CURRICULUM VITAE

AHMED RUBAAI, LIFE FELLOW IEEE
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EDUCATION

Doctor of Engineering in Electrical Engineering, Cleveland State University, August 1988
Master of Science in Electrical Engineering, Case Western Reserve University, May 1983
Bachelor of Science in Electrical Engineering, El-Fateh University, Libya, North-Africa, June 1978

ACADEMIC EXPERIENCE

Chair, Dept. of Electrical Engineering & Computer Science, Howard University, July 2016-August 2025.
Professor, Dept. of Electrical & Computer Engineering, Howard University, Aug. 00-present
Associate Professor, Dept. of Electrical Engineering, Howard University, Aug. 94-Aug. 00
Assistant Professor, Dept. of Electrical Engineering, Howard University, Aug. 88-Aug. 94

Howard University--- Chair of the Electrical Engineering and Computer Science (EECS) Department (July 2016-August 2025)

As the Chairperson, I am engaging in external fund raising, connecting with the alumni and the advisory board, preparing for ABET visit, faculty recruitment, strategic planning, and promoting and facilitating the growth of the Department. Key initiatives and accomplishments include**:**

- **Involvement and Responsibility with ABET Accreditation**.
  - In the fall of 2018, I spearheaded an intensive preparation effort for the ABET accreditation visit for both the Electrical Engineering Program and the Computer Engineering Program. Despite facing considerable challenges, our collective efforts resulted in successful accreditation, securing a full 6-year accreditation for each program. This accomplishment not only reflects the high standards of education we uphold but also underscores our commitment to continuous improvement and excellence.
  - Similarly, in the fall of 2020, I led another rigorous preparation process for the ABET accreditation visit for the Computer Science Program. Once again, our meticulous planning and dedication paid off, leading to a successful accreditation and a full 6-year validation of the program's quality and effectiveness.
  - Under my leadership, the department has successfully concluded the ABET accreditation site visit for our Electrical Engineering and Computer Engineering programs for fall 2024. Again, our thorough planning and dedication paid off,

leading to a successful accreditation and a full 6-year validation of the two programs' quality and effectiveness. This achievement is a testament to the department's unwavering commitment to academic excellence and our dedication to meeting the highest standards of engineering education. The department embarked on an extensive preparation process, which included the submission of the following critical ABET reports:

- Outcome Assessment Reports (Direct and Indirect) for academic years 2020-2021 and 2022-2023
- Program Educational Objectives (PEOs) and Student Learning Objectives (SLOs) Assessment Reports for 2022-2023
- Comprehensive Self-Study Reports for both Electrical Engineering and Computer Engineering programs

The ABET evaluators commended our programs for their rigor, the alignment of our curriculum with industry needs, and the dedication of our faculty and staff. Importantly, the visit concluded with no major findings or concerns, reflecting a clean slate and underscoring the university's commitment to producing highly skilled and well-prepared graduates.

- In preparation for the Computer Science ABET site visit scheduled for fall 2026, I have finalized all key documentation. This includes the 2022-2023 and 2024-2025 ABET Computer Science Outcome Assessment Reports, the ABET Self-Study Report, and the 2024-2025 PEO and SLO Assessment Reports. These documents reflect our program's continuous improvement efforts and our commitment to ABET standards.

The reports are a testament to the hard work and dedication of our faculty and staff, and they reflect my continuous efforts to maintain and enhance the quality of our educational programs. The assessments encompass both direct and indirect evaluations of our program outcomes and objectives, ensuring a comprehensive review of our curriculum and student achievements.

