



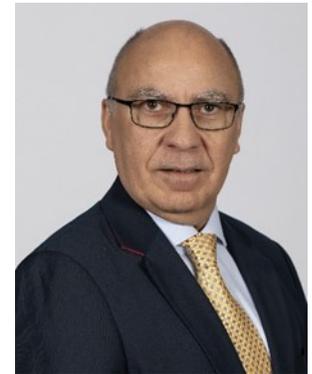
IEEE Region 3



<https://r3.ieee.org/>

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As we are preparing for fall with cooler weather to start, I hope you and your families had an enjoyable summer. We started the summer with a sad news on one of our esteemed members. William (Bill) Ratcliff, IEEE Life Senior Member and former Region 3 Director (2008-2009), passed away on 20 June 2024. Bill made a significant impact on IEEE MGA through his efforts to emphasize the importance of the member, leading the drive to change the Regional Activities Board to the Member and Geographic Activities Board. Bill was also known for strategic thinking and for encouraging teams to determine the root cause of a problem before seeking solutions. He led IEEE Strategic Planning Committee, Region 3 Strategic Planning Committee, and helped the IEEE MOVE project develop and execute its strategic plan. Our condolences go to Bill’s family.



*Eric Grigorian,
Director, Region 3*

Now that schools and classes are starting to get back in fall session, this is a great opportunity for all Sections to reach out to their affiliated Student Branches and bring them into the fold of Section activities. Most, if not all of the Student Branches have new leadership that may not be aware of all that IEEE can do for them, including multitude of technical meetings that they can participate in.

End of summer and beginning of fall also brings about annual elections at all levels within IEEE. You should have already received information and voting for the IEEE Annual Election for selection of President-Elect candidate. This year we have 3 very great candidates and I urge you to cast your vote prior to the deadline of 12:00 noon

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ET (16:00 UTC-04) on 1 October 2024. You can cast your vote at iee.org/elections. Additionally, we have our Section election processes gearing up. This year, I have opted to open up the nominations process to all members within the Region, soliciting anyone within the Region to reach out to their Section Nomination Committee or their Region's Area Chair if they have interest to serve in any capacity in their respective Section. Except for some Sections that were proactive and had already started their nominations, deadline for nominations for all other Sections is September 19th, 2024. These are all part of expanding the reach and getting potential new leaders in each Section, or even better, identify individuals within dormant Sections in our Region that are interested in becoming active. I am committed to rejuvenate any Section within the Region and if you have any ideas and suggestions, please feel free to reach out to me directly.

While we are talking about elections, I hope that you have taken advantage of many online training classes that have been posted by IEEE Member Geographic Area (MGA) on the new election process. If you are not familiar with the new unit election process, please visit [MGA](#) site and familiarize yourself to this new process immediately, including using vTools Elections. **All Sections within Region 3 that have an election during this year, and in the future, should use vTools Elections for the nominations and elections.** This should not be a surprise to the Sections as we had talked about this during Region 3 meeting at SoutheastCon 2024 in Atlanta.

With all the activities that the Region has been involved with, several accolades are in order. First of all, congratulation to Atlanta Section for being selected as 2024 Large Section of the year. Atlanta Section continues to be very active across the board in many areas including K-12 STEM and member engagement. I urge all Sections within the Region to start considering nominating themselves for Section Awards, no matter what the size of the Section is. I am sure all of our active sections are engaged with great engagement for their members and their community and should highlight this for recognition by IEEE. Additionally, I would like to recognize the Region's Project team as 2 of the submitted projects for MGA Excess Funds that was submitted right after SoutheastCon, was funded. If your Section is interested in getting engaged with XRP STEM Project or Cyber Project, please reach out to Allen Jones or Region 3 Projects Committee for more info. We can't also forget about Sharlene Brown, as she was featured in the recent issue of the Institute. More details on this recognition is included in this newsletter.

Our cross regional collaboration activities has also been increasing. Damith Wickramanayake just recently organized a Region 3 – Region 10 2024 Educational Activities Best Practice Webinar. We have also been trying to review and finalize a Region 3 – Region 9 MOU for Caribbean Conference (CaribCon) that would alternate among Region 3 and Region 9 Sections that are in or near Caribbean nations. In coordination with other regional YPs, Binesh Kumar also helped in organizing "Generative AI: Friend or Foe for Students & Young Professionals" that was just recently held.

Based on updated regional vitality reports, we are seeing growth in membership within the region. As a Region 3 has continued to excel its membership out of the six US Regions. Our membership in July was up 3% Year-over-Year (YoY), with a total membership of 23,523.

This IEEE Region 3 Newsletter is sent to the members of Region 3. The information herein may be used in section and chapter newsletters. The opinions expressed, as well as the technical accuracy of authors, advertisers, or speakers published in this newsletter are those of the individual authors, advertisers, and speakers. Therefore, no endorsement by the IEEE, its officers, or its members is made or implied.

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Thanks to our own Jacob Kulangara, we are also continuously adding new Life Member Affinity Groups to our Sections within the Region. Please take advantage of Life Members and get them engaged with your Student Branches, Young Professionals, and members within your Section. Binesh Kumar has also been active in identifying and implementing new initiatives, activities, and presentations for our YP group, in an effort to get them engaged. Please get your Section’s YP representative to get with Binesh to get them engaged and take advantage of the great young talents available to your Sections.

On other fronts, we are continuing to work with IEEE-USA on hosting the 2024 Innovation, Workforce, and Research Conferences (IWRC) in Aerospace and Defense to Region 3. The event is scheduled for December 3rd & 4th, 2024 in Huntsville, AL. [IWRC in Aerospace and Defense](#) intends to bring together stakeholders from industry, government, and academia in Huntsville, Alabama, to meet, learn, talk, and discuss the CHIPS Act and other government programs that promote innovation and small business in the southeast. If your Section is active in activities related to the CHIPS Act, or are interested in being engaged, please contact me or Melissa Carl, m.carl@ieee.org.

As always, thanks for all that you do for IEEE!

Eric Grigorian, P.E., PMP
 2024-2025 IEEE Region 3 Director

A Non-Engineer’s Journey to IEEE Leadership

Sharlene Brown, from factory worker to accountant and human resources professional, to active IEEE volunteer including founder of Jamaica Section’s WIE affinity group. Read about her amazing journey in the [The Institute](#).

