



# 2023-2024

## ETA KAPPA NU

### LAMBDA ZETA CHAPTER

*Annual Report*

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# SERVICE

Lambda Zeta members are dedicated to helping bring forth opportunities that aim to advance fellow students towards their goals and aspirations. Our chapter actively seeks out ways to better our local community. Throughout the year we focused on serving our UNT community along with our local community.



# LaTeX Workshop

This year, we hosted a Document Building Technical Workshop to equip UNT students with the skills needed to create professional documents, with a particular focus on resume building. In preparation for an upcoming IEEE Resume Review, students were taught the typesetting language LaTeX.

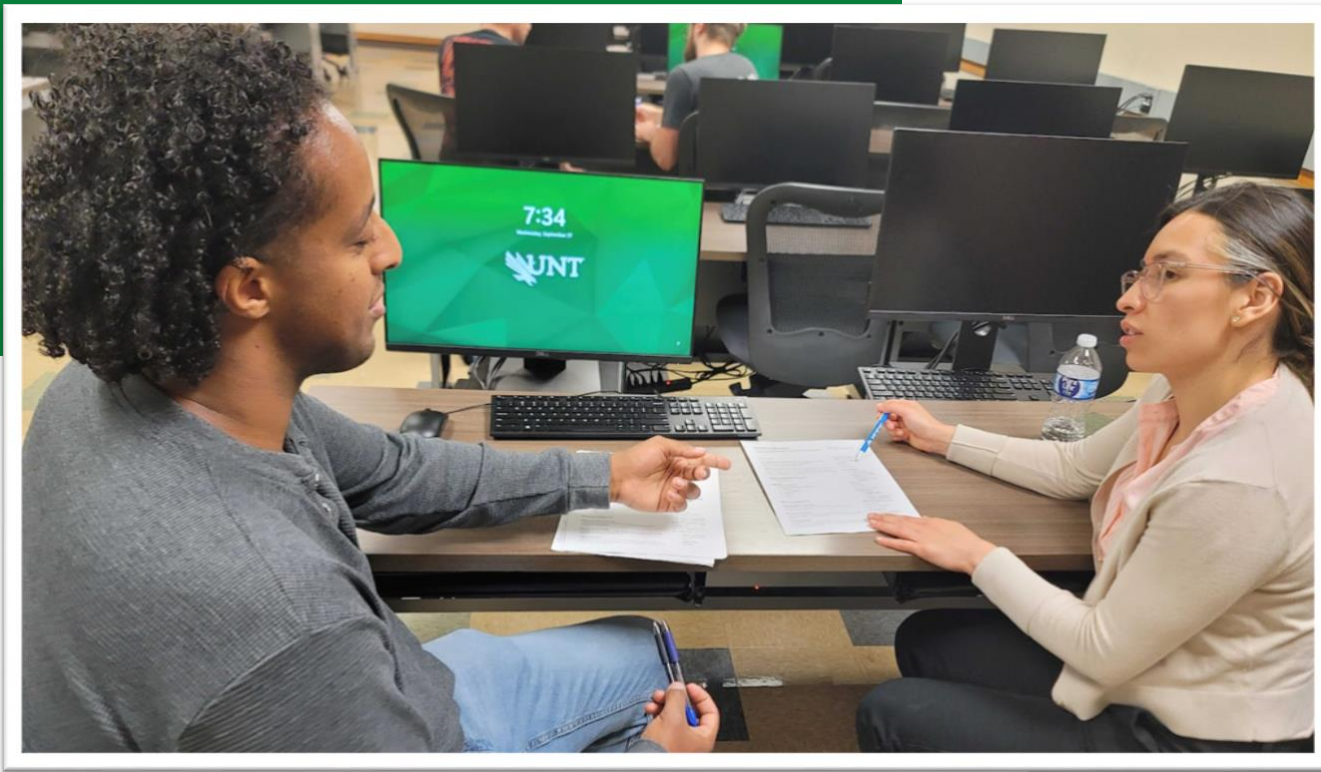
By the end of the workshop, all participants had set up their Overleaf accounts linked to their IEEE memberships and left with a solid understanding of LaTeX. The enthusiasm was palpable as students eagerly anticipated using their new skills to craft formal documents.



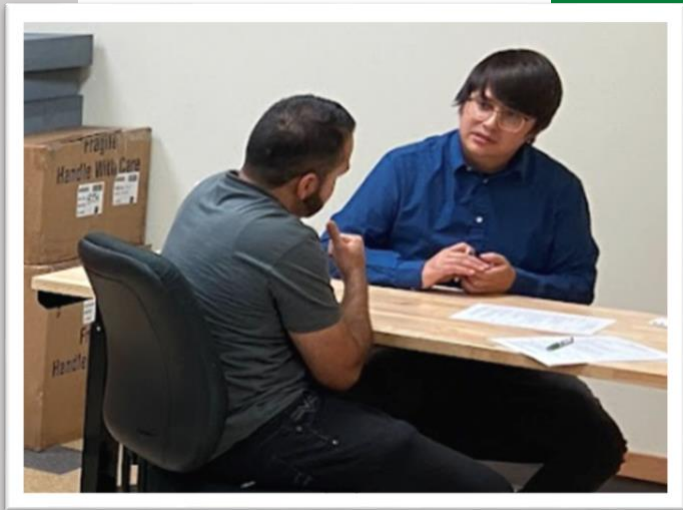
# Resume Review

This year, we organized a Resume Review Workshop, offering students one-on-one meetings with industry professionals from various fields, including law, engineering management, and research. Many of these professionals, excited to volunteer, were UNT alumni.

