our design choices but also situate the workshop within a broader theoretical foundation for effective, collaborative, and sustainable engagement in higher education.

Bringle & Hatcher [4] define community engagement as “the partnership of university knowledge and resources with those of the public to enrich learning, prepare engaged citizens, and contribute to the public good”. This workshop embodies this by bringing together students, faculty, researchers, and entrepreneurs to jointly explore and make sense of LLM technologies.

Koekkoek, Van Ham & Kleinhans [5] emphasize that university–community engagement involves “activities such as participatory research, collaborative learning, and multistakeholder involvement”. This workshop matches this structure by creating a space where multiple academic disciplines collaborate around a shared topic (LLMs).

Farner [6] shows that institutional community engagement depends on “boundary spanners enacting varied roles inside the university, supporting shared experimentation and knowledge exchange”. Our event included panels, posters, and dialogue spaces that allowed faculty, students, and researchers to act as boundary spanners, sharing expertise across departments.

The European Commission’s NESET report [7] states: “Community engagement requires co-creation of knowledge between universities and diverse communities for mutual benefit”.

The workshop's lightning talks, posters, and discussions reflect co-creation, as participants contributed ideas and shared inquiries rather than passively receiving information.

The Community of Inquiry (CoI) framework [8] argues that learning communities flourish when cognitive presence, social presence, and teaching presence are supported. This workshop did exactly this by: i) providing structured content-teaching presence, ii) creating discussion spaces-social presence, and iii) encouraging reflection and questioning-cognitive presence. Therefore, the workshop aligns with learning community principles.

The Principles of Community Engagement [9] (3rd ed., NIH/CDC, 2025) explain that effective engagement requires “ongoing assessment, reflection, and adaptation based on participant feedback”. Our evaluation process directly embodies this approach: through post-workshop surveys and qualitative analysis, we gather structured participant feedback, identify emerging needs, and incorporate these insights into future workshop planning. This iterative cycle—collecting feedback, analyzing it, and translating it into actionable changes—supports the development of a more responsive and inclusive LLM learning community. Placing this evaluation framework within our broader discussion of community-building clarifies how the workshop contributes to long-term, principled engagement rather than serving as a standalone event.

2. Study Overview of Evaluating the Outcome

This section along with Section 3 present the primary focus of the paper: evaluating the outcomes of the workshop. Specifically, the study examines participants' learning gains, their engagement within an emerging LLM learning community, and their perceptions of session quality and future needs.

2.1. Research Questions

RQ1 – Learning and Resource Gains: To what extent does participation in the LLM workshop enhance attendees' knowledge, understanding, and perceived access to resources related to large language models?

RQ2 – Community Engagement and Learning Community Development: How does the workshop influence participants' sense of engagement, opportunities for networking and collaboration, perceptions of inclusivity, and feelings of belonging within an emerging LLM learning community?

RQ3 – Session Quality and Priorities for Future Programming: How do participants evaluate the value, engagement, interest, and informativeness of individual workshop sessions, and what needs, preferences, and improvement suggestions do they identify for shaping future LLM-related workshops and community events?

These research questions were selected to align with the workshop's dual aims of supporting individual learning and fostering an interdisciplinary LLM learning community. RQ1 focuses on knowledge and resource gains because the workshop was designed to provide structured learning experiences consistent with the teaching presence emphasized in CoI framework [8]. RQ2 examines engagement, networking, inclusivity, and belonging, reflecting community

engagement principles from Bringle & Hatcher, Koekkoek et al., Farner, and the NESET report [4], [5], [6], [7], all of which highlight collaboration, boundary-spanning participation, and co-creation of knowledge. RQ3 evaluates session-level experiences using the descriptors valuable, engaging, informative, and interesting because these align with core dimensions of effective learning environments: perceived usefulness (value), active participation (engagement), clarity and substance of content (informativeness), and curiosity or motivation (interest), corresponding respectively to CoI's teaching, social, and cognitive presences [8]. Consequently, these questions provide a focused, theory-aligned structure for assessing both learning outcomes and community-building impacts.

2.2. Study Design and Methods

2.2.1. Participants

All registered workshop attendees were invited via email to complete the anonymous post-event survey. Participation was voluntary, and respondents confirmed they were at least 18 years old before beginning. Attendees represented a broad mix of academic levels and disciplinary backgrounds. This study is IRB approved with IRB #7071, and all parts follow the IRB regulations.

2.2.2. Data Collection Instrument

The survey comprised structured components:

Knowledge and Resource Acquisition (SurveyQ1 to investigate RQ1): Three Likert-scale sub-questions (Q1_1, Q1_2, Q1_3) assessing gains in LLM-related knowledge, exposure to applications, and access to future learning resources.

Engagement and Learning Community Indicators (SurveyQ2 to investigate RQ2): Four Likert-scales sub-questions (Q2_1, Q2_2, Q2_3, Q2_4) evaluating networking opportunities, level of participant engagement, inclusivity, and sense of belonging to an LLM community.

