

2024 UNT AI/CS Summer Research Program Summary

<https://ai.unt.edu/unt-ai-summer-research-program>

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Program Description

The University of North Texas hosted a summer research program in 2024 coordinating 17 projects focussed on Artificial Intelligence and other areas of Computer Science. 53 students participated including 26 Masters Students (17 MS in CS, 6 MS in AI, 3 MS in Data Science) and 24 undergraduates (6 Texas Academy of Math and Science (TAMS) undergraduates, 9 REU undergraduates, 9 UNT undergraduates) and 3 early PhD students. These students were coordinated through 6 graduate advisors and 13 faculty advisors including 3 program coordinators providing project resources and advising at various levels. Not only were the projects a fun learning experience for the students early in their academic progress, but also a chance for each group to forward valuable research contributions in the process.

The program consisted of an intense first 5 week period with daily focussed meetings (“huddles”) to discuss daily plans and celebrate progress; this is in addition to regular project group meetings and one-on-one career advising sessions. Students produce quick posters and project pitches for the final event at the end of the first 5 weeks. The additional second five weeks consisted of a focus on paper writing for the remaining REU, TAMS, and other student volunteers. All projects were selected for their potential for expected academic publication or clinical application and likely interest of participating students.

Participant Poster



UNT AI/CS Summer Research Program 2024



 Abhigya Koirala	 Abigail Miltenberger	 Adrian Pedraza	 Ajooni Chandni	 Angela Zhang	 Anirban Saha Anik	 Arnav Saxena	 Asma Irfan	 Bavya Sri Venulapalli	 Bhanuja Ainary	 Bryan Wang	 Chaitanya Chunduri	 Deeparvi Balusuguri	 Dhruvili Dudhat	 Gloria James-Avalos	 Hema Tummapala	
 Jesse Salazar	 Jessica Lozoya	 Kelsey Charbeneau	 Kevin Gautier	 Kevin Li	 Kush Phatak	 Lakisha Balaji	 Lillian Mohning	 Manish Manda	 Manumitha Kamarapu	 Maya Espinosa	 Michael McDowall	 Minh To	 Mohammed Abrar Baig	 Nagarjuna Pendekanti	 Nengi Pollyn	
 Nishitha Goud	 Priya Jha	 Rena Patel	 Renugopal Sivaprakasam	 Ria Tao	 Ruchira Bodula	 Sanjana Marri	 Srikanth Kanthala	 Sriram Kandadai	 Teja Babu Mandaloju	 Thomas Bouchard	 Troy Krupinski	 Uday Kiran Chimpiri	 Vishal Jonnalagadda	 Weston Allen		
Coordinators		Faculty Advisors										Grad and Postdoc Advisors				
 Mark V. Albert	 Ting Xiao	 Haihua Chen	 Erin Schafer	 Sharon Miller	 Rajeev Azad	 Jincheng Du	 Yuzhe Xiao	 Lingzi Hong	 Dmytro Shynkiv	 Kevin Dibbern	 Thiruvilla S. Mahadevan	 Himanshu Sharma	 Tallon Coxe	 Fatimah Habibi		
Student Coordinator		 Saba Yousefian Jazi	 Jing Yuan	 Junhua Ding	 John South	 Yuanxi Wang	 Xi Yu Leung	 Zinat Alam	 Xiaoying Song	 Liyu Yang	 Ravi Kumar Bevara	 Farahnaz Hossaini	 Ernest William Cubat	 Fengjiao Tu		

Links to the Full Poster: [[PDF](#)] [[gSlides](#)] (downloadable in multiple formats)]