<https://spectrum.ieee.org/non-engineers-journey-to-ieee>



Past Director Report

Theresa Brunasso [theresa.brunasso@ieee.org]
IEEE R3 Past Director

As summer comes to an end, I hope you and your families are healthy and enjoying some cooler weather.

Right now, there is plenty of news coverage about the US Presidential election, but I want to remind you that the annual [IEEE Election](#) is ongoing, and voting is now open. Our very own Mary Ellen Randall, past Region 3 Director and the creator of MOVE is running for IEEE President-Elect. You can see her and the other candidates in the [Meet the Candidates Forum](#). In addition to selecting the IEEE President-Elect, we are electing the [IEEE-USA President-Elect](#) and the [Technical Activities Vice President-Elect](#). I encourage you all to vote.

The Region 3 Nominations and Appointments committee recommended a slate of candidates for the Region 3 2026 Director-Elect, and the Executive Committee approved the slate at the August 26th meeting. The Region 3 committee, which includes all the Section Chairs will vote on the slate later this year, and then we will share the slate of candidates with you.

Now that classes are back in session, I hope you'll spend time with student members. IEEE Day is October 1st, and it is not too soon to start planning an [IEEE Day Event](#). IEEE Day celebrates the first time in history when engineers worldwide gathered to share their technical ideas in 1884. That's 140 years ago! Every year, IEEE members in IEEE Sections, Student Branches, Affinity groups, and Society Chapters hold both virtual and in person events to celebrate IEEE Day. I hope you will participate in an event.

As always, thanks for all you do for IEEE!

Theresa Brunasso
IEEE R3 Past Director

Region 3 Activities Funding Recipient Testimonials

Sharlene Brown [sharlenicolabrown@gmail.com]

The Professional Activities Committee (PAC) continues to grant funding support to Section's, Affinity groups and Student Branches to support their non technical activities. The PAC team has randomly selected a few PAC recipients to share their testimonial about their experience with the funding application process, the approval process and advice to Sections, Affinity groups and Student Branches when applying for PAC funding. Here is what the university of Kentucky Student Branch, R3 Women in Engineering Affinity Group Representative, Atlanta Section and Melbourne and Canaveral Section Representative has to say:

Regina Hannemann -University of Kentucky Student Branch Counsellor:

Application is easy with a spreadsheet, approval was fast and uncomplicated. We applied very last minute and still got the funding approval in time to be able to incorporate the extra funding into our budget for our event. Our advice to other student branch is to APPLY! Student Branches really need to check in with their section to get the process done. Our branch has good standing with the section (and vice versa), so we got all signatures in quickly. A little more lead time would have been nice, but this was our first application, we will know to apply earlier next summer.



Ebonee Walker - R3 WIE Representative :

As R3 WIE Coordinator, PAC funds supported the WIE AG's panel discussion at SoutheastCon 2024. I was told PAC funds exist for these types of activities. I applied via my Huntsville Section for the regional event. The Huntsville Section provided the initial funding, so the PAC timeline had no effect on the event's execution. But the application was reviewed within a month of submission; however, it was sent back for a correction. After that clarification, it was approved. Our advice to other Affinity groups is to put the PAC to work: if you have an event that will have a professional aspect, then complete the funding application and make PAC decide whether they will fund you.



Melody Richardson - Atlanta Section -Project Lead SoutheastCon Networking Event.

My experience with the application submission was straightforward and user-friendly. The approval process, however, can vary; at times, it's quick, while other instances may require more time depending on the specifics of the application. I have found applying prior to the event (rather than after the event) leads to a quicker approval. My advice is to apply even if you're unsure whether your event qualifies for PAC funding. If you have any doubts, don't hesitate to reach out to the committee for guidance—they're there to help.



Vince Socci -Project Lead - Joint Melbourne & Canaveral Section

The Excel form is very handy and makes the project planning and management easier. The application took longer than expected when we eventually had our application reviewed. Our advice to other Organization units (ou's) is to get your OU matching funding approved early so that you have time to go through the PAC process. Additionally brainstorm project ideas using the examples tab on the application spreadsheet because there are many opportunities for valuable programs to be funded.



Please contact PAC Chair, Sharlene Brown at sharlenicolabrown@gmail.com if further details are needed.



IEEE Membership Renewal Now Open for 2025

Renew before 1 November 2024 to be entered in the early renewal drawing.

RENEW NOW >

- IEEE Membership Renewal Now Open for 2025
- Renew Early and Enter to Win (Early renewal drawing for use 3 Sept - 31 Oct)
- Your Membership Expires 31 December 2024
- Last Chance to Renew Your IEEE Membership (Grace period for use 1 Jan - 28 Feb)
- Stay Connected with IEEE!
- It's Time to Renew Your Membership
- Don't Lose Access to Your Benefits

2024 Life Member Individual Service Award 2024

Jacob Kulangara [jmkulang@gmail.com]

Region 3 LM Coordinator

Two members of IEEE Region 3 contributed to a IEEE Milestone achievement recognition.

This year the IEEE Life Member Individual Service Award for Region 3 was given to Dr. Stevo Bozinovski, professor of Computer Science at South Carolina State University. The certificate of award states that it is for:

"Significant contribution and outstanding service as Life Member and acknowledgement of IEEE Milestone recognition"

Dr Bozinovski was a Vice Chair between 2015 and 2017, and then Chair of the IEEE Columbia Section of IEEE Region 3. He organized Technical Sessions each month, until the breakout of Covid-19 in 2020. He personally gave 5 presentations as section Technical sessions covering, Robotics and Flexible Manufacturing, Genetics and Biological Manufacturing, Artificial Intelligence, Brain-Robot Interface, and Riemann zeta Function. For his service he received Outstanding Service Award from Region 3 in 2017. In 2021 he published an article in the Life Member Newsletter, in the section of Tales of Vault, on control of a robot using EEG signals.

In 2023 he received the IEEE Milestone recognition, for his pioneering work, the worldwide first control of a robot using human brain signals, which happened in 1988 in Skopje, Macedonia. Another member of IEEE Region 3, Liljana Bozinovska, MD. PhD, was part of the 1988 team. The third member was Mr Mihail Sestakov, now in Australia.