Attendees had the opportunity to receive personalized feedback on their resumes, leaving satisfied and better prepared for the upcoming career fair. We efficiently managed to review all students' resumes ahead of schedule, and our reviewers were thanked with a sweet treat. We look forward to maintaining contact with these generous professionals for future events.

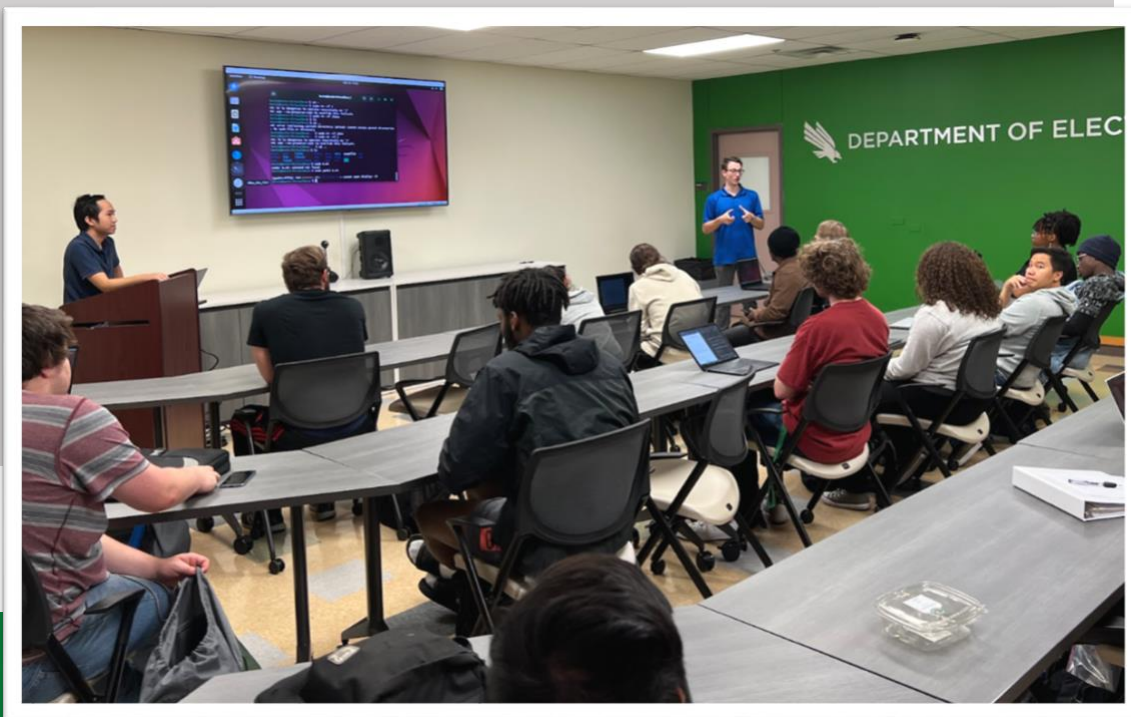






# Intro to Linux Workshop

In our Linux in VirtualBox Workshop, students were introduced to using Linux within a VirtualBox virtual machine. They learned about the origins of Linux, explored its various distributions and use cases, and got hands-on experience with Ubuntu.



The workshop had a great turnout, and students thoroughly grasped the capabilities of utilizing a virtual machine to boot operating systems like Linux. The powerful presentation enabled participants to push the limits of Ubuntu, leaving them excited to explore further.





# Intro to Microcontrollers Workshop

This comprehensive workshop was organized to help familiarize students with Microcontrollers. The workshop began by distinguishing between microprocessors and microcontrollers, helping students understand their unique characteristics and different applications.

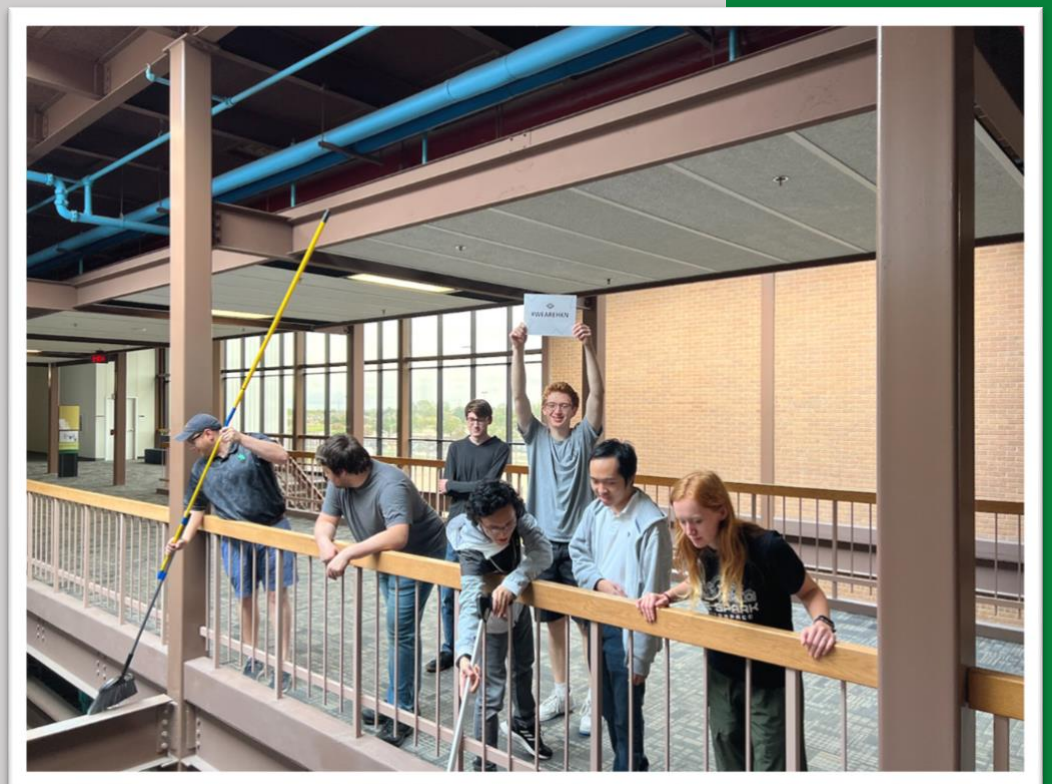
It also expanded on the architecture of microcontrollers, providing students with an in-depth understanding of their structure and functionality. The workshop also covered various communication protocols and design conventions associated with microcontrollers. Overall, this workshop allowed students to gain practical knowledge on how microcontrollers communicate and operate.