- **Enhancement of the Quality and Reputation of our Academic Programs through Various Key Initiatives and Accomplishments.**

I have spearheaded the following key initiatives and projects that have significantly enhanced the quality and reputation of our programs:

1. **Successfully Completed the Establishment of the New Post-Silicon Design & Validation Laboratory:** As the sole founder and lead developer of the new post-silicon design and validation laboratory, I have played a pivotal role in enhancing our engineering capabilities. Of note, the state-of-the-art facility is recognized by Howard University President Ben Vinson III as one of the "Twenty-Four Moments that Defined Howard in 2024," placing at #11 on this prestigious list (https://thedig.howard.edu/all-stories/twenty-four-moments-defined-howard-2024). Post-silicon lab validation accounts for a significant portion (50% to 60%) of the total engineering effort involved in new product development, thereby significantly contributing to our research and innovation endeavors.
2. **Successfully introduced the 4+1 Dual Degree Program in Computer Engineering:** As the sole founder, I originated and developed the new 4+1 Dual Degree Program in Computer Engineering, set to launch in Fall 2026. I successfully directed all phases from the initial feasibility study to securing final approval from the University Board of Trustees, University President, and Provost, underscoring its value to our academic offerings.

3. **Successfully Completed the 4+1 Program Feasibility Study:** I have undertaken the responsibility of drafting the 4+1 Program Feasibility Study, which encapsulates our research findings, market analysis, and anticipated outcomes. This study provides a robust framework to support the viability and implementation of the 4+1-degree program in Computer Engineering, further enhancing our academic offerings and attracting talented students.

These accomplishments reflect my commitment to excellence in research and education. I am confident that these thorough preparations and initiatives will position us well for a successful accreditation outcome and further reinforce our standing as a leading department in engineering education.

- **Engaging in External Fund Raising for the Electrical Engineering and Computer Science department**

One of my key priorities has been to raise private donations for the department. Since assuming the leadership role in July 2016, I have been awarded several significant industrial-based scholarship grants, which have greatly contributed to our academic and research capabilities.

- Apple $1.2 million innovation award; "Expand Silicon and Hardware Engineering curriculum in partnership with Apple's experts.
- Intel $600,00 award: Improving Undergraduate Student Performance in Electrical Engineering, Computer Engineering and Computer Science Programs at Howard University.
- Intel $230,000 award: Enhancing Pipeline of Talented Students from Underrepresented Background with Research Experiences in Emerging Areas of Technology.
- Cisco 585,000 award, Bridging the Gap Between Academia and the Real World for Underrepresented Students: Cisco Tech Fellows Program,"
- Intel Lab $100,000 award: Cloud Computing and Curriculum Development.
- Microsoft $134,000 award: Unmanned Aerial Vehicle Testbed for Cyber Security Attack: Analysis, Modeling and Mitigation.
- Microsoft, $100,000 award: Development of New Silicon Lab
- Micron 100,000 award: Preparing the Next Generation Workforce in chip design and semiconductor engineering.
- Autodesk $184,500 award: Experience in Teamwork, and Industrial-Grade Design Validation: Autodesk Tech Fellow Program.
- Autodesk, $100,000 award: Development of New Silicon Lab
- Microsoft $127,563 award: Microsoft Tech Fellows Program.
- Aerospace $75,000 award: Practical and Research Experiences in Undergraduate Education.
- Precise Software $32,000 award: Enhancing the Quality of Undergraduate STEM Education.
- Bechtel $25,000 award: Bechtel Tech Fellows Program Fund
- AT&T, $25,000 award: AT&T Tech Fellows Program Fund.

These accomplishments reflect my commitment to excellence in research and education. The funding has not only enhanced our research infrastructure but also provided valuable opportunities for our faculty and students to engage in cutting-edge projects and collaborations.

- **Forming and Maintaining Relationships and Partnerships with Industry**

I have made significant strides in forming and maintaining robust partnerships with leading technological and engineering companies. These collaborations are pivotal in enhancing our academic programs, research capabilities, and providing invaluable opportunities for our students and faculty. Below are some of the key partnerships that I have established and nurtured:

1. **Intel**

The Department of Electrical Engineering and Computer Science (EECS) at Howard University proudly highlights the impactful partnership with Intel Corporation, whose contributions have profoundly enhanced academic experience, research opportunities, and diversity within the department. Through scholarship funds, hardware and software donations, research grants, and workshops, Intel has paved the way for students to excel in engineering and computer science. Since the 2017-2018 academic year, Intel's unwavering support has provided students and faculty with the tools and resources needed to thrive in the rapidly evolving fields of Electrical Engineering, Computer Engineering, and Computer Science. Intel has enriched our computer engineering curriculum by hosting one workshop per semester as part of the Fundamentals of Digital Systems and Advanced Digital Design courses. These workshops introduce students to industry-relevant skills and cutting-edge technology through hands-on projects. They not only expand students' knowledge but also prepare them for real-world challenges, ensuring they are industry-ready upon graduation. Intel's generous scholarship funding has been a cornerstone of its partnership with the EECS department, creating opportunities for students to achieve academic excellence without the burden of financial barriers. Since **2017**, Intel has provided over **$930,000 in scholarship funds**, supported **more than 40 undergraduate students** in achieving their academic goals, and funded **20 PhD students**, empowering them to pursue groundbreaking research and contribute to technological advancements. These scholarships have enabled underrepresented students to excel in engineering and computer science, opening doors to impactful careers and leadership roles in the technology sector. By supporting initiatives that increase the representation of underrepresented minorities and women in Electrical Engineering, Computer Science, and Computer Engineering, Intel is contributing to a more equitable and inclusive STEM workforce. This partnership has encouraged women and minority students to pursue and complete degrees in engineering and technology fields, helped Howard University solidify its position as a leader in producing diverse talent for the technology sector, and Intel's focus on diversity and inclusion reflects its commitment to building a workforce that represents the communities it serves and fosters innovation through diverse perspectives. Intel is playing a pivotal role in advancing gender and racial balance in STEM education.

2. **Apple Inc**

The EECS Department is proud to celebrate its partnership with Apple, a collaboration that is revolutionizing education and advancing diversity in the STEM workforce, particularly in the semiconductor industry. With Apple's **generous $1.2 million three-year grant**, the department has established the state-of-the-art Silicon Design and Validation Lab, a cutting-edge facility that serves as a hub of innovation, research, and excellence in semiconductor design, testing, and validation. This initiative aligns with Howard University's mission to empower underrepresented groups in STEM fields while fostering the next generation of leaders in technology. At the core of this partnership is the groundbreaking Silicon Design and Validation Lab, a facility equipped with the latest technologies to provide students with hands-on experience in semiconductor design and

validation. Apple's contributions extend beyond financial support; they reflect a commitment to empowering students to transform the future of technology. Through this partnership, Howard University is preparing Students for industry leadership, fostering diversity in STEM, this collaboration helps address the critical need for representation in technology fields, and Apple's support has bridged the gap between academia and industry, creating opportunities for students to engage with industry leaders and gain real-world insights. In collaboration with Apple, the EECS department has developed a cutting-edge program designed to deliver a high-quality education in chip design, semiconductor engineering, and related fields. This initiative ensures that students are equipped with the tools, knowledge, and hands-on experience required to thrive in a competitive and rapidly evolving industry. Key features of this initiative include, students benefit from coursework and training in advanced semiconductor topics, ranging from circuit design to fabrication techniques and process engineering, students gain real-world application experience by working on industry-relevant projects funded by Apple, bridging the gap between academic learning and professional practice, and the initiative reflects a shared commitment to fostering a diverse talent pipeline, emphasizing the graduation of more underrepresented minorities and women in the semiconductor and chip design fields. As the Silicon Design and Validation Lab continue to grow, the EECS department looks forward to achieving even greater milestones in collaboration with Apple. Together, we are shaping the future of technology and creating opportunities for underrepresented groups to lead the way in STEM innovation.