List of Participants

Graduate	Undergraduate	Advising team
<u>MS in AI Students</u> 1. Asma Irfan 2. Dhruvil Dudhat 3. Mohammed Abrar Baig 4. Rena Patel 5. Troy Krupinski <u>MS in CS Students</u> 6. Bavya Sri Vemulapalli 7. Bhanuja Ainari 8. Deepanvi Balusuguri 9. Hema Tummapala 10. Manish Manda 11. Manumitha Kamarapu 12. Nishitha Goud 13. Priya Jha 14. Renugopal Sivaprakasam 15. Ruchira Bodula 16. Sanjana Marri 17. Uday Kiran Chimpiri <u>Misc Grad Students</u> 18. Kevin Gautier (PhD in Computer Science and Engineering) 19. Sriram Kandadai (PhD in Computer Science and Engineering) 20. Gloria James-Avalos (Ph.D. in Learning Technologies) 21. Anirban Saha Anik (MS in Data Science) 22. Nagarjuna Pendekanti (Ms in Data Science) 23. Teja Babu Mandalaju (MS in Data Science)	<u>TAMS undergraduates</u> 1. Kush Phatak 2. Ajooni Chandi 3. Kevin Li 4. Saanvi Mhatrel 5. Sunny Zhang 6. Bryan Wang 7. Lakhisha Balaji 8. Vishal Jonnalagadda <u>UNT undergraduates</u> 9. Adrian Pedraza 10. Arnav Saxena 11. Chaitanya Chunduri 12. Jesse Salazar 13. Maya Espinosa 14. Michael McDowall 15. Minh To 16. Nengi Pollyn 17. Srikar Kanthala <u>REU undergraduates</u> 18. Abhigya Koirala 19. Abigail Mitenberger 20. Angela Zhang 21. Kelsey Charbeneau 22. Ria Tao 23. Thomas Bouchard 24. Weston Allen 25. Jessica Lozoya 26. Lilian Mohning	<u>Graduate student advisors</u> 1. Saba Jazi 2. Dmytro Shymkiv 3. Kevin Dibbern 4. Thiruvilla S. Mahadevan 5. Xiaoying Song 6. Himanshu Sharma 7. Gloria James-Avalos 8. Ravi Kumar Bevara 9. Nick Rogozinski 10. Tallon Cox 11. Cubit William Ernest 12. Farahnaz Hosseini 13. Fatimah Habis 14. Liyu Yang 15. Fengjiao Tu <u>Faculty advisors</u> 16. Mark V. Albert, Coordinator, Computer Science and Engineering & Biomedical Engineering 17. Ting Xiao, Coordinator, Information Science 18. Jincheng Du, Materials Science and Engineering 19. Rajeev Azad, Biological Sciences 20. Yuanxi Wang, Physics 21. Xi Yu Leung, Merchandising, Hospitality & Tourism 22. Junhua Ding, Information Science 23. Yuzhe Xiao, Physics 24. Jing Yuan, Computer Science and Engineering 25. Haihua Chen, Information Science 26. Erin Schafer, Audiology and Speech-Language Pathology 27. Sharon Miller, Audiology and Speech-Language Pathology 28. John South, Geography and the Environment 29. Lingzi Hong, Information Science 30. Zinat Alam, Business

The Selected Projects

Color coding: **Undergraduate**, Graduate, **Graduate/Postdoc Advisor**, **Faculty Advisor**.

1. **AI Teacher Assistant: a conversational chatbot that answers procedural and content student questions**
Gloria James-Avalos, **Kush Phatak**, **Nengi Pollyn**, **Srikar Kanthala**
2. **Auto-SE: Leveraging Large Language Models for Automated Software Requirement Specifications**
Teja Mandalaju, **Kelsey Charbeneau**, Bhanuja Ainari, **Junhua Ding**
3. **Chatbot Advisor: LLM-Based Conversational Chatbot for Student Advising Excellence**
Hema Tummapala, Uday Kiran Chimpiri, Manish Manda
4. **Enhancing Health Communication: Developing LLM-based Models to Generate Effective Counter Speech Against Health Misinformation**
Kevin Gautier, Anirban Saha Anik, Sriram Kandadai, **Xiaoying Song**, **Lingzi Hong**
5. **Objective Classification of Hemiplegic Cerebral Palsy: Objective Cluster Analysis of Whole Time Series Gait Data**
Troy Krupinski, Renugopal Sivaprakasam, **Lakhisha Balaji**, **Kevin Dibbern**, **Mark V. Albert**
6. **ExtractPaper: Automated Information Extraction for High-Entropy Alloy Academic Papers**
Michael A. McDowall, **Minh To**, Varun Reddy
7. **Calibrated Recommendations System**
Abhigya Koirala, Rena Patel, Nishitha Goud, **Jing Yuan**
8. **Improving CGCNN Models for Defect Formation Energy Predictions**
Thomas Bouchard, **Angela Zhang**, Justin Garrigus, **Fatima Habis**, **Yuanxi Wang**
9. **Determining Factors Contributing to Successful Hearing Aid Adoption and Continued Use**
Jessica Lozoya, **Jesse Salazar**, Deepanvi Balusuguri, Priya Jha, **Sharon Miller**, **Erin Schafer**
10. **The Hotel Robot Debate on Twitter: A Social Network and Epistemic Network Analysis**
Bavya Sri Vermulapalli, **Abby Miltenberger**, **Arnav Saxena**, **Liyu Yang**
11. **Sway Index Predictions Using Machine Learning Models**
Chaitanya Chunduri, Vishal Jonnalagadda, **Adrian Pedraza**
12. **Orthoimagery Enhancement: Leveraging Deep Learning to Unveil and Analyze Environmental Changes in Landscapes**
Nagarjuna Pendekanti, Ruchira Bodula, Asma Irfan, **John South**
13. **Predicting Material Properties using Molecular Dynamics and Qualitative Structure-Property Relationship**
Weston Allen, Sanjana Marri, **Bryan Wang**, Thiruvilla S. Mahadevan, **Jincheng Du**
14. **Developing Classification Models with ESM-2: From Binary to Drug Mechanism**
Manumitha Kamarapu, **Ajooni Chandi**, **Lillian Mohning**, **Tallon Cox**, **Rajeev Azad**
15. **Stock Trend Optimization with Real-time News Data**
Dhruvil Dudhat, Mohammed Abrar Baig, Ravi Varma Kumar Bevara, **Farahnaz Hosseini**
16. **Thermography: Depth Thermography with Physics-Driven AI**
Kevin Li, **Gloria Chujun Tao**, **Maya Espinosa**, **Jonathan Roberts**, **Yuzhe Xiao**, **Dmytro Shymkiv**