# Founders Day Campus Cleanup



Under the initiative of Lambda Zeta, invited students of Discovery Park to participate in a spring cleaning of the campus. This event focused on the areas that needed attention, aiming to improve the campus environment and the EE departments shared spaces.



# Study Hall and Recitations

Study Hall	Recitation
Room B207	Room B288
M 2:30 - 5:20 PM	M 11:30 AM - Electronics
Room B288	Tu 1:00 PM - Circuit Analysis
Th 1:00 - 2:20 PM	Tu 1:40 PM - Digital Logic
	W 4:00 PM - Circuit Analysis
	W 4:40 PM - Digital Logic

Dedicated Lambda Zeta officers and members facilitated optional weekly in person supplementary classes on the following topics: Digital Logic, Circuit Analysis, and Electronics I. Every week students were welcome to drop in to further their comprehension of the course material.

HKN Lambda Zeta Chapter and the IEEE UNT Student Branch collaborated to facilitate a learning environment where study halls could take place twice a week. Students could drop in to work on assignments and consolidate their understanding.



# Mock Interviews



This Spring 2024, IEEE UNT introduced a new initiative to enhance the soft skills and professional literacy of UNT's engineering students through Mock Interviews. Building on the success of our Resume Review, this event provided students with personal, one-on-one meetings with experienced industry professionals, offering focused and in-depth feedback.

The lineup of interviewers, many of whom were managers, gave highly relevant and appreciated feedback. They came prepared with interview questions and provided valuable insights into improving interview impressions. Despite being an experimental initiative, the event was well-received, and Lambda Zeta looks forward to making this a lasting tradition within the IEEE UNT Student Branch.



# PROFESSIONAL DEVELOPMENT

One of the goals of the Eta Kappa Nu Lambda Zeta Chapter is to provide valuable and engaging professional development opportunities to the student community at the University of North Texas. We welcome all students to participate!

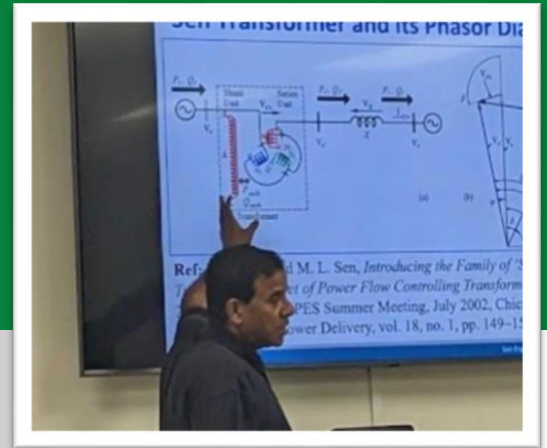
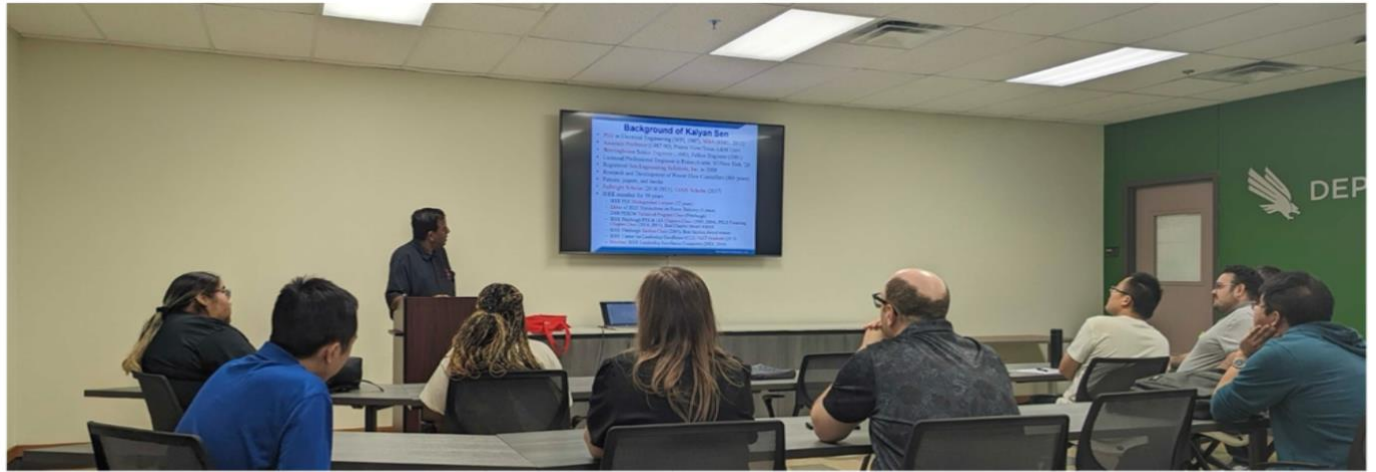
This year, our activities included a variety of technical and career-related talks during both North Tech-SAS and the Dallas Circuits and Systems Conference, which we hosted. Additionally, our LaTeX and Resume Review Workshops helped prepare students for the upcoming job fair at Discovery Park.