Session-Level Evaluation (SurveyQ3 to investigate RQ3): A grid, displayed in Section 3.3.3, capturing how participants rated each workshop session across four dimensions—perceived value, engagement, interest, and informativeness—with each session also including a “did not attend” option.

Overall-perception (SurveyQ4 to investigate RQ3): Three Likert-scale sub-questions (Q4_1, Q4_2, Q4_3) evaluating the overall perception of the workshop.

Open-Ended Questions (SurveyQ5–Q8 to investigate RQ3): Prompts capturing major takeaways, desired future workshop topics, improvement suggestions, and additional comments.

2.2.3. Quantitative Analysis

Descriptive statistics (frequencies, means, and distributions) will be computed for all Likert items in Q1, Q2, Q4 and for session-level ratings in Q3. RQ1 and RQ2 will be addressed through the quantitative measurement of perceived knowledge gains, engagement, inclusivity, and satisfaction. For RQ3, session-level metrics from Q3 will be aggregated to determine which sessions were viewed as most valuable or engaging.

2.2.4. Qualitative Analysis

Responses from Q5–Q8 will be examined using thematic analysis following Braun and Clarke’s established framework [10] for identifying and interpreting patterns in qualitative data. A hybrid inductive–deductive coding strategy [11] will be applied: inductive codes will reflect themes relevant to RQ3, while deductive codes will incorporate additional emergent insights, consistent with rigorously implemented hybrid thematic analysis approaches. All themes will be reviewed iteratively and triangulated with quantitative session ratings to ensure analytic coherence and alignment with reflexive thematic analysis practices

3. Data Analysis and Results

Although more than 160 participants registered for the workshop, its come-and-go format meant that not all participants attended every session. The poster sessions in both days were very dynamic and participants came and go, hence we summarized the number of participants for each session as in Table 2 except for the poster sessions.

	day1 keynote	day1 faculty talks	day1 panel 1	day1 panel 2	day1 student talk	day2 keynote	day2 roundtable	day2 tutorial	day2 student talk
# of participants	37	58	37	29	48	26	13	35	38
# of asked questions from attendees	9	9	6	4	14 talks in total, no interaction	7	all about activities and sharing	4	14 talks in total, no interaction

Table 2: Participant Summary for Each Session

Among all those participants, only a portion of participants fully or partially responded to the survey. Our analysis is therefore based on the available responses—while the data do not represent the entire participant population, they still offer meaningful insight into workshop experiences. At the same time, readers should be aware of this limitation when interpreting the findings.

3.1.RQ1: To what extent does participation in the interdisciplinary LLM workshop enhance attendees’ knowledge, awareness, and perceived resources related to large language models?

Survey Q1. This question comprising three Likert-scale sub-items (Q1_1, Q1_2, Q1_3; Table 3), assesses participants’ perceptions of knowledge and resource acquisition following the workshop.

Question	n	Mean	SD
Q1_1: This workshop broadened/enhanced the knowledge about LLM technologies for participants.	48	4.42	0.71
Q1_2: This workshop provided opportunities for participants to see different applications of LLMs in various fields.	49	4.59	0.57
Q1_3: This workshop provided resources for participants to continually learn or apply LLMs relevant skills in the future.	48	3.96	0.94

Table 3: Q1 Mean and Sd

For each sub-question, we summarized the distribution of responses (Table 4) and converted the

Likert categories to numerical scores to facilitate quantitative analysis: strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, and strongly agree = 5. Using the coded Likert responses, we computed descriptive statistics for each sub-question, with the corresponding means and standard deviations reported in Table 3. The distribution of responses is further illustrated using bar plots shown in Figure 1.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q1_1	0	1	3	19	25
Q1_2	0	0	2	16	31
Q1_3	1	2	10	20	15