3. Microsoft

The EECS Department is proud to highlight its invaluable partnership with Microsoft. Through its Silicon & Cloud Hardware Infrastructure and Engineering (SCHIE) team, Microsoft is driving transformational growth within the department, ensuring students and faculty have the resources, expertise, and recognition to thrive in engineering and computer science. At the heart of this partnership is the development of the EECS Silicon Lab, an advanced facility designed to prepare students for careers in the rapidly evolving semiconductor industry. The Microsoft SCHIE team has been instrumental in this endeavor by leveraging the expertise of Microsoft's subject matter experts to guide the lab's development and ensure it meets industry standards, contributing educational materials for the Tapeout course offered in Spring 2024, a cornerstone of our efforts to train the next generation of semiconductor engineers, and working to identify opportunities for guest lecturers and speakers in the upcoming school year, bringing real-world insights and experiences to the classroom. This collaboration represents Microsoft's commitment to bridge the gap between academic training and industry demands, equipping students with the tools and knowledge to excel in high-demand fields. Microsoft's sponsorship of student awards has been a driving force in recognizing and rewarding academic achievements within the EECS department. These awards celebrate students who excel in categories such as recognizing innovative solutions to real-world problems, highlighting students who demonstrate exceptional creativity and initiative, and honoring significant contributions to advancing knowledge in engineering and computer science. Since the **2021-2022 academic year**, Microsoft has provided **$361,563 in scholarships** to support undergraduate and graduate students. These scholarships provide financial support to students, enabling them to focus on their studies, inspire students to pursue ambitious academic and professional goals, and help underrepresented minorities and women succeed in engineering and computer science fields. The partnership between Howard University's EECS department and Microsoft is a testament to the power of collaboration in driving academic excellence and fostering innovation. Together, we are preparing students to meet the challenges of

a technology-driven world, strengthening diversity, equity, and inclusion in STEM fields, and building a pipeline of skilled professionals ready to contribute to the global tech industry.

4. **Cisco**

Cisco's partnership with Howard University's Department of Electrical Engineering and Computer Science is a shining example of their commitment to advancing diversity, equity, and inclusion in the tech and design industries. Through strategic investments in student support, curriculum enhancement, and infrastructure development, Cisco is playing a pivotal role in equipping students with the tools and knowledge needed to excel in today's rapidly evolving technological landscape. One of the cornerstones of this partnership is Cisco's sponsorship of capstone design projects. These projects are vital to the academic journey of senior students, bridging the gap between theory and practice by allowing them to tackle real-world challenges. Cisco's contributions include providing funding to support innovative project development, equipping students with access to industry-standard tools and platforms, and offering guidance from Cisco professionals, ensuring students have access to expert advice and insights. By integrating Cisco's cutting-edge technology into their projects, students gain invaluable hands-on experience and develop critical skills that prepare them for successful careers in engineering, computer science, and related fields. Cisco's partnership is deeply aligned with Howard University's mission to increase the representation of underrepresented minorities and women in STEM. Together, we are providing scholarships and internships to talented students from diverse backgrounds, inspiring students to approach challenges with creativity and critical thinking and ensuring more students from historically underrepresented groups can succeed in engineering and computer science. Cisco's contributions extend beyond student support to include infrastructure development initiatives that are reshaping the academic experience for EECS students and faculty. These efforts include outfitting labs with state-of-the-art technology and software to support hands-on learning, creating dynamic and collaborative learning environments that foster creativity and innovation, and supporting the professional development of educators to ensure students receive world-class instruction. By improving the tools, spaces, and resources available to students and faculty, Cisco is enabling the department to stay ahead of technological trends and prepare graduates to lead in a competitive, fast-paced industry. Since the **2020-2021 academic year**, Cisco has provided **over $585,000 in scholarship funds**, benefiting more than **45 students**. These scholarships have allowed students to focus on their studies without the stress of financial constraints, rewarded students who demonstrate exceptional academic achievement and leadership, and inspired recipients to pursue their goals and reach new heights in their academic and professional journeys. We look forward to continuing this impactful collaboration and achieving even greater milestones together.