# Technical Talks

**Dr. Kalyan K. Sen**  
**Test Technology Associates**  
**Raphaël Chabaneix**  
**Brunno Covolan**  
**Dr. Su Yan**  
**Christopher Sanderson**  
**Sid Ashok Parmar**  
**Brian Rautio**







## *Dr. Kalyan K. Sen*

The UNT Electrical Engineering Department hosted a technical lecture titled "SMART Power Flow Controllers - A Necessity for Future Power Grid" by Kalyan K. Sen, PhD, PE, MBA, IEEE Fellow. Dr. Sen discussed the history of practices within the power field, highlighted current flaws, and proposed future solutions. The event had a satisfactory turnout, including industry members unaffiliated with UNT, despite the short notice. While the allotted time was unexpectedly overshoot, the event proceeded smoothly with no significant issues.



# *Test Technology Associates (TTA)*

Discovery Park welcomed Test Technology Associates (TTA), a prominent local innovator in the DFW area, to showcase their expertise in the In-Circuit Programming industry. Co-hosted with the Signal Processing Society at UNT, the event featured an interactive presentation on TTA's state-of-the-art circuit testing devices. Attendees enjoyed live demonstrations and left with a comprehensive understanding of TTA's crucial role in the industry. The dynamic presentation was well-received, with attendees noting the valuable insights for aspiring electrical engineers. TTA concluded by announcing an open house to further connect with students and demonstrate their equipment in action.



## *Raphaël Chabaneix*

Raphael, an associate at the McKool Smith litigation firm, was invited to enlighten UNT's Electrical Engineering Senior Design class on intellectual property and its applications to engineering. Given that many EE seniors are designing original, real-world solutions subject to various copyrights, trademarks, and patents, Raphael shared his extensive experience representing tech corporations in patent enforcement proceedings and licensing litigations. The talk provided comprehensive insights into intellectual property, covering copyrights, patents, NDAs, and trade secrets. EE seniors left with a clearer understanding of the legal resources available to them, a valuable skill that will benefit their engineering careers.





## *Brunno Covolan*

Brunno, Engineering Manager at Intertek Testing Services and a valuable friend of IEEE-UNT, delivered an insightful talk on the often-overlooked field of product standards testing. Addressing UNT's EE seniors who are developing market-ready products, Brunno provided an in-depth look into the rigorous evaluation process at Intertek. He highlighted why approximately 98% of products fail to meet standards on their first assessment. Brunno emphasized that product testing engineers thoroughly ensure consumer safety without stifling innovation. The talk was well-received, with students gaining a deep understanding of the intricate balance between creativity and safety in product development.



## *Dr. Su Yan*

This year, Dr. Su Yan delivered an enlightening presentation on the evolution and impact of Computational Electromagnetics (CEM) in science and engineering. Starting from the late 1950s, various computational methods such as the method of moments (MoM), the finite-difference time-domain (FDTD) method, and the finite-element method (FEM) have been developed to solve Maxwell's equations. Dr. Yan highlighted the explosive growth since the 1990s in advanced computational methods addressing larger-scale and more complex EM applications. These developments include fast algorithms, hybrid techniques, and domain-decomposition methods, which have significantly impacted modern technologies and scientific research. The presentation left students with a deeper understanding of CEM's foundational methods and its evolving capabilities. We extend our gratitude to Dr. Yan for sharing his time and expertise with our department.



## *Christopher Sanderson*

The IEEE UNT Student Branch was thrilled to host Christopher Sanderson, the Director-Elect of Region 5, for an enlightening talk on "Who Cut the Cheese? The Evolution of Change." This event provided students with invaluable insights on fostering their careers in an ever-changing world. Drawing from decades of professional experience, Sanderson delivered a comprehensive and captivating presentation on the art of innovation. Inspired by "Who Moved My Cheese?" by Dr. Spencer Johnson, he used the analogy of Sniff, Scurry, Hem, and Haw to illustrate how to move like an innovator and avoid stagnation in the dynamic field of engineering. Attendees were enthralled by Sanderson's engaging personality, participating in thought-provoking discussions and leaving empowered with new perspectives on embracing and adapting to innovation.





## *Sid Ashok Parmar*

Sid Ashok Parmar, a renowned expert in high voltage DC (HVDC) transmission, presented at UNT, discussing the latest advancements and applications in this field. Parmar's expertise shone as he delved into the intricacies of HVDC transmission systems, highlighting their significance in modern power networks. Through a blend of theoretical insights and practical examples, he demonstrated the potential of HVDC technology to revolutionize energy transmission, addressing challenges such as efficiency, long-distance transmission, and the integration of renewable energy sources.

The event was a resounding success, thanks to Parmar's skillful presentation and the engaging participation of the audience. Attendees gained valuable insights into how HVDC can address key energy transmission challenges and its role in building a more robust and sustainable power grid. The event fostered stimulating discussions around the future of HVDC technology.



## *Brian Rautio*

Brian Rautio, VP of Operations at Sonnet Software, shared his insights on navigating the fine line between engineering and business. With a deep passion for electrical engineering, Rautio presented strategies for maintaining a technical focus while effectively marketing oneself. His presentation explored how engineers can thrive without shifting to managerial roles, drawing on the successes of past innovators and offering practical advice on finding companies that value engineering passion over profit margins. Attendees found the talk both engaging and thought-provoking. We extend our gratitude to Brian Rautio for generously sharing his experiences and expertise.