Table 4: Q2 Count Summary

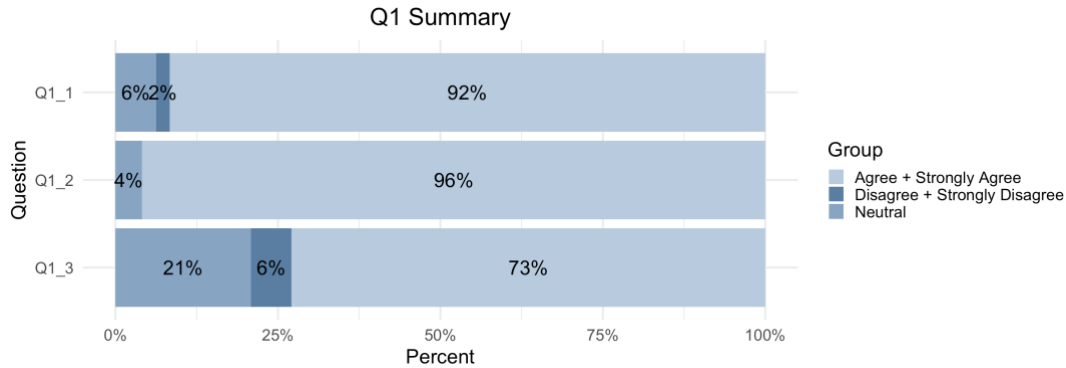


Figure 1. Bar plots of Q1

As shown in Figure 1 and Tables 3–4, participants reported overwhelmingly positive perceptions across all Q1 items. For Q1_1 and Q1_2, agreement was especially strong—92% and 96% of respondents, respectively, endorsed that the workshop broadened their understanding of LLM technologies and exposed them to diverse applications, reflected in high means (4.42 and 4.59) and low variability.

Responses to Q1_3 were somewhat more mixed: although 73% agreed that the workshop provided resources for continued learning, this item showed a lower mean (3.98) and higher standard deviation (0.94), indicating greater divergence in participants' perceptions regarding the adequacy or applicability of post-workshop resources.

The analysis and results suggest the workshop was highly effective in delivering core conceptual and applied LLM knowledge, while revealing opportunities to strengthen post-workshop learning supports.

3.2. RQ2: How does the workshop influence participants' sense of engagement, networking opportunities, inclusivity, and belonging within an emerging LLM learning community?

Survey Q2. To address RQ2, Survey Q2—comprising four Likert-scale items (Q2_1–Q2_4; Table 5)—assesses participants' perceptions of engagement, networking opportunities, and sense of belonging during the workshop.

Question	n	Mean	SD
Q2_1: This workshop was a good platform to facilitate networking and collaboration.	48	4.52	0.65
Q2_2: This workshop provided sufficient opportunities for participants to engage in different activities.	48	4.17	0.69
Q2_3: This workshop enhanced participants sense of belongings to the LLM community.	48	4.17	1.00
Q2_4: This workshop was structured to foster inclusivity and equity among participants.	48	4.12	0.82

Table 5: Q2 Mean and Sd (n=48)

As in Section 3.1, we reported the corresponding means and standard deviations in Table 5, summarized the response distributions for each sub-question (Table 6), and illustrated these patterns using the bar plots in Figure 2.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q2_1	0	0	4	15	29
Q2_2	0	0	8	24	16
Q2_3	0	4	8	12	24
Q2_4	0	1	10	19	18

Table 6: Q2 Count Summary (n=48)

As shown in Figure 2 and summarized in Tables 5-6, participants reported consistently positive perceptions of engagement, networking, and inclusivity fostered by the LLM workshop.

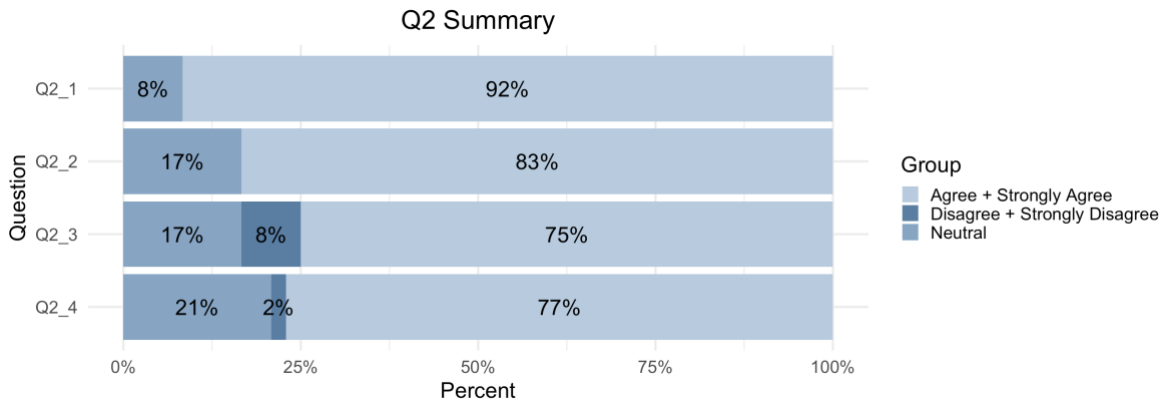


Figure 2. Bar plots of Q2 (n=48)

For Q2_1 and Q2_3, which assessed opportunities for networking/collaboration and sense of belonging within the LLM community, the dominant responses were agree and strongly agree, with 92% and 75% of participants expressing positive agreement, respectively. These perceptions are further supported by high mean scores ($M = 4.52$ for Q2_1; $M = 4.17$ for Q2_3) and relatively low standard deviations, indicating strong endorsement and general consistency across respondents.