Summer Research Posters

Images below are JPG, while [the full-size PDFs are available through this link](#)
Additionally, the end of program presentation slides.



A Schedule Excerpt

To understand the intensity of the program, here are scheduling grid examples for one of the coordinators - including one from June morning and from July afternoon sessions

Week 1, May 20 - May 24, 2024

	Mon, May 20	Tue, May 21	Wed, May 22	Thu, May 23	Fri, May 24
	Intro day and project selection	Initial project meetings	Initial project meetings	Social and skills group start	ML intro finish
9:00	Program Introduction [zoom link] [video link] - 1 hr	Huddle - project assignments	Huddle: Hearing aid to V-JEPA updates. Embedding subgroup (F206)?	Huddle (short) - last pitches tomorrow	Huddle - "last" team shuffle. Group needs.
9:20		UR2PhD chat		ML introduction part 1 (entirely optional) [slides]	Shufflers (F206)
9:40					Skills group meeting (F206)
10:00	Project pitches, [text description] [video of pitches] - 2 hours	Individual changes	GVT		Social group meeting (F206)
10:20		ExtractPaper / Predicting Materials	Chatbot advisor	HOTSPOT	
10:40	Roster for project selection (rightmost 5 columns are editable from 12-3pm this day) [gSheet]	CP Phenotyping / Protein Language	Maya	ExtractPaper	ML introduction part 2 (entirely optional) [slides]
11:00		Hearing Aid / AI TA	Roundup	11:00-11:30: Social group meeting (F206)	
11:20	12:30-1:30pm: Pizza for REU & students staying for CSE faculty candidate talk 12:30pm-1:30pm in F265		11:00 - 11:30	11:30-12:00: Skills meeting (F206)	
11:40	"Ubiquitous Sensing and ML for mHealth"	Roundup	11:30-12:30: lunch with speaker	12:30-1:30: Faculty candidate Xiaoxue Zhang in F285	Roundup - all
				(Mark gone)	Rapid fire - use the slides
					(enjoy the 3-day weekend)

Week 2, May 28 - May 31, 2024

	Tue	Wed	Thu	Fri
	Photos for Poster [place here]	Detailed 4 min motivations pitch with text/visuals	Photos for Poster [place here]	Pizza at 12! Accomplishments roundup
9:00	Huddle - see outline, shared tutorial resource [link]	Icebreakers [required, attendance taken]	Huddle	Internship discussion - panelists from the program
9:20			Social media chat (F206)	[slides]
9:40	Sway		Skills group (F206)	
10:00	STORM	Solelearn/Codeforce intro - sign up and share links (optional - bring laptops, add user IDs in the shared doc-link)	Social group (F206)	Andy McDowall
10:20	Chatbox Advisor		Nengi Pollyn	Minh To
10:40	Hearing Aid	Motivations Pitch	Troy Krupinski	Accomplishments
11:00	Hotel Robot	Roundup groups 1-9 (use the shared slide deck only - link)	Snikar Kanthala	Roundup groups 1-9 (use the shared slide deck only - link)
11:20	Predict Materials	Motivations Pitch	Solelearn/Codeforce's mutual activity (F206 - optional)	Accomplishments
11:40	Social group - icebreaker plan in F206	Roundup groups 10-18 (use the shared slide deck only - link)		Roundup groups 10-18 (use the shared slide deck only - link) 12:00 - Pizza in F285 for those who pitch in everyone who wants it.