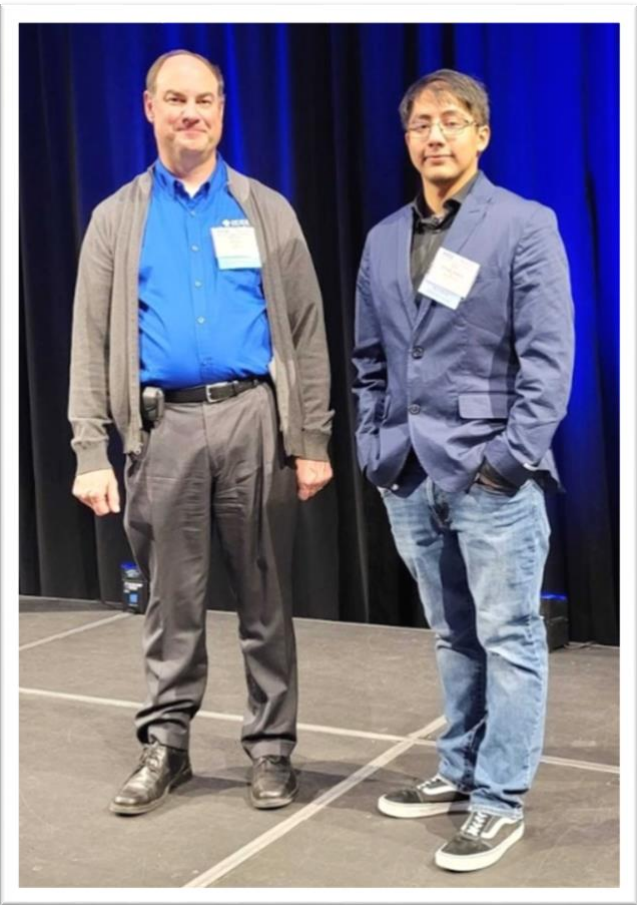


# IEEE MetroCon 2023

Lambda Zeta attended IEEE MetroCon's annual technical conference with enthusiasm, volunteering to help operate the event and engaging in its diverse exhibits and talks. Our chapter even hosted a talk, contributing to the high-quality knowledge shared at the conference. The volunteer efforts were well-received, and several members participated actively, with one team winning first place in the student poster competition.







# Rising Stars Conference

The IEEE Rising Stars Conference, aimed at inspiring and empowering the next generation of engineers and technology professionals, saw four outstanding members of the Lambda Zeta chapter in attendance this year. The conference offered a rich experience with workshops, keynote speeches, networking events, a career fair, and panel discussions. Our members engaged with industry leaders from top tech companies like Keysight, Bentley, and Qualcomm, participated in hands-on sessions, and explored emerging technologies such as artificial intelligence, cybersecurity, and renewable energy. The insights and skills gained will be shared through debriefing sessions and future workshops, enhancing the expertise and opportunities within our HKN chapter.





# IEEE R5 Conference

The UNT IEEE and Lambda Zeta chapter traveled to Springdale, Arkansas, for the IEEE Region 5 Annual Conference. This event offered valuable networking opportunities and a range of talks on technological advancements, professional development, and navigating the industry as young professionals. Our students prepared diligently and competed in Region 5's Circuits, Ethics, Presentations, and Robotics competitions. Upon returning, Lambda Zeta and IEEE UNT were enriched with new professional connections and insights. We are especially proud of our teams, who placed 4th in the R5 Circuits Competition and 3rd in the R5 Ethics Competition. The experience greatly contributed to our members' growth, and many are already looking forward to competing again at the 2025 R5 Conference.











# Consumer Electronics Show (CES)

CES 2024, one of the largest and most influential technology events globally, explored cutting-edge technologies and engaged with industry leaders. The conference featured exhibition halls showcasing the latest in smart home devices, automotive technology, wearable tech, and virtual reality, along with networking events for potential collaborations and job opportunities. Four members of our HKN chapter attended, interacting with startups presenting groundbreaking innovations and participating in panels on AI, 5G, sustainable solutions, and healthcare innovation. The hands-on experiences and insights gained will be shared with our chapter through IEEE/HKN presentations and workshops, enhancing our collective knowledge and fostering an environment of learning and innovation.



# Student Leadership Conference





Lambda Zeta attended a conference at the University of Houston, joining hundreds of Eta Kappa Nu chapters from around the world. This event provided an extraordinary opportunity to connect with like-minded leaders of exceptional character. Our chapter enthusiastically participated in numerous activities, immersing ourselves in the vibrant energy of the attendees and making both new and rekindling old professional connections. Boasting the highest member participation, our chapter dedicated itself to this invaluable exchange of knowledge and connections. Members returned with abundant newfound wisdom, joyfully expressing gratitude toward the wonderful Eta Kappa Nu community.









# Life Members Conference



Four members of the Lambda Zeta chapter attended the inaugural IEEE Life Members Conference, marking our first participation in this prestigious event designed for networking and staying updated on technological advancements. A highlight was Benjamin Hand's invitation to speak on a panel hosted by John McDonald, HKN Governor at Large, discussing mentoring and its impact. Additionally, newly inducted member Matt Rao participated in a separate panel. The conference was a fantastic opportunity for our members to connect with IEEE life members from around the world, expanding and deepening our network. The insights and connections gained will greatly benefit our chapter's growth and engagement within the professional community.