Responses to Q2_2 and Q2_4, which focused on engagement in workshop activities and the promotion of diversity and inclusion, similarly reflected favorable participant perceptions. Most respondents agreed or strongly agreed that the workshop provided sufficient opportunities for active engagement (83%) and was structured to foster inclusivity and equity (77%). The corresponding mean values ($M = 4.17$ for Q2_2; $M = 4.13$ for Q2_4) suggest a high level of

overall agreement, though with slightly greater variability than the networking-related items, as indicated by moderately higher standard deviations.

Collectively, the low dispersion of responses and mean values clustered between 4.1 and 4.5 on a 5-point Likert scale suggest a broadly shared positive experience among participants. These findings indicate that the workshop was effective in creating an environment conducive to professional interaction and collaboration, supporting the development of social and professional connections among attendees. Furthermore, participants' perceptions of inclusivity and equity suggest that the workshop successfully fostered a welcoming atmosphere in which individuals felt comfortable engaging with both the content and the broader LLM community. Together, these results underscore the workshop's effectiveness not only as a technical learning venue but also as a space for community-building and inclusive participation.

3.3.RQ3: How do participants evaluate the value, engagement, and informativeness of individual workshop sessions, and what needs, preferences, and improvement suggestions do they identify for future LLM workshops and community events? (Survey Q3-Q8):

Survey Q3. This question asked participants to evaluate each individual workshop session by indicating whether they found it valuable (Descriptor 1), engaging (Descriptor 2), informative (Descriptor 3), and interesting (Descriptor 4). Respondents were permitted to select multiple descriptors for any session. This question was asked in the way below:

If you agree with the statement, put $\checkmark$ in the cell.

	<i>This session is valuable</i>	<i>This session is engaging</i>	<i>This session is interesting</i>	<i>This session is informative</i>	<i>Did not attend</i>
<i>day1_A).Invited talk (Keynote)</i>					
<i>day1_B). Faculty talks</i>					
<i>day1_C). Poster sessions</i>					
<i>day1_D). 1st panel discussion: LLM technologies</i>					
<i>day1_E). 2nd panel discussion: LLM applications</i>					
<i>day1_F). Students lightning talks</i>					

	<i>This session is valuable</i>	<i>This session is engaging</i>	<i>This session is interesting</i>	<i>This session is informative</i>	<i>Did not attend</i>
<i>day2_A). Invited talk (Keynote)</i>					
<i>day2_B). Roundtable discussion on broadening participation in LLM</i>					
<i>day2_C). Poster Presentation</i>					
<i>day2_D). Tutorial -- resources to LLM users</i>					
<i>day2_E). Students lightning talks</i>					

Figure 3 and Figure 4 provide visual summaries of these distributions, showing the number of selections for each descriptor for each session.

Across both days, participants generally rated sessions as valuable, informative, and interesting more often than engaging, indicating strong content quality with more variation in interactivity. For Day 1 (N = 31), non-attendance ranged from 16–35%. Because this was an optional, come-and-go event, we treated >50% endorsement of value, informativeness, or interest as a

pragmatic indicator of positive session quality. Using this standard, most Day 1 sessions were well received: faculty talks, poster sessions, and especially the LLM-technologies panel showed strong evaluations, while the keynote had lower engagement and the highest non-attendance. Student lightning talks were the strongest overall, receiving the highest value ratings.

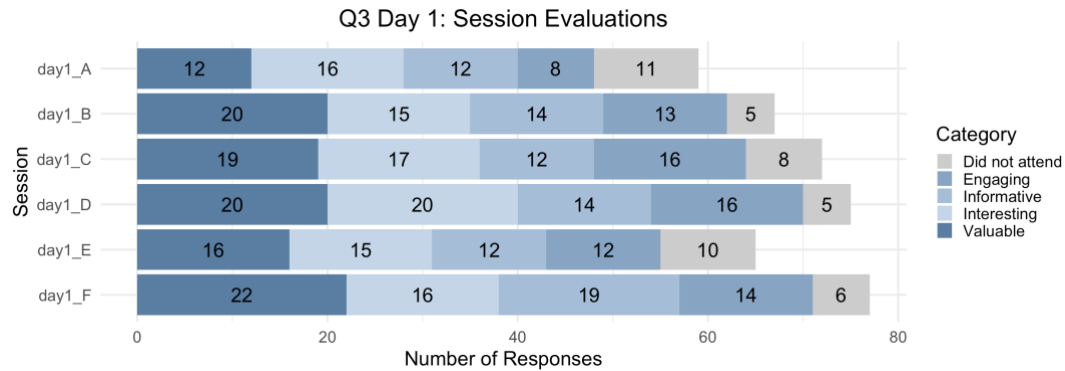


Figure 3. Barplot of Day 1 Individual Session Perception (n=31)