Two members of the IEEE Region 3, Stevo Bozinovski and Liljana Bozinovska (left and center), and Mihail Sestakov, at the 2023 reception of the IEEE Milestone achievement recognition. Above is the IEEE plaque, commemorating the 1988 achievement.

July 2024 Melbourne Section EXCOM Meeting and Magic Show
 Raul Ortega [rortega@nuvosource.com]

The Melbourne Section is always looking for exciting ways to spice up their EXCOM and other meetings. In July, Section Secretary Mary Flavin called upon her well known contacts to attend the July meeting and put on a Magic Show! Mr. Scott Barhold, who had previously performed for the section called upon his friend and partner John Ferrentino, both professional and well known magicians, who agreed to try some of their new tricks on the section audience.



The section meeting was very well attended by section members and/or family members who enjoyed and participated in the show tricks. From disappearing articles to unknown source noises, the two magicians wowed the crowd!



Special thanks to Secretary Mary Flavin for going out of her way to schedule this production and to her assistants who helped to set up the show stage, seating and serving a delicious meal just prior to the show. Oh! And the section also had an outstanding Excom Section Meeting!!

IEEE Savannah Section Nancy Mead [nrmcmu@gmail.com]

The IEEE Savannah Section had a very successful Electrical Engineering day for the Savannah Engineering Academy, hosted by Georgia Southern University – Armstrong Campus. This event was also the same as last year. We had 29 students and 6 volunteers for this event. At least 4 were IEEE members. Attached are some pictures as well as the flyer with the description. We also provided lunch for the students on June 7, the last day of the event, and IEEE Savannah Section volunteers were there that day as well.



William "Bill" Ratcliff



We regret to report the passing of our friend and colleague, Bill Ratcliff.

Bill's IEEE leadership and impact included the Member and Geographic Activities Board, the IEEE Savannah Section, the IEEE Strategic Planning Committee, the Region 3 Strategic Planning Committee, and the IEEE MOVE project. Bill was the Director of IEEE Region 3 in 2008.

<https://www.bakermccullough.com/obituaries/William-Ratcliff-2/#!/Obituary>

2024 IEEE Annual Election

Balloting for the 2024 IEEE Annual Election is underway. Take the opportunity to vote and help choose the future volunteer leadership of IEEE.

- You will need your IEEE Account (username and password) to authenticate access. Completed ballots will be accepted until 12:00 noon Eastern Time (16:00 UTC) on 1 October 2024.
- Candidate biographies and statements are available within the electronic ballot for viewing as you cast your vote.
- Information about the candidates can also be found on the IEEE Annual Election [website](#) and available in [PDF format](#) (2MB).

When accessing your ballot electronically, you may save your choices at any point by clicking "Sign Out" and return later to cast your vote. For your vote to count, be sure to click the "Submit Ballot" button on the ballot summary page.

After your ballot is submitted, you will receive an e-mail confirmation.

>> [Access Ballot](#)

If you have any questions, contact the IEEE Contact Center at contactcenter@ieee.org; or visit the Support Center at <https://supportcenter.ieee.org/>.

Upcoming IEEE Award Events and Deadlines:

- **IEEE-USA Awards:** (15 September 2024)
<https://ieeusa.org/volunteers/awards-recognition/>
- **Member and Geographic Activities (MGA) Awards:** various deadlines (15 October 2024)
<https://mga.ieee.org/awards>
- **2025 Region 3 Awards (December 1):**
<https://ieee.secure-platform.com/a/solicitations/1055/home>

*Gemini Elementary School—IEEE Melbourne Section
Kindergarten IEEE STEM Creative EOY Outing
Raul Ortega [rortega@nuvosource.com]*

The Melbourne Section was called upon with very short notice to participate in a school year end kindergarten creative lunch & learn outing. The section decided to send their Balloon Animal Artist, who wishes to remain anonymous, to the rescue and join the team of other STEM teaches and volunteers to entertain and awaken the creative spirit in about 75 kindergarteners. All kinds of activities were available for the kids to have a few hours of fun and lunch before the school year ends on May 24th .



The Kindergarteners, as well as parents and teachers, were thrilled to be able to join in creating all sorts of animals – poodles, cats, teddy bears, swans, horses, giraffs as well as other balloons – swords, flowers, hats and others. The creative spirit in all the boys and girls was definitely prepared for a long summer with all the activities available.



Special thanks to members of the anonymous Melbourne Section balloon artist's family who responded on short notice and joined in the fun. They also want to remain anonymous!!!

MOVE

Loretta Arellano [l.arellano@ieee.org]

Deployments in 2024 by Kit August

MOVE Community Outreach, an IEEE-USA Initiative, is committed to assisting victims of and responders to natural disasters. Growing rapidly, MOVE recent responded to New Mexico (NM) Ruidoso Wildfires driven by heat and winds, and then Hurricane Beryl in Houston Texas (TX). The MOVE team keeps up with STEM and community engagement, ongoing technology updates, training, and is also expanding to new locations identified as areas of great need.

Facebook posts and other social media helped many people keep up with the important work of MOVE volunteers responding to emergencies. For example, from the very first day when MOVE received the call to respond to the Ruidoso Wildfires, and also Hurricane Beryl, pictures and updates from the volunteers who responded provided near real time information. These posts brought us all close to the situation. These posts gave us a deep respect and gratitude for all these volunteers who are dedicated. They volunteer every day to fulfill the humanitarian goals in the mission of advancing sustainable technology for humanity. Follow us on Facebook #ieeeusamove



Hurricane Preparedness By Grayson Randall

The 2024 Hurricane season, June 1 – November 30, is expected to be extremely active. With water temperatures at extremely high levels (hurricane fuel) and wind patterns favoring storm development... most hurricane forecasting organizations (eg. NOA and Weather Channel) are expecting a record number of hurricanes. These are only forecasts as there are many factors, but most meteorologists agree we should plan for the worst. What has MOVE done to address this potential threat?

- 1) We moved our MOVE-1 truck from San Diego California to the Dallas/Fort Worth Metroplex to be closer to the Gulf of Mexico. MOVE-2 still resides in Raleigh NC. This gives us one day access to the Atlantic and Gulf coast states.
- 2) A 3rd vehicle for San Diego California is in process. Details to follow.
- 3) We have implemented new LEO satellite equipment and purchased new 5G cellular equipment to support better data rates and connectivity.
- 4) We completed in-person driver refresh classes for all our drivers to prepare them for the new equipment and to refresh their driving skills.
- 5) We are working closely with our team in Puerto Rico to ensure they are ready to support disaster operations.