5. **Autodesk**

The EECS Department celebrates its impactful partnership with Autodesk, whose unwavering support is transforming the academic and professional journeys of our students. Autodesk's contributions are fostering innovation, advancing education, and preparing the next generation of leaders in computer science and engineering. Autodesk has played a pivotal role in enhancing project-based learning opportunities within the EECS curriculum. Students gain hands-on experience with cutting-edge design tools and technologies, allowing them to bring their ideas to life while addressing real-world challenges. Through this initiative, students work on interdisciplinary projects in areas such as computer-aided design (CAD), 3D modeling, and simulation engineering, learn to use Autodesk's advanced software platforms, gaining expertise

that makes them highly competitive in the job market, and receive the necessary training to become Autodesk-certified professionals before graduation, boosting their career prospects. Since the **2020-2021 academic year**, Autodesk has awarded **$184,500 in scholarships** to **10 outstanding students** in the EECS department. These scholarships have reduced financial barriers for students pursuing degrees in computer science and engineering, recognized and rewarded academic excellence, leadership, and innovation, and enabled students from diverse backgrounds to focus on their studies and achieve their full potential. In addition to scholarships, Autodesk is committed to offering real-world experience through internships that expose students to professional environments and industry best practices, and supporting students in earning Autodesk certifications, ensuring they graduate with a competitive edge in the global job market. These initiatives reflect Autodesk's dedication to empowering students with the tools, skills, and confidence needed to excel in their careers.

6. **Micron**

The Department of Electrical Engineering and Computer Science proudly acknowledges Micron Technology, Inc**.** for their transformational support in advancing education and innovation in chip design and semiconductor engineering. Through a dedicated gift grant, Micron is helping to prepare the next generation of highly skilled professionals to meet the growing demands of the semiconductor industry. Since the **2022-2023 academic year**, Micron has provided **$100,000 in scholarship funds**, benefiting **20 students** in the EECS department. These scholarships have enabled students to pursue their educational goals with reduced financial barriers, supported students from diverse backgrounds, helping to create a more inclusive workforce in semiconductor engineering, motivated students to achieve academic excellence and explore career paths in chip design and semiconductor technologies. Micron's support for the EECS department is grounded in a shared vision of advancing innovation and fostering talent in the semiconductor field. Their contributions are helping to address industry needs by providing students with practical skills and hands-on experience, addressing the growing demand for highly skilled professionals in the semiconductor industry, advancing the frontiers of knowledge in chip design and related fields, positioning Howard University as a leader in semiconductor education, inspiring the next generation of innovators by engaging students in meaningful projects, and providing financial support.

7. **Aerospace**

The EECS Department celebrates its impactful partnership with Aerospace Corporation, a collaboration that is opening new horizons for students in the fields of aeronautics and space technologies. By providing students with unique opportunities to work on cutting-edge aerospace projects and funding scholarships, Aerospace is fostering innovation and supporting the next generation of engineers and scientists. One of the most exciting aspects of our collaboration with Aerospace is the opportunity for students to engage in capstone design projects centered on aeronautics and space technologies. These projects challenge students to apply their classroom knowledge to real-world problems, developing innovative solutions in areas such as students explore the complexities of designing, testing, and deploying satellite technologies, gaining hands-on experience in a critical field of aerospace engineering. These capstone projects not only enhance students' technical skills but also expose them to the collaborative and interdisciplinary nature of aerospace engineering, preparing them for careers in this dynamic industry. Since the **2021-2022 academic year**, Aerospace has demonstrated its commitment to supporting student success by providing **$75,000 in scholarship funds**, benefiting **12 students** in the EECS department. These

scholarships have enabled students to focus on their academic and research pursuits without the financial burden of tuition, supported students who are passionate about pursuing careers in aeronautics, space technologies, and related fields, and contributed to diversifying the talent pipeline in aerospace engineering by supporting students from underrepresented backgrounds. Scholarship recipients have expressed immense gratitude for Aerospace's generosity, noting how these funds have opened doors to unique educational and professional opportunities.

8. Bechtel

The Department of Electrical Engineering and Computer Science proudly recognizes Bechtel Corporation for its exceptional financial contributions and steadfast commitment to advancing education, research, and innovation. Their generosity