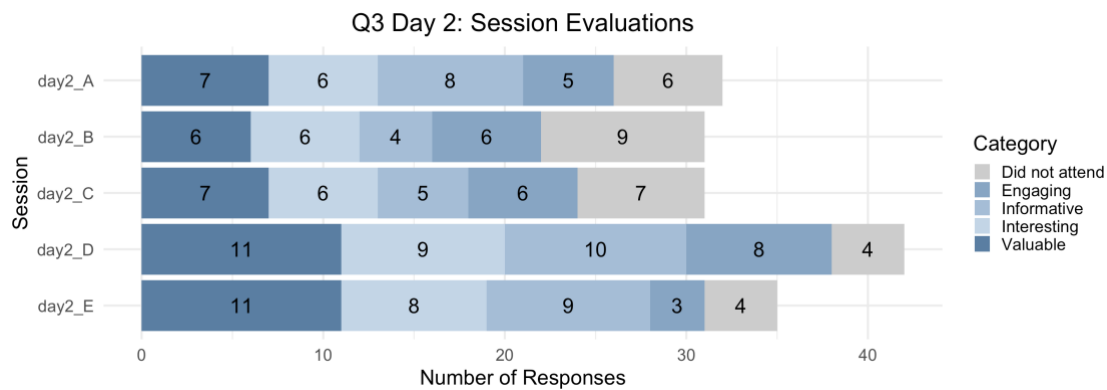


Figure 4. Day 2 Individual Session Perception Barplot (n=18)

Day 2 showed similar patterns among respondents ($N = 18$), with non-attendance ranging from 22–50%. Content-focused descriptors again exceeded engagement across most sessions. The keynote and roundtable received moderate evaluations; poster sessions showed balanced but less informative ratings. The tutorial stood out as the highest-rated session of the day, and student lightning talks again scored highly for value and informativeness despite lower engagement.

Overall, both days delivered strong substantive content, with interactivity emerging as the primary area for improvement across more presentation-driven formats.

Survey Q4: This survey question included three Likert-scale sub-questions (Table 7) assessing participants' overall perceptions of the workshop. We computed descriptive statistics (Table 7) and summarized response counts (Table 8).

Question	n	Mean	SD
Q4_1: This workshop was organized well.	45	4.44	0.69
Q4_2: I was satisfied with the overall experience of this workshop.	45	4.56	0.69
Q4_3: I am likely to participate in future community events or discussions related to LLMs/Other AI.	45	4.51	0.69

Table 7. Q4 Mean and Sd (n=45)

Participants expressed consistently positive overall perceptions of the workshop, as reflected in the distribution of responses summarized in Table 8. Across all three Q4 sub-questions, a

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q4_1	0	1	2	18	24
Q4_2	0	1	2	13	29
Q4_3	0	1	2	15	27

Table 8. Count Summary (n=45)

consistent percentage of respondents (93%) selected *agree* or *strongly agree*, with no participants indicating *strongly disagree* and only 1 participant selecting *disagree* for any sub-question.

This strong clustering of responses toward the upper end of the Likert scale is further reflected in the high mean scores for all items, which ranged from 4.44 to 4.56 on a 5-point scale (Table 7). Respondents strongly agreed that the workshop was well organized (Q4_1; $M = 4.44$, $SD = 0.69$) and that they were satisfied with their overall experience (Q4_2; $M = 4.56$, $SD = 0.69$). These results indicate substantial consensus regarding the quality and structure of the workshop.

Similarly, participants expressed a high likelihood of engaging in future community events or discussions related to LLMs or other AI topics (Q4_3; $M = 4.51$, $SD = 0.69$). The consistently low standard deviations across items suggest that these positive perceptions were shared broadly and did not vary substantially across respondents. Together, these findings demonstrate that the workshop not only met participants' expectations in terms of organization and overall experience but also fostered motivation for continued involvement in LLM-related community activities. The strong and uniform agreement across items underscores the effectiveness of the workshop in delivering a high-quality learning experience and encouraging sustained engagement with the subject matter.

3.4. Qualitative Analysis for RQ3 (Survey Q5-Q8)

We conducted a hybrid inductive–deductive coding strategy mentioned in Section 2.2.5 for the qualitative analysis. We started by selecting relevant prior empirical findings, developed a codebook based on these themes, and systematically code the open-ended question responses using these predefined categories. As data segments are matched to the initial codes, we examined whether the evidence supports, extends, or challenges the original assumptions and made revisions as needed.

Note that we report only the most prominent themes from the analysis of Survey Q5–Q8 in this section (Section 3.4), while the complete theme tables are provided in Appendix 1. All interpretations, however, are based on the full set of themes presented in the complete tables.

Survey Q5: What are the three most important take aways for you about LLM technologies and applications from this workshop?

Attendees were asked what the three most important take aways for them were regarding LLM technologies and applications from this workshop, to which their responses are as in Table 9.

Many participants responded that they gained a deeper understanding of LLMs and their applications; notably, many referenced their applications in scientific and educational settings due to its generative nature. LLM applications can help in both a laboratory for scientists to

expand their knowledge regarding a specific field or in a classroom by both students and teachers in a similar sense.