What can you do to prepare?

1) Make sure you have a hurricane plan. Food, water, and electricity may be unavailable for days and travel/assistance severely delayed.... Are you ready? Be Prepared before the storm!!!! Have a plan!!!! Find helpful guidance checklist at https://www.redcross.org/content/dam/redcross/get-help/pdfs/hurricane/EN_Hurricane-Safety-Checklist.pdf

2) Follow the directions of emergency management!!! If they tell you to evacuate, Please Evacuate!!! Even if it was a false call the last several times, this one could save your life. If your state or county has evacuation zones, know your zone and evacuation route. Evacuation requests are not done without serious considerations for life safety.

3) Consider volunteering for MOVE. We have many jobs to fill. You can deploy to the disasters, provide STEM Outreach, or we have many jobs that can be done remotely. **Volunteer Interest Form** >> <https://bit.ly/MOVE-SIGNUP>





IEEE Eta Kappa Nu



Student Leadership
CONFERENCE

*IEEE-HKN offers students
and graduate schools an opportunity to connect at its annual Student
Leadership Conference in Charlotte!*

James Conrad, PhD [jmconrad@charlotte.edu]

On November 15-17, over 300 students and faculty from around the world will be convening in Charlotte, North Carolina for the [IEEE-Eta Kappa Nu \(HKN\) Student Leadership Conference](#) to share best practices and learn from technology leaders from industry and IEEE Societies. HKN is IEEE's honor society with chapters at over 279 universities globally; and, the Student Leadership Conference is its largest annual, in-person gathering. The conference will feature over 20 different learning sessions and workshops including 3 hands-on workshops delivered by Texas Instruments, Analog Devices, and Test Equity/Keysight. Plus there will be two dedicated Recruitment Fairs where students will be able to explore which IEEE Societies could be their potential "technical homes," learn about degree options from graduate schools, and meet with recruiters for internship and job opportunities.

According to Dr. Jim Conrad, 2022 HKN President and this year's Conference Committee chair, "The greatest value of the conference is the unique opportunity to network with fellow HKN students to build collaborations, meet future colleagues, and share best practices from their chapters."

To make the opportunity to attend attainable for students, HKN is able to offer each chapter one hotel room for two nights for up to four students through the generosity of the Samueli Foundation. However, HKN does not cover the transportation costs for students to attend. We ask Section leaders to consider travel grants to help students with the transportation costs. Since the conference is within Region 3 this year, these costs will not be high. To encourage more student engagement in this IEEE activity, you can even consider providing more financial support so additional students beyond the four supported by HKN can attend.

IEEE-HKN Alumni Members can also attend and meet IEEE's future leaders – more information on registering for the entire conference or just the Saturday evening banquet are at: <https://slc.hkn.events/>

To learn more about [sponsorship opportunities](#) and how you can support your students to take advantage of this wonderful, and often, life-changing opportunity, you can contact Nancy Ostin at n.ostin@ieee.org. To get a flavor of last year's conference, you can check out this [video](#).



IEEE SoutheastCon 2025 – Call for Company/University Involvement

James Conrad, PhD [jmconrad@charlotte.edu]

The annual IEEE Region 3 Student and Technical conference, **SoutheastCon 2025: Industry and Academia in Partnership**, will be held at the Charlotte-Concord, NC Embassy Suites and Convention Center from March 28 through 30. This conference attracts 500 - 600 students and 200 - 300 IEEE professionals each year. There is over 40,000 sq. feet of convention space and there will be ample room for all of the planned activities.

The conference activities include:

- A technical conference portion comprised of workshops, tutorial sessions, technical paper sessions, poster sessions, and technical exhibits (tables). The topics include the broad discipline of Electrical and Computer Engineering.
- A student conference portion, which **attracts the brightest ECE students and university faculty from across the Southeast USA**. Specific activities include:
 - ◊ Robotic hardware and software competitions.
 - ◊ Professional development workshops on Friday and Saturday. Several companies and practicing engineers will talk about various technologies, business practices, and experiences as a young engineer.
 - ◊ A student career and graduate program fair (company and graduate school tables).
- The Region 3 volunteer leader's meetings.

There are many opportunities for companies, organizations, and universities to participate, including:

- Conducting one-hour or two-hour workshops on products and product lines.
- Conducting a one-hour or two-hour workshop on a professional development skill.
- Participating in the student job and graduate program fair/expo (Friday and Saturday).
- Hosting a lunch or dinner, underwriting a student competition, or providing funding for conference “giveaways” (T-shirts, lanyards).

For more detail, visit the conference Patron/exhibitor website at: <https://ieeesoutheastcon.org/elementor-5585/> or contact: Jim Conrad, Technical Program Chair, at 704-687-8597 or jmconrad@charlotte.edu.

IEEE-HKN Student Leadership Conference



IEEE Eta Kappa Nu (IEEE-HKN) Student Leadership Conference will be held November 15–17, 2024 in Charlotte, NC.

Students, have you registered for the 2024 IEEE-HKN Student Leadership Conference? Learn more about the event and register here by September 27th to get the early bird rate: <https://slc.hkn.events/registration/#HKNSLC2024>

A promotional graphic for the IEEE-HKN Student Leadership Conference (SLC) 2024. The graphic has a yellow and white background. On the right, there is a photograph of four students holding large letters that spell 'HKN'. On the left, there is a yellow triangle containing the text 'IEEE-HKN SLC' in large blue letters. Below this, there is a list of details: 'NOV. 15-17', 'CHARLOTTE, NC', 'REGISTRATION OPEN!', and 'EARLY BIRD UNTIL 9/27'. At the bottom left of the graphic, the URL 'HTTPS://SLC.HKN.EVENTS/' is provided.

Advancements in Machine Learning Classification Techniques for Data Quality Improvement

Akshay Agarwal [akshay31@gmail.com]

Poor data quality can cause inaccurate analysis and decision-making in information-driven systems. Algorithms for Machine learning (ML) classification have emerged as efficient tools for addressing a wide range of data quality issues by automatically finding and correcting anomalies in datasets. There are various methods and strategies used to apply ML classifiers to tasks such as data purification, outlier identification, missing value imputation, and record linkage. The evaluation criteria and performance analysis methodologies used to measure the efficacy of machine learning models in resolving data quality issues are evolving.