# SOCIAL

The Lambda Zeta Chapter held several events that engaged our members and fellow students. These events offered our members a respite from school and a fun way to get to know each other.

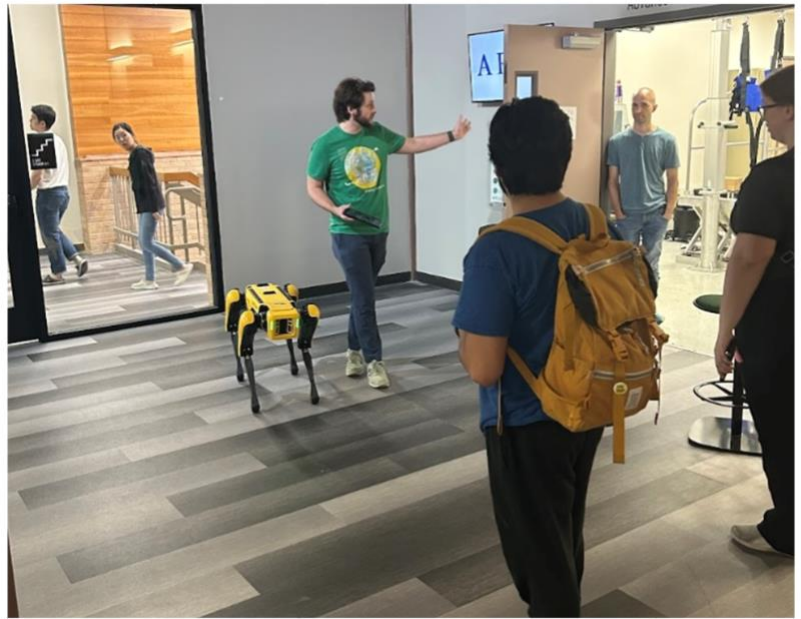
# 3<sup>rd</sup> Annual Research Showcase

The UNT College of Engineering hosted an open house event inviting all labs in the CSCE and EE departments. This year's event saw participation from ten EE labs, nine CSCE labs, and one BMEN lab. To encourage exploration, a QR code scavenger hunt was organized, with raffle prizes for those who visited the most labs.

The event surpassed previous IEEE-HKN Research Showcase records with twenty labs participating, including more CSCE labs and a successful BMEN lab. The accompanying website for the scavenger hunt was robust, effectively incentivizing students to engage with the participating labs.









# Bowling Night



IEEE and Lambda Zeta members, along with many others, gathered for an exciting night of strikes and turkeys! This event was a fantastic opportunity for students to have fun and get to know the IEEE UNT family. The evening saw a great turnout of potential new members and current members alike, all enjoying a fantastic night of bowling. Strikes were thrown, turkeys were slain, and everyone had a wonderful time bonding and incorporating more students into the life at IEEE and HKN Lambda Zeta at UNT.



