MIAMI UNIVERSITY

SIGHT Project - Meeting 09

Project Name: Safety Immersion and Gamified Hazard Training for Industry 5.0 Workers

Project Number: WSIC26-250206-009

Date: November 07, 2025

Time: 11:00 AM - 12:15 PM EST

Location: FSB 3097 and Zoom

Meeting Slides: https://fmegahed.github.io/sight/presentations/meeting09/meeting09.html

Meeting Focus: Updates on RAG Evaluation, AM Hub Activities, and VR Developments

Attendees:

- **Miami University (MU):** Fadel Megahed (PI), Mohammad Mayyas (Co-PI), Arthur Carvalho (Co-PI), Jay Shan (Co-PI), Reza Abrisham Baf (SP), Ibrahim Yousif (Post Doc), Michael Wise (Graduate Research Assistant), Austin Hamilton (Student Assistant), Ryan Singh (Student Assistant), Amanda White (Student Assistant), Mohamed Farrag (Project Manager), Yue Li (Evaluator), Kristen Morio (Evaluator)
- **Consultants:** Lora Cavuoto (UB; Safety Consultant)
- **MaxByte:** Ramshankar CS (CEO), Harish Chittaluri (Tech Lead)
- **MeetKai:** Kevin Bresnahan (VP), Jacquie Babakanian (Chief of Staff), Andre Amorim (3D Graphics Artist), Alexander Elert (Software Engineer), David Arcia (Software Engineer), Artur (Software Engineer), Vincent Cheong (AI Engineer)
- **Industry Partners:** Vick Dhanapal (Engineered Profiles), Jason Broshear (Yamaha Motors)

I. Project Team Updates

Administrative Updates:

- **Communication Plan:** The Project Communication Plan was approved by the BWC as of the morning of November 7, 2025.
- **IRB Status:** The MU team met with the IRB on October 24 to clarify the WebVR environment and motion sickness concerns. The team is currently awaiting written comments; a follow-up was sent on November 5.

- **Invoicing:** Expense reports and invoices have been submitted to the BWC.

Technical Progress (RAG & NAMRC):

- **Evaluation Pipeline:** The team has established a "golden set" of 60 questions regarding the Cobot manual. They are currently running 1,440 different configuration permutations to evaluate retrieval and generation accuracy.
- **Next Steps:** The top two performing pipelines will be selected for expert evaluation by industry partners and safety consultants.
- **Documentation:** Amanda White is working on OCR and chunking for additional equipment manuals (e.g., Milling Machine) to augment the knowledge base.
- **Submission:** The team is finalizing a paper on this architecture for submission to the North American Manufacturing Research Conference (NAMRC) by November 14.

AM Hub Updates (Mohammad Mayyas):

- **Computer Vision:** Phase 1 and 2 tasks regarding image collection and model selection are largely complete. The team collected over 6,000 images, augmented with various lighting and occlusion scenarios.
- **Performance:** The object detection model has achieved a mean Average Precision (mAP) of 99.6%, significantly exceeding the initial target of 75%.
- **Digital Twin Definition:** The team defined the project's Digital Twin approach as a "two-way automated data flow" between physical systems and digital replicas, distinguishing it from a "digital shadow" (one-way flow).

II. Industry Partner Collaboration

MaxByte Updates (Ramshankar CS):

- **AR Demo:** Demonstrated an Augmented Reality interface on a tablet (pending Magic Leap setup), showing machine overlays, real-time data dashboards, and manual retrieval.
- **Connectivity:** Successfully established connectivity between a Haas CNC machine and the Byte Factory application via Kepware (currently using local host).
- **Hardware Status:** The state-of-the-art Magic Leap 2 headsets have been delivered at the AM Hub. The remaining sensors, cameras, and other integrated hardware’s delivery was completed after the meeting on Nov 17, 2025.
- **Technical Discussion:** The team discussed challenges regarding data synchronization and latency between the physical machines, the Byte Factory middleware, and the AR display.

MaxByte confirmed all systems connect to a single middleware to minimize synchronization issues.

MeetKai Updates (Jacquie Babakanian, Andre Amorim, Artur):

- **3D Assets:** Displayed updated 3D environments for the Milling Machine, including detailed tool organization (drills, collets, spacers) following 5S principles.
- **UI/UX Demo:** Showed a Figma mockup of the gamified interaction. Features include:
  - Static UI controllers for rotating machine handles.
  - A precision scoring system.
  - Visual feedback showing the distance between the tool tip and the part.
- **Requests:** MeetKai requested photos of the physical lab space setup and a structured script/lesson plan for the training modules.
- **Haptics Discussion:** Dr. Mayyas inquired about integrating haptic feedback (force resistance). MeetKai confirmed that joystick/game controller integration is possible for the web-based platform.

III. Upcoming Due Dates

BWC Deliverables:

- **January 09, 2026:** DO2.4 - Submit November/December Project Team Meeting documents.
- **January 09, 2026:** DO7.2 - Submit Quarterly Progress Report (Q2).

Technical Milestones:

- **November 14, 2025:** NAMRC Paper Submission.
- **December 2025:** Develop RAG model.
- **January 2026:** Create gamified training modules (Initial MVP draft).
- **February 2026:** Develop gamified engine.
- **March 2026:** Integrate analytics framework with VR modules; Finalize 3D equipment renders.

IV. Risk Log Discussion

- Arthur Carvalho will update the risk log based on the technical discussions regarding data latency/synchronization capabilities.
- No critical new risks threatening the project timeline were identified during the meeting.

V. Other

- **Lubrication & Maintenance:** Following the retirement of Frank (lab manager), Michael Wise will serve as the subject matter expert to provide MeetKai with details on tool usage and machine lubrication protocols.
- **Meeting Frequency:** To accelerate development, the team agreed to increase the frequency of technical meetings. Developers from MU, MeetKai, and MaxByte will coordinate weekly or ad-hoc meetings to address blockers immediately rather than waiting for the bi-monthly update.

VI. A Summary of Action Items

Action Item	Owner	Anticipated Due Date
Evaluate RAG Pipeline Results (Survey feedback on top 2 configurations)	Industry Partners & Lora Cavuoto	Week of Nov 11, 2025
Submit NAMRC Papers	MU Team	Nov 14, 2025
Establish Weekly Technical Syncs	Ibrahim Yousif, Fadel and MeetKai	Immediate
Provide Lab Photos/Layout & Training Scripts	Ibrahim Yousif & Michael Wise	ASAP
Magic Leap & AR Configuration	MaxByte Team	December 2025
Update Risk Log (Latency)	Arthur Carvalho	Ongoing
Update Chatbot with Winning Pipeline	Ryan Singh and Austin Hamilton	Post-NAMRC Submission
Augment Dataset (OCR/Chunking)	Amanda White	Ongoing