Overview of Machine Learning Classification Techniques

Machine learning classification techniques are critical for recognizing patterns and making projections from input data. Four popular methods are Naive Bayes, Support Vector Machines (SVM), Random Forest, and Neural Networks. Each strategy has unique advantages and disadvantages.

Naive Bayes

A probabilistic model is based on Bayes' theorem. It assumes feature independence based on the class label. Naive Bayes is renowned for its simplicity as well as its efficacy. Its ability to handle enormous datasets and high-dimensional data sets makes it a popular choice for a variety of applications. Furthermore, it performs well in text classification problems due to the intrinsic sparsity of text data. Naive Bayes is capable of effectively handling both numerical and categorical features. However, its "naive" assumption of feature independence may restrict its usefulness in some cases.

Support Vector Machines (SVM)

SVM seeks the ideal border or hyperplane that maximizes the margin between various classes in high-dimensional domains. SVM's versatility stems from being able to handle nonlinearly distinguishable data using kernel functions. Large datasets and high-dimensional data benefit greatly from SVM. However, choosing suitable kernel types and optimizing relevant parameters can be difficult during implementation. Furthermore, SVM's performance in high-dimensional feature spaces limits its comprehensibility.

Random Forest

A combination approach that mixes several decision trees to improve overall prediction accuracy. Random Forest lowers variation by aggregating the results of individual trees and offers feature importance. This approach supports both numerical and category features. While Random Forest produces excellent results, overfitting may occur if the number of trees surpasses a sensible threshold.

Neural Networks

Neural Networks mimic the structure and functionality of the human brain. Neural Networks understand sophisticated patterns and relationships in data via nodes that are interlinked. Their strength rests in their ability to recognize complicated structures, which makes them important for a variety of applications. In contrast to other methods, constructing and training Neural Networks requires significant computational resources and time investment. Furthermore, their opaque character makes interpretation difficult.

Understanding the differences between Naive Bayes, Support Vector Machines, Random Forests, and Neural Networks allows programmers to choose the best technique for their specific use case. The choice is influenced by data size, dimensionality, complexity, interpretability, and available processing resources. Naive Bayes, due to its simplicity and efficacy, may be suitable for text categorization jobs. On the contrary, SVM's robustness to nonlinearly separable data makes it an excellent contender for specialized applications. Meanwhile, Random Forest improves accuracy and minimizes volatility. Finally, although Neural Networks need significant resources and are less interpretable, they display exceptional capabilities in recognizing complicated patterns.

Methodologies and Approaches in ML Classification for Data Quality Improvement

Machine learning (ML) classification algorithms are crucial for enhancing data quality since they can automatically detect and rectify inconsistent or erroneous data points in large datasets. Recently, there has been a significant increase in interest in investigating new procedures and ways to tackle the difficulties presented by the growing complexity and volume of data. This post will examine notable machine learning classification algorithms that aim to improve data quality. We will investigate their essential characteristics and practical uses.

Active Learning (AL)

AL is a widely used method that involves the collaboration of human experience with machine learning algorithms to continuously improve the performance of a classifier through iterative refinement. Active learning (AL) commences by

manually categorizing a limited number of cases and subsequently trains the classifier using this initial dataset. Subsequently, the computer chooses ambiguous cases, namely those whose true labels are still undetermined, and seeks human verification. Once the ground truth labels are acquired, the classifier enhances its knowledge base and continues to assign labels to new uncertain cases until it reaches a state of convergence.

Deep Learning (DL)

A very promising machine learning classification technique that utilizes artificial neural networks that are inspired by the structure and operation of biological neurons. Deep learning models can autonomously acquire feature representations with hierarchy from unprocessed data by applying multiple layers of nonlinear transformations. Deep learning is highly proficient in processing intricate data formats, such as images, sounds, and text, which allows it to achieve cutting-edge performance in a wide range of applications.

Ensemble Learning (EL)

A robust classification approach in machine learning that combines numerous weak learners to form a strong classifier. Ensemble learning methods, such as Random Forest, Gradient Boosting, and AdaBoost, create a variety of decision trees or other base models using subsets of the given data. During the prediction process, each individual base model contributes a vote, and the ultimate output is chosen by combining or aggregating these votes. Ensemble learning (EL) models generally achieve higher accuracy and resilience compared to individual-based learners because they have the ability to capture complementary patterns in the data.

Feature Engineering (FE)

A crucial part of ML classification pipelines involves transforming raw data into meaningful representations that may be used as input for ML models. Feature extraction techniques, such as Bag of Words, TF-IDF, and Word Embeddings, have the objective of retaining significant semantic connections between data pieces. Bag of Words represents text data as binary vectors indicating the presence or absence of certain terms, while TF-IDF applies weights to terms based on their frequency distribution in texts.

Evaluation metrics are crucial instruments for quantifying the effectiveness of machine learning classification systems and objectively evaluating their performances. Some common evaluation metrics include Precision, Recall, F1 Score, and Accuracy. The precision metric is the ratio of correctly predicted positive instances to all anticipated positive instances. On the other hand, Recall calculates the percentage of real positive cases that are accurately identified. The F1 Score is the harmonic mean of Precision and Recall which provides a well-balanced evaluation using both false negatives and false positives. Accuracy is a measure of the proportion of correctly identified cases compared to the total number of samples.

Conclusion

ML classification algorithms offer valuable approaches to tackle the difficulties of upholding high data quality in the constantly changing data environments nowadays. Techniques such as Active Learning, Deep Learning, Ensemble Learning, Feature Engineering, and Evaluation Metrics are constantly expanding the limits of what can be achieved in data analysis and modeling. By adopting these innovative processes and approaches, firms can uncover concealed insights, reduce risks, and make well-informed decisions based on dependable and precise data.



Akshay Agarwal is a seasoned Lead Data Engineer with over fourteen years of experience in designing, developing, and implementing cutting-edge data solutions. His expertise spans in cloud migration, data analytics, and Artificial Intelligence, with a focus on optimizing data workflows and ensuring high data quality. Agarwal is dedicated to advancing business data-driven decision-making through innovative approaches and staying abreast of the latest industry trends. His commitment to excellence in data engineering continues to drive meaningful change and inspire progress in the field.