# Congressional Visit Day



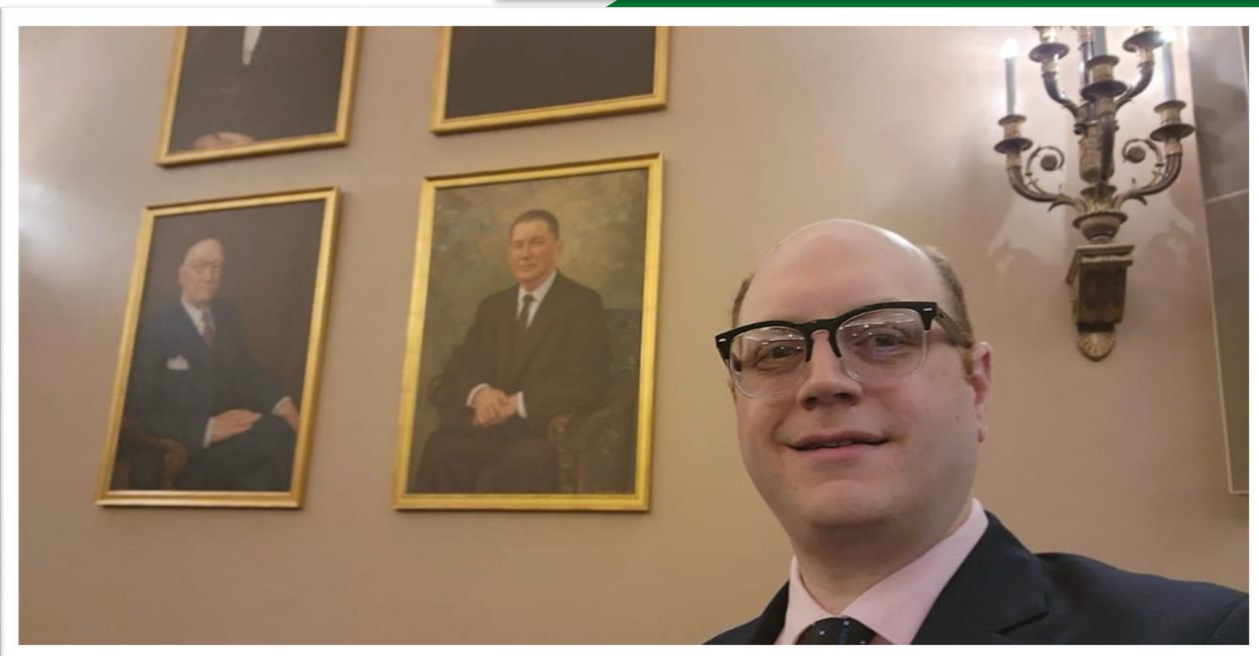
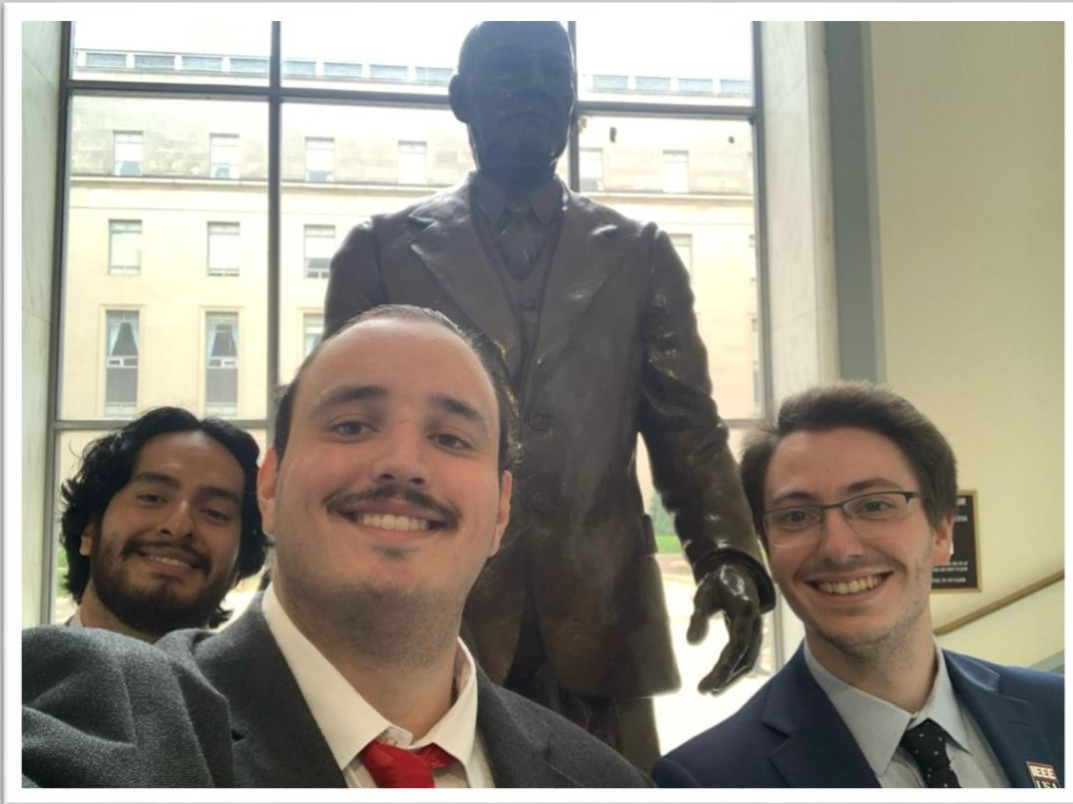
Lambda Zeta made waves at IEEE-USA's Congressional Visits Day (CVD) 2024! Thanks to the incredible support of the Fort Worth Section, Lambda Zeta members traveled to Washington, D.C. for this electrifying event. A delegation of five members met with congressional offices, advocating for critical legislation like the Create AI Act and the Keep STEM Talent Act. Their passion and expertise sparked productive discussions about the future of science and technology. After a successful day of advocacy, Lambda Zeta and fellow participants celebrated a truly impactful CVD 2024, leaving a mark on the future of American innovation.