Theme	Count	Sample Responses
Better Understanding of LLM Applications	20	"Application on time series data [and] on videos" "LLM could be helpful for scientists when they try to expand their knowledge of a specific field" "Applications of LLMs in education"
Issues and Naivety of AI	12	"Using LLMs for robotics is still an open problem" "We should not use llms naively. It is important to consider how the parametric knowledge in the models may be biased or cause hallucinations." "There are dangers in blindly using LLMs" "Domain scientists are skeptical about LLMs"

Table 9: Q5 Prominent Themes Summary

Interestingly, a few participants who praised the usage of LLMs in educational settings also mentioned the issues and naivety of AI. The two takeaways seemingly contradict one another, as the praise hopes to incorporate AI more into work-life, while the latter hopes to segregate the two. However, it is better understood as an invitation to use LLMs in work and school settings while also being cautious of bias in models, which was also emphasized in [12]. To effectively apply LLMs to these settings, it is imperative that users do not follow the models blindly and ensure equity when utilizing LLMs.

Some acknowledged the difficulty in using LLMs, from creating a model, to training, and ensuring low bias. Additionally, it was noted that it is difficult to learn at an industry standard while in academia. In niche domains, additional challenges arise because models often lack sufficient training data or pre-existing domain-specific architectures, leading to more foundational or “primitive” barriers that must be addressed before meaningful progress can be made.

Survey Q6: What do you want to see/experience at future’s LLM workshops?

Question 6 asked participants what they wanted to see or experience at future LLM workshops. Though there were fewer responses than the previous question, nonetheless, they are insightful into future improvements that could be made to further the quality of the workshops (Table 10).

Theme	Count	Sample Responses
Increase Scope of Topics	11	"Maybe some stuff about multi-modality" "LLM and privacy" "Maybe a session on HCI and AI" "Applications in education activities, e.g., curriculum design, classroom activity design, assessment, etc."
Diverse Participants	4	"Participation from non-STEM fields" "A panel discussion consists of both computer scientists and domain experts" "More people from outside engineering fields"
Increase Opportunity for Student Discussion	4	"More opportunities for student discussion would be nice as it is difficult to get questions in during the presentation." "Longer student talks"

Table 10: Q6 Prominent Themes Summary

Table 10 summarizes participants’ suggestions for improving the workshop, highlighting several recurring priorities. The most frequently mentioned recommendation was an increase in the scope of topics (n=11), especially more speakers from outside of STEM-related fields.

Participants expressed interest in broader coverage—including multimodality, privacy, human–computer interaction, and applications in educational contexts—indicating a desire for more diverse and interdisciplinary content. Two other themes received notable attention: the need for greater diversity in participants (n=4) and expanded opportunities for student discussion (n=4). These suggestions emphasize the importance of inclusive representation and more interactive, student-centered engagement during sessions.

Moderate levels of interest were shown in increasing keynote speakers (n=3) and enhancing interactivity within sessions (n=3), reflecting participants’ preference for formats that offer richer knowledge exchange and hands-on learning. Additional recommendations—such as improving accessibility, adding more demonstrations, reducing group size, and allocating more panel time—appeared less frequently (n=1–2) but still point to practical enhancements that could improve the attendee experience. Overall, the responses reveal a clear desire for broader content coverage, increased interaction, and a more inclusive and participatory workshop environment.

Survey Q7: What could be improved for future workshops?

Participants were asked for feedback regarding how to improve future workshops. Though somewhat similar of a question to the previous, the responses differ as we see an increase of suggestions related to the logistics of the workshops, in comparison to the former which discussed the material more.

Theme	Count	Sample Responses
Meet on Weekdays	4	"Would help if this was done on weekdays" "Better attendance by changing time away from weekend"
Increase Scope of Topics	4	"I would like to here more focused discussion about where the future of the field might go." "I really wanted to learn more in-depth about what other labs are doing"
Decrease Length of Session	3	"Make it shorter" "... Less number of talks"
Better Panel Speakers	3	"More refined panel discussion"

Table 11. Q7 Prominent Themes Summary

Several suggestions echoed themes identified in earlier responses, including expanding the scope of workshop topics, improving the quality of panel speakers, and increasing the number of keynote presentations. A notably new theme, however, focused on the accessibility of the venue and scheduling. One participant reported being unable to attend additional sessions due to the lack of accessible seating and accessible entryways, despite having strong interest in the workshop content. Others expressed concerns about scheduling, suggesting that workshops held on weekdays—and supported by virtual options such as Zoom—would be more convenient and encourage broader participation.

Participants also recommended adjustments to the format and pacing of the sessions. Several attendees expressed interest in increasing time for student-centered discussion, emphasizing a desire for more meaningful communication between participants, presenters, and keynote speakers. At the same time, some respondents suggested shortening the overall length of sessions or reducing the total number of talks, indicating a preference for more concise programming. Together, these comments highlight a desire for a better balance between opportunities for interaction and an efficient, manageable session structure.