A Case Study of Amazon DynamoDB

A investigation into the application of Amazon's DynamoDB in constructing resilient cloud systems with focus on its strengths and weaknesses of its global tables and data replication strategies may be found at <https://www.ijsr.net/getabstract.php?paperid=SR24825062105>. The goal of the study is optimization of DynamoDB so data integrity is maintained. "Enhancing Cloud System Resilience: A Case Study of Amazon DynamoDB with Active—Active Computer Writer and Active—Passive Data Layer Strategies", authored by **Akshay Prabdu**, was published in International Journal of Science and Research (IJSR), Volume 13 Issue 8, August 2024; <https://www.ijsr.net/>.

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IEEE Regions 3,4 and 5 Ask-Me-Anything: IEEE-USA Candidates Forum

Shape the future of IEEE-USA by joining us for a live Q&A session with the candidates for the top position! This is your chance to ask burning questions, hear their visions, and make your voice heard.

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With IEEE elections closing on October 1, your vote is crucial. Make a difference and learn more about the candidates by visiting <https://ieeusa.org/volunteers/elections/>.

IEEE★USA
Building Careers & Shaping Public Policy

Presidential Candidates Forum

Barry C. Tilton **Bob G. Becnel**

Monday, September 16
7:00 PM Central Time

Date and Time

Date: 16 Sep 2024

Time: 07:00 PM to 08:30 PM

All times are (UTC-05:00) Central Time (US & Canada)

Add Event to Calendar

[iCal](#)

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Location

This event has virtual attendance info. Please visit [the event page](#) to attend virtually.



(Continued on page 18)

(Continued from page 17)

Hosts

[Southeastern USA - Region 3](#)

[Southwestern USA - Region 5](#)

[Central USA - Region 4](#)

Contact Event Hosts

Registration

Starts **05 September 2024 12:00 AM**

Ends **16 September 2024 07:00 PM**

All times are (UTC-05:00) Central Time (US & Canada)

No Admission Charge

Register Now

IEEE-WIE Forum USA East

Where: Stamford, CT

When: 7-9 November 2024

IEEE WIE Forum USA East focuses on developing and improving leadership skills for individuals at all stages of their careers. Attendees will have the opportunity to hear inspirational and empowering talks presented by successful leaders from IEEE Northeast. Emerging technologies will also be demonstrated, engaging attendees to facilitate discussion and potential advancement of STEM outreach class ideas.

For more information visit [IEEE WIE – Women In Engineering East Forum](#)



2024 IEEE-USA IWRC Aerospace & Defense

Where: Huntsville, AL

When: 3-4 December 2024

IEEE-USA IWRC is bringing the *CHIPS Act* to Alabama!

Innovation takes more than ideas — it takes partnerships. Small business owners, government officials, academic researchers, financiers, and others need to work together for our local innovation ecosystem to thrive, but it is rare for those people to be all in one place — until now.

The 2024 IEEE-USA Innovation, Workforce, and Research Conference (IWRC) consists of an evening reception followed by a day-long workshop, bringing together stakeholders from academia, government, and industry to bridge the gap between research and commercially viable products. Experts from our region and across the country will discuss research grants, technology transfer programs, start-up funding, intellectual property and a host of other topics related to inspiring and empowering true innovation in the southeast.

But most importantly we will bring together the key innovators from the key parts of our local innovation economy in one place to meet, learn, talk, and plan as the *CHIPS Act* comes to our corner of America.

Visit [IWRC-USA IWRC Conference \(ieeeusa.org\)](#) for more information.





Industry and Academia in Partnership

IEEE SoutheastCon is the annual IEEE Region 3 conference that promotes all aspects related to theory and application of engineering disciplines. Sponsored by IEEE Region 3, this event will attract researchers, professionals, and students from across the globe and especially from the southeastern U.S. SoutheastCon 2025 Technical Program will feature tutorial sessions, workshops, and paper presentations

Topic areas appropriate for technical program submission include, but are not limited to:

- Power and Energy Systems
- Computing and Communications Systems
- Signal and Image processing
- Microelectronics, Devices and Electromagnetics
- AI and Predictive Modeling
- Robotics, Automation, and Controls
- Industry Applications: Artificial Intelligence
- Industry Applications: Power and Energy Systems
- Industry Applications: Computing Systems
- General

Technical Paper Submission Information

IEEE SoutheastCon 2025 will distinguish regular from short papers; a regular paper appears as a complete work in the proceedings and is presented in a technical session at the conference; whereas a short paper is published only as a 2-page “extended abstract” and less formally presented as a poster at the conference. SoutheastCon 2025 adopts the IEEE standard conference proceedings format. All submissions should be written in English with a maximum paper length of eight (8) printed pages (10-point font) including figures. Papers have to be submitted in PDF format, and will be reviewed using a double-blind process. Manuscript Templates for Conference Proceedings for Microsoft Word or LaTeX formats are found on <https://www.ieee.org/conferences/publishing/templates.html>.

Paper due date (2025): January 15 (FIRM) Notification to authors: February 15 Camera Ready Papers: March 1

Plagiarism and Double Submission

Papers are reviewed on the assumption that they do not contain plagiarized material and have not been submitted to any other conference at the same time (multiple submissions). These matters are taken very seriously, and IEEE will act against any author who has engaged in either practice. See the IEEE web pages on Intellectual Property Rights, Plagiarism and Multiple Submissions for further guidance:

http://www.ieee.org/publications_standards/publications/rights/index.html

http://www.ieee.org/publications_standards/publications/rights/plagiarism.html

http://www.ieee.org/web/publications/rights/Multi_Sub_Guidelines_Intro.html

Call for Tutorials, Workshops, & Demonstrations

SoutheastCon 2025 is accepting proposals for one to four-hour tutorials, workshops, and technical demonstrations. These sponsored activities will be made available to all conference attendees (appx. 800 professionals and students). Contact the Technical Program Chair, Jim Conrad (jmconrad@uncc.edu) for more information.



Conference information and the full CFP can be found on the SoutheastCon 2025 website
<https://ieeesoutheastcon.org/>



EPICS in IEEE Launches Call for Artificial Intelligence and Autonomous Systems Service Learning Projects

Damith Wickramanayake [damithwick@ieee.org]



Call for Artificial Intelligence and Autonomous Systems Service Learning Projects

Proposals should address specific applications of AI in a specific industry.