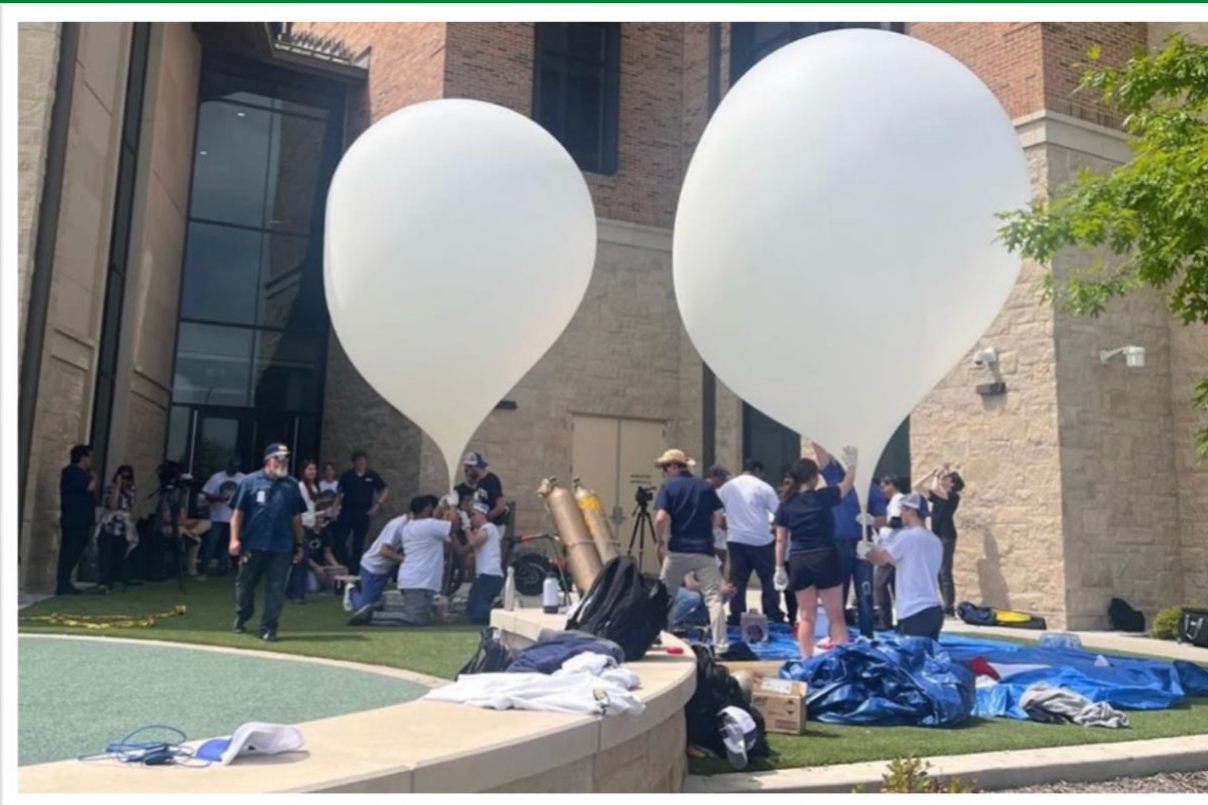


# Solar Eclipse

An incredible once-in-a-lifetime opportunity presented itself as a total solar eclipse passed directly over the UNT Frisco campus. Partnering with Penn State, Lambda Zeta and IEEE UNT hosted an extraordinary event for the entire community. This collaboration provided an educational experience that enabled attendees to safely view the eclipse while learning about the science behind this astronomical phenomenon.



The event aimed to inspire younger kids and non-STEM students by showcasing innovative technology, including the launch of a weather balloon equipped with payloads to measure various signals affected by the eclipse. This hands-on demonstration offered a unique learning experience and engaged the community in the wonders of science and technology. The event effectively promoted STEM education, fostered community engagement, and strengthened our partnership with other IEEE chapters.



# OFFICIAL BUSINESS



## General Meetings

Our Eta Kappa Nu chapter held numerous meetings throughout the past year, allowing the entire membership of Lambda Zeta to meet, plan events, finalize candidates for induction, and hold officer elections. The success of these events was made possible by the continued involvement of all our members. The achievements documented in this report are a testament to the collective efforts and dedication of our membership.

## Officer Meetings

The regular progression of HKN business requires meticulous planning to execute events at the scale our chapter has come to expect. To meet these requirements, the leadership holds weekly meetings with all officers and advisors, along with numerous small group sessions to strategize for the upcoming semester and year.



# Induction Fall 2023



## Inductees

Benjamin Hand

Adam Malmquist

Cihan Tunc

Nathan Nixon

Thinh Le

Austen Guerrero

John Gitahi

Jinran Zhang

Esmeralda Serna

Burak Tufeki





# Induction Spring 2024



## Inductees

Bryce Slovacek

Tyler Miller

Jefferey Calloway

Jude Abunabaa

Kirk Humes

Marc Torres

Matthew Rao

Jean Hobson







# Officers



Fall 2023 - Spring 2024

President

Nick Bright

Vice President

Austen Guerrero

Treasurer

Nicholas Esponda

Corresponding Secretary

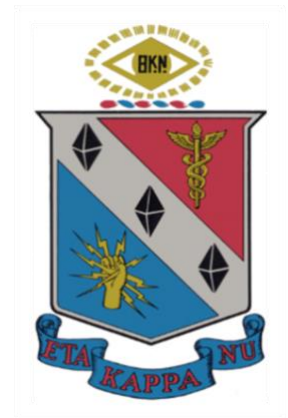
Kevin Pham

Recording Secretary

Esmeralda Serna



# HKN Hours



Event	Hours
Summer Officer Planning Meetings	70
First Flight College Day Activity Fair	25
Technical Speaker: Dr. Kalyan K. Sen	20
First Week of School Tabling	6
3rd Annual Research Showcase	195
Induction Discussions	26
LaTeX Workshop	8
Resume Review	40
Induction Discussions 2	7
Intro to Linux Workshop	13
Fall 2023 Induction Ceremony	24
Intro to Microcontrollers	16
2023 Board of Governors Election Discussion	10
Founders Day Campus Cleanup	14
2023 IEEE MetroCon	133
2023 Student Leadership Conference	484
Technical Talk: Test Technology Associates	10
Technical Talk: Raphaël Chabaneix	19



Technical Talk: Brunno Covolan	17
Study Halls and Recitations	190
Rising Stars Conference	144
CES	120
UNT DP Welcome Back Bash	7
Resume Review	44
Mock Interviews	48
Technical Talk: Dr. Su Yan	15
Bowling Night	15
Technical Talk: Christopher Sanderson	35
Technical Talk: Sid Ashok Parmar	13
Spring 2024 Induction Ceremony	62
Technical Talk: Brunno Covolan	23
Bridging Gaps in Advanced Network Management and Healthcare with AI and Connectivity	11
Powering Artificial Intelligence and Data Center Processors Seminar	14
Scalable Semiconductor Quantum Light Sources	14
Electrochemical Sensing Systems for Bio/chemical Applications: From Hardware to Software	16
UNT Electrical Engineering Town Hall	18
IEEE R5 Conference	242
CVD	115

Life Members Conference	176
AlN/AlScN Acoustic Resonant Systems Based on Ultra-thin Piezoelectric Films	6
Advanced Optical Materials and Devices via Nanoscale Light-Matter Interactions	7
Communication-Efficient Distributed Control of Multi-Agent Systems and Its Applications	8
Hybrid Bioprinting (Hybprinting) for Multi-functional Interface Engineering	8
Infrared Spectroscopy and Vibrational Imaging of Living Cells using Plasmonic Metasurfaces	12
Technical Talk: Brian Rautio	20
Study Halls and Recitations	134
Solar Eclipse	42
<b>TOTAL HKN HOURS</b>	<b>2,696</b>