Survey Q8: Any additional comments or feedback?

This final free response question asked attendees for any additional comments or feedback they would like to share, to which they responded as shown below in Table 12.

Theme	Count	Sample Responses
Increase Accessibility	2	" the setting itself was not conducive to many people with disabilities" "It can be difficult to attend early sessions"

Table 12: Q8 Prominent Theme Summary

The final free-response question yielded fewer comments but offered valuable insight into additional areas for improvement. Some participants suggested incorporating a student hackathon to provide hands-on opportunities for applying workshop content. Accessibility emerged again as a concern: several attendees noted difficulty attending early sessions and recommended scheduling workshops during daytime or after-school hours on weekdays. One participant also reported that the venue was not accessible, causing them to miss most of the event. Finally, a comment highlighted the need for more inclusive lunch options, such as vegan or halal choices, to accommodate dietary restrictions.

Summary of Survey Q5-Q8. Across all four questions, participants consistently highlighted both the strengths of the current workshop and areas for future enhancement. Attendees reported gaining valuable insights into LLM applications, the challenges researchers may face in the field, and the importance of recognizing the limitations and potential naivety of LLMs when building or interpreting models. Looking ahead, participants expressed a desire for broader topic coverage, more opportunities for student-led discussion, and a more diverse speaker and participant panel.

Suggestions for improvement emphasized refining panel discussions, shortening overall session lengths, increasing interactivity, and scheduling workshops on weekdays to boost accessibility and attendance. Additional comments reinforced concerns about accessibility—both in venue accommodations and food options—and introduced new ideas such as incorporating a student hackathon to allow hands-on engagement and knowledge demonstration. Together, these findings point to a clear interest in making future workshops more inclusive, interactive, and aligned with participant needs and expectation.

4. Discussion, Lessons, and Limitations

The preceding analyses indicate that most workshop sessions were well received (Tables 3, 5, 7, 9), with particularly strong evaluations for the faculty talks, poster sessions, the LLM-technologies panel, the LLM tutorial, and the student lightning talks (Figures 3–4). In contrast, the roundtable discussion attracted the fewest participants (Table 2). These results suggest that the workshop’s success stemmed from its broad integration of theoretical developments and practical applications in LLMs, as well as its intentionally varied activity formats (Table 1). Moreover, the workshop design was purposefully aligned with the community-engagement frameworks outlined in Section 1.3, creating a structure that promoted participation, collaboration, and shared learning across disciplinary boundaries.

At the same time, several lessons emerged that can inform future iterations of the workshop:

Scheduling and accessibility. Scheduling the event over a weekend was intended to accommodate participants' weekday commitments and support a two-day structure. However, attendance data (Table 2) and participant feedback (Tables 10–12) indicate that a one-day weekday event with multiple simultaneous sessions may better support attendance, reduce food and logistical costs, and offer more flexibility. In addition, the selected room emphasized capacity rather than accessibility; securing a more accessible venue is an important improvement for future workshops.

Broadening scope and participant diversity. Although the workshop included a range of sessions, most content was academically oriented. While some industry participants attended, industry speakers were underrepresented. Expanding the scope of topics and intentionally recruiting speakers and attendees from industry, nonprofits, and other non-academic sectors would broaden the perspectives and applications highlighted at the workshop (Tables 10–11). A simultaneous-session structure would support such topical diversification without extending the total duration.

Enhancing engagement in talks and keynotes. Because the workshop scheduled many sessions sequentially without parallel tracks, interaction time was limited, which was reflected in lower engagement ratings for several talks (Figures 3–4; Tables 10–11). Introducing parallel sessions would allow for longer, more interactive talks without reducing the number of sessions offered, thereby improving participant engagement and inclusivity.

Collecting demographic information. The absence of demographic data in the registration form and the survey limited the interpretation of survey results. Including demographic questions in future registration and survey instruments would provide a richer understanding of who participated and how different groups experienced the workshop.

Regarding limitations, the findings reflect only the responses received, and many registrants did not complete the survey. Thus, the results may not fully represent all workshop attendees. Additionally, session-level perceptions are tied to the specific content and presenters; even within identical session types (e.g., keynotes), evaluations may vary based on the individuals involved. Future assessments should account for these content-specific factors and aim to increase the survey response rate to strengthen the robustness of the findings.

5. Conclusion and Future Work

This study evaluated the educational and community-building impacts of the 2024 interdisciplinary LLM workshop, with a focus on learning outcomes, cross-disciplinary engagement, and the development of an emerging LLM learning community. Participants reported gaining deeper understanding of LLM technologies, valuing exposure to diverse applications, and experiencing an inclusive and collaborative environment that promoted networking and shared learning. The workshop's alignment with community-engagement frameworks and its combination of theoretical and applied sessions supported strong reception across several key components, including the faculty talks, poster sessions, the LLM-technologies panel, the tutorial, and the student lightning talks. At the same time, the evaluation highlighted several lessons to guide future iterations (see Section 4).