Industries including healthcare, agriculture, education, environmental improvements, and other applications for societal benefit.

PROPOSAL DEADLINE
15 OCTOBER

epics.ieee.org/fall-call-for-projects-2024

EPICS in IEEE
Engineering Projects in Community Service

EPICS in IEEE is excited to launch our fall call for proposals that will fund applications of artificial intelligence and autonomous systems. We encourage teams to explore technical applications of machine learning, fuzzy systems, evolutionary computing, embedded intelligent systems, generative AI, hybrid intelligent systems, robotics, drone technologies, and assistive technologies. EPICS in IEEE proposals should address specific applications of AI in industries such as healthcare, agriculture, education, environmental improvements, and other applications for societal benefit.

Students are encouraged to think creatively about these technical areas that can result in direct societal benefit from a solution that will be adopted by the community partner. The projects should be able to be completed in 1 year or less. All projects must have IEEE members involved. We encourage teams to partner with local IEEE sections, chapters, societies, and affinity groups as well as IEEE student branches for projects.

Selected projects will receive up to \$10,000 USD, mentorship, and resources. The deadline to submit a proposal is **October 15th, 2024**.

[Read more here!](#)

Damith Wickramanayake
REAC: R3

Other Region 3 Address

R3 Web Site: <https://r3.ieee.org/>

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Instagram: <https://www.instagram.com/r3ieee/>

X (Twitter): <https://twitter.com/r3ieee>

IEEE Collabratec: <https://ieee-collabratec.ieee.org>

12th International Conference On Wireless for Space and Extreme Environments (WISEE 2024)

Where: Daytona Beach, FL

When: 16-18 December 2024

The 12th IEEE Wireless in Space and Extreme Environments Conference (WISEE) will bring together investigators from NASA, the Canadian Space Agency (CSA), the European Space Agency (ESA), and other space agencies, along with aerospace and space defense industries and academic researchers, in an effort to understand and solve the emerging problems facing



wireless sensing and communication in space and related extreme environments.

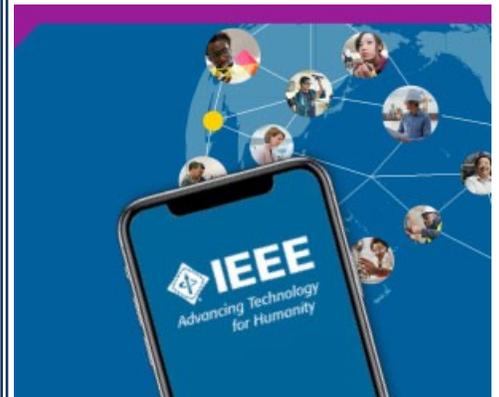
[12th IEEE International Conference on Wireless for Space and Extreme Environments \(WiSEE 2024\)](#).

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IEEE SoutheastCon

Important date:

Last Date to Submit a paper: January 15, 2025

Notification to Authors: (rolling reviews - last notification February 15, 2025

Camera Ready Papers: March 1, 2025

<https://ieeesoutheastcon.org/>

Life Members Evolution Conference 2025

David Fillion [dfillion@ieee.org]

Life Member Evolution Conference 2025 Committee

The IEEE Life Members Evolution Conference 2025 will be held 11-13 June 2025 at the Joyce Cummings Center at Tufts University, Medford, Massachusetts, in the Boston area. This conference follows the successful IEEE Life Members Evolution Conference 2024.

The Life Members Evolution Conference 2025 in Boston fits this technology conference, as Boston is one of the top tech centers in the United States and the world.

The Life Members Evolution Conference 2024 featured outstanding keynote speakers such as Rodney Brooks, AI and Robotics, and Dr. Karen Panetta, AI Research. Other speakers, such as Kendra Cook, spoke on "Space Technology for Interplanetary Exploration." Expect speakers and presenters of the same caliber in a broad spectrum of disciplines at the conference.

New to the 2025 Evolution Conference will be the addition of a Technical Papers Track. A call for papers has been circulated and can be found on the conference website.

Expect details regarding registration, lodging, transportation options, and corresponding accessibility information to be publicized on the conference website as the details become available.

The IEEE Life Members Evolution Conference 2025 website is lifemembersconference.ieee.org.

IEEE Conferences in Region 3

[2024 IEEE Conference on Electrical Insulation and Dielectric Phenomena \(CEIDP\)](#)

6—9 October 2024 | Auburn, Alabama | Event Format: In-person

Sponsors: IEEE Dielectrics and Electrical Insulation Society

Field of Interest: Engineered Materials

Late Online Registration Deadline: **29 September 2024**

[2024 IEEE Visualization and Visual Analytics \(VIS\)](#)

* [2024 IEEE Workshop on Energy Data Visualization \(EnergyVis\)](#)

[2024 IEEE Topological Data Analysis and Visualization \(TopoInVis\)](#)

[2024 IEEE VIS Workshop on Data Storytelling in an Era of Generative AI \(GEN4DS\)](#)

* [2024 IEEE VIS Workshop on Visualization Education, Literacy, and Activities \(EduVIS\)](#)

* [2024 IEEE Evaluation and Beyond - Methodological Approaches for Visualization \(BELIV\)](#)

[2024 IEEE Visualization in Data Science \(VDS\)](#)

* [2024 IEEE Workshop on Uncertainty Visualization: Applications, Techniques, Software, and Decision Frameworks](#)

13—18 October 2024 | Tampa, Florida | Event Format: In-person only and *Hybrid (In-person and Virtual),

Sponsors: IEEE Computer Society

Field of Interest: Computing and Processing

[2024 IEEE Digital Education and MOOCS Conference \(DEMOcon\)](#)

16—18 October 2024 | Atlanta, Georgia | Event Format: In-person

Sponsors: IEEE Education Society

Field of Interest: General Topics for Engineers

Registration: August 30—October 15, 2024 (Standard); October 16-18, 2024 (On-site)

[2024 IEEE BiCMOS and Compound Semiconductor Integrated Circuits and Technology Symposium \(BCICTS\)](#)

27-30 October 2024 | Fort Lauderdale, Florida | Event Format: In-person

Sponsors: IEEE Electron Devices Society; IEEE Microwave Theory and Technology Society; IEEE Solid-State Circuits Society