Week 3, June 3 - June 7, 2024

	Mon	Tue	Wed	Thu	Fri
	Photos [here] Place posters drafts here .	LinkedIn, titles/authors	Poster draft for review here URF essays!	Pitch practice Day 1	Grad student panel!
9:00	Huddle. LinkedIn links, titles/ author order, URF	Plugging into Research (undergrad/MS/PhD difference) [slides]	Peer resume evaluation and collection here	Huddle & Dimensionality reduction discussion [slides] [more data vis slides]	Huddle
9:20	REU travel support! [link]	Photos taken aside	Career services - Resume critique - identification of the better resumes		PhD Student Panel - Thasina Tabashum, Will Cubit, Sina Montazeri
9:40	Social media group meeting (F206)				
10:00		Social & Skills groups	Poster draft review groups 1-3 (F206)	UNT Undergrad Research Fellowship discussion (can use this for text) F206	
10:20	Sway	Asma Irfan	Poster draft review groups 4-6 (F206)	Peer poster review 1-2,3-4,5-6	
10:40	Rena Patel	Arnav Saxena	Poster draft review groups 7-9 (F206)	Pitch practice groups 1-4	Peer poster review 2-3,4-5,6-7
11:00	Huzaifa Adnan	Adrian Pedraza	Poster draft review groups 10-12 (F206)	Pitch practice groups 5-8	Roundup for the week. Use shared slide deck [link] .
11:20	Jesse Salazar	Roundup LinkedIn links and titles/authors prepared beforehand (post on shared doc first page here)	Poster draft review groups 13-15 (F206)	Pitch practice 9-12	2-3 mins each.
11:40	3 strikes meeting - anyone with 3 strikes required to attend - highest priority!		Poster draft review groups 16-18 (F206)	Pitch practice 13-17	"Accomplishments + what was learned (this week only)"

Week 4, June 10 - June 14, 2024

	Mon	Tue	Wed	Thu	Fri
	Continuity plan and titles/authors prep for 2024 summary	2024 summary projects list draft [link] - quite under construction	Pitch practice	Poster drafts - draft of all parts before meeting	Dr. Behpour discussion
9:00	Huddle - Confirm project title and authors in shared document and make continuity plan decisions	Huddle - review 2024 projects list. Quick continuity check on teams	Huddle	Serendipity in Science (how projects start) [slides]	Huddle
9:20	Varun Reddy Gudigopuram	Ice breaker (required)		Mohammed Abrar Balg	UNT Undergrad Research Fellowship discussion F206
9:40	Sway	garticphone.com, Program logo competition...		Bhanuja Ainari	
10:00	AI TA		Pitch practice groups 1-3	Poster draft review groups 1-4 (F206)	(Teams AutoSE, Defects, Protein, & Thermography only) GenCyber camp visit present in B227
10:20	Laya Myadam	UNT Undergrad Research Fellowship discussion - write in the shared doc prior to coming to F206	Pitch practice groups 4-6	Poster draft review groups 5-8 (F206)	Uday Kiran Chimpiri
10:40	Social group - discuss in F206. Suggest 2 events. Plan icebreaker		Pitch practice groups 7-9	Poster draft review groups 9-12 (F206)	
11:00	Professional skills group in F206 discussion - select two events this week or next	Dhruvil Dudhat	Pitch practice groups 10-12	Poster draft review groups 13-17 (F206)	Discussion with Alum Dr. Sahar Behpour, Deloitte Data Science
11:20	Social media team effort F206	Chaitanya Chunduri	Pitch practice groups 13-15		
11:40	Quick Round-up - confirmation of continuity plans (helpful for group shifts coming)	Aashish Vinay Vasala	Pitch practice groups 16-18		
			Board games in the nest?		

Week 5, June 17 - June 21, 2024

	Mon	Tue	Thu	Fri
	See outline for peer review guidance. URF fellowship paragraphs!	Place poster drafts as PDF . See outline for discussion of documentation goals	Poster draft for review [editable and PDF]. All must be completed by 2pm.	End of 5 week session
9:00	Huddle - Confirm project title and authors in shared summary document Link	Huddle - Noting plan for Friday (invite anyone you would like)	Huddle - go over wrap up plans	
9:20	Social and Professional Skills group discussion in F206.	UNT Undergrad Research Fellowship discussion F206 (all URF planned submissions must come and post text ahead of time)	Pitch practice groups 1-3	
9:40	Social media group brainstorming, F206		Pitch practice groups 4-6	
10:00	Entrepreneurship social in F285 - people interested in startups etc talk back in F285	Poster draft review groups 1,7,13 (F206)	Pitch practice groups 7-9	End of session pitch and poster presentations in F285. Also to be presented over zoom available to anyone (family & friends) at this zoom link
10:20		Poster draft review groups 2,8,14 (F206)	Pitch practice groups 10-12	
10:40	Project Pitches - group N pitch to someone in group N+1, then later pitch to someone in group N-1. Critical feedback required	Poster draft review groups 3,9,15 (F206)	Pitch practice groups 13-14	
11:00		Poster draft review groups 4,10,16 (F206)	Pitch practice groups 15-16	
11:20	Poster Critiques - Someone from group N find Group N+1 and group N-1 and provide at least 2 points of constructive feedback	Poster draft review groups 5,11,17 (F206)	Final roundup of the session - Final checking posters and pitch presenters Posters must be finalized and uploaded by 2pm today!	11:15 or so - program pictures 11:30 or so - pizza!
11:40		Poster draft review groups 6,12 (F206)		

Pictures (more to come):