Looking ahead, future work will focus on developing a recurring workshop series with community-facing themes, creating open-access LLM learning resources, and partnering with K–12 educators and nonprofits to co-develop LLM-based educational tools. Integrating LLM modules into engineering curricula will help support inclusive, sustained learning beyond the event itself. Collectively, these directions aim to enhance the impact, accessibility, and long-term sustainability of LLM education and community engagement across engineering and related fields.

6. Acknowledgment

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Appendix 1

Theme	Count	Sample Responses
Better Understanding of LLM Applications	20	"Application on time series data [and] on videos" "LLM could be helpful for scientists when they try to expand their knowledge of a specific field" "Applications of LLMs in education"
Issues and Naivety of AI	12	"Using LLMs for robotics is still an open problem" "We should not use llms naively. It is important to consider how the parametric knowledge in the models may be biased or cause hallucinations." "There are dangers in blindly using LLMs"
Overview of work done at UVA (on LLMs)	7	"Lots of work already being done at UVA, the workshop helped in getting a nice overview." "The different projects I got to hear about"
Challenging	6	"Industry level progress is hard in academia" "Research in niche areas such as healthcare has more primitive problems"
Practical Understanding of LLMs	5	"Basics and practical understanding of hardware part to work with different level of LLMs" "The new tools I got introduced to"
Insightful Discussion	2	"Insightful discussions about LLMs"
Meeting CS Professors	2	"Meet professors from CS department"
Networking	2	"Helped with networking with people in the field"
Diverse Perspectives	2	"Get diverse opinions" "They can be studied in many different ways from the perspective of different fields"
Fast Progression of Technology	2	"The advancements in this field is fast-paced."
Competitive Field	1	"... feels like it's a competitive field"
How to Define Models	1	"How to define a model like ChatGPT"

Table 9: Q5 Summary

Theme	Count	Sample Responses
Increase Scope of Topics	11	"Maybe some stuff about multi modality" "LLM and privacy" "Maybe a session on HCI and AI" "Applications in education activities, e.g., curriculum design, classroom activity design, assessment, etc."
Diverse Participants	4	"Participation from non-STEM fields" "A panel discussion consists of both computer scientists and domain experts" "More people from outside engineering fields"
Increase Opportunity for Student Discussion	4	"More opportunities for student discussion would be nice as it is difficult to get questions in during the presentation." "Longer student talks"
Increase in Keynote Speakers	3	"More keynote speakers"
Increase Interactivity of Sessions	3	"More interactive sessions would help with applying knowledge" "A tutorial session to guide the general population how to apply LLMs"
Increase Accessibility	2	"Accessible venues for the workshop."
Increase Demo Amounts	2	"Maybe more demo that show work"

Decrease Group Size	1	"Small groups"
Increase in Panel Time/Amount	1	"I liked when the panel members spoke honestly about advice for students and the state of the field. I think the panels were very valuable."

Table 10: Q6 Summary

Theme	Count	Sample Responses
Meet on Weekdays	4	"Would help if this was done on weekdays" "Better attendance by changing time away from weekend"
Increase Scope of Topics	4	"I would like to have more focused discussion about where the future of the field might go." "I really wanted to learn more in-depth about what other labs are doing"
Decrease Length of Session	3	"Make it shorter" "... Less number of talks"
Better Panel Speakers	3	"More refined panel discussion"
Increase Student Discussion	2	"More communication between participants"
Increase Interactivity of Sessions	2	"Provide a session to teach the attendees how to use LLMs efficiently, build simple LLM examples." "Engage participants more"
Virtual Option	2	"Would help if ... had a virtual component (Zoom)"
Increase Accessibility	1	"Rooms that have accessible seating"
Increase ease of submitting Student Talks	1	"It could be easier to submit talks- maybe make an option to submit an existing paper instead of having to make a one pager"
Separate Poster Sessions from Lunch	1	"I didn't see that many people who were there for the poster, maybe i was there too late after the lunch. It would be great if that session was separate from the lunch."
Increase Panel Discussion Time	1	"More panel discussion"
Increase Food Options / More Inclusive	1	"Food (rice items)"
More Keynote Speakers	1	"More keynotes"

Table 11. Q7 Summary

Theme	Count	Sample Responses
Increase Accessibility	2	" the setting itself was not conducive to many people with disabilities" "It can be difficult to attend early sessions"
One Day Sessions	1	"One day session could be fine"
Parallel Panels	1	"Consider making parallel panels where attendees can choose their topics of interest"
Student Hackathon	1	"Would be a nice idea to provide a theme for the workshop so students can participate in a hackathon... and present their results during the workshop."
Increase Inclusivity of Food Options	1	"Vegan/halal food options"
Decrease Amount of Food	1	"Need to get a better estimation on food. We waste a lot of this time"

Table 12: Q8 Summary