Field of Interest: Components, Circuits, Devices and Systems; Engineered Materials, Dielectrics and Plasmas; Fields, Waves and Electromagnetics; General Topics for Engineers; Photonics and Electrooptics; Power, Energy and Industry Applications

[2024 Ninth International Conference On Mobile And Secure Services \(MobiSecServ\)](#)

9—10 November 2024 | Miami Beach, Florida | Event Format: In-person

Sponsors: De Nouvelles Architecture Pour Les Communications; Miami Section

Field of Interest: Communication, Networking and Broadcast Technologies; Components, Circuits, Devices and Systems; Computing and Processing

[2024 IEEE Physical Assurance and Inspection of Electronics \(PAINE\)](#)

12—14 November 2024 | Huntsville, Alabama | Event Format: In-person

Sponsors: IEEE Electronics Packaging Society; IEEE Reliability Society; University of Florida, Gainesville

Field of Interest: Components, Circuits, Devices and Systems; Engineered Materials, Dielectrics and Plasmas; Photonics and Electrooptics

Registration: \$775 until September 30; \$895 from October 1

IEEE Conferences in Region 3

[SC24: International Conference for High Performance Computing, Networking, Storage and Analysis](#)

[SC24-W: Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis](#)

17–22 November 2024 | Atlanta, Georgia | Event Format: Hybrid (In-person and Virtual)

Sponsors: Association for Computing Machinery - ACM; IEEE Computer Society

Field of Interest: Computing and Processing

[2024 IEEE International Performance, Computing, and Communications Conference \(IPCCC\)](#)

22–24 November 2024 | Orlando, Florida | Event Format: In-person

Sponsors: IEEE Computer Society

Field of Interest: Communication, Networking and Broadcast Technologies; Computing and Processing

[2024 IEEE International Conference on Wireless for Space and Extreme Environments \(WiSEE\)](#)

16–18 December 2024 | Daytona Beach, Florida | Event Format: In-person

Sponsors: Daytona Section; IEEE Council on RFID; IEEE USA Washington, DC; Region 01–Northeastern USA

Field of Interest: Aerospace; Communication, Networking and Broadcast Technologies; Engineered Materials, Dielectrics and Plasmas; Fields, Waves and Electromagnetics; Signal Processing and Analysis

Call for Papers: Deadline 15 December 2024

Registration: Early—before November 15, 2024

[2024 International Conference on Machine Learning and Applications \(ICMLA\)](#)

18–20 December 2024 | Miami, Florida | Event Format: Hybrid (In-person and Virtual)

Sponsors: Association for Machine Learning and Applications; IEEE Systems, Man, and Cybernetics Society

Field of Interest: Computing and Processing; Engineering Profession; Robotics and Control Systems; Signal Processing and Analysis

Registration: Pre-registration deadline October 15, 2024

[2024 IEEE International Conference on RFID Technology and Applications \(RFID-TA\)](#)

18–20 December 2024 | Daytona Beach, Florida | Event Format: In-person

Sponsors: IEEE Council on RFID

Field of Interest: Aerospace; Communication, Networking and Broadcast Technologies; Components, Circuits, Devices and Systems; Signal Processing and Analysis

Call for Papers: Deadline September 15, 2024

[2025 IEEE Electrical Energy Storage Applications and Technologies Conference \(EESAT\)](#)

20–21 January 2025 | Charlotte, North Carolina | Event Format: In-person

Sponsors: IEEE Power & Energy Society

Field of Interest: Power, Energy and Industry Applications

IEEE Conferences in Region 3

[2025 Annual Reliability and Maintainability Symposium \(RAMS\)](#)

27–30 January 2025 | Destin, Florida | Event Format: In-person

Sponsors: ASQ Electronics and Communications Division; ASQ Reliability and Risk Division; IEEE Reliability Society; Institute of Environmental Sciences and Technology - IEST; Institute of Industrial and Systems Engineers - IISE; International System Safety

Field of Interest: Aerospace; Engineering Profession; General Topics for Engineers; Power, Energy and Industry Applications

[2025 IEEE International Workshop on Antenna Technology \(iWAT\)](#)

19–21 February 2025 | Cocoa Beach, Florida | Event Format: In-person

Sponsors: IEEE Antennas and Propagation Society; Orlando Section

Field of Interest: Communication, Networking and Broadcast Technologies; Components, Circuits, Devices and Systems; Engineered Materials, Dielectrics and Plasmas; Fields, Waves and Electromagnetics

Call for Papers: Deadline 30 September 2024

[2025 IEEE IAS Electrical Safety Workshop \(ESW\)](#)

3–7 March 2025 | Jacksonville, Florida | Event Format: In-person

Sponsors: Florida Council; IEEE Industry Applications Society

Field of Interest: Engineering Profession; General Topics for Engineers; Power, Energy and Industry Applications; Transportation

[2025 IEEE Applied Power Electronics Conference and Exposition \(APEC\)](#)

16–20 March 2025 | Atlanta, Georgia | Event Format: In-person

Sponsors: IEEE Industry Society; IEEE Power Electronics Society; Power Sources Manufacturers Association

Field of Interest: Components, Circuits, Devices and Systems; Power, Energy and Industry Applications

Call for Papers: No submission dates posted at this time

Registration: October 25, 2024 (Opens); January 13, 2025 (Early registration closes)

[SoutheastCon 2025](#)

22–30 March 2025 | Concord, North Carolina | Event Format: Hybrid (In-person and Virtual)

Sponsors: North Carolina Council; Region 03—Southeastern USA

Field of Interest: Aerospace; Bioengineering; Communication, Networking and Broadcast Technologies; Components, Circuits, Devices and Systems; Computing and Processing; Engineered Materials, Dielectrics and Plasmas; Engineering Profession; Fields, Waves and Electromagnetics; General Topics for Engineers; Geoscience; Nuclear Engineering; Photonics and Electrooptics; Power, Energy and Industry Applications; Robotics and Control Systems; Signal Processing and Analysis; Transportation

Call for Papers: Deadline January 15, 2025

Registration: Open

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Continued on page 17

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<https://r3.ieee.org/about/#1587483863309-20f649fe-ca1d>

IEEE Region 3 Executive Committee – 2024 (cont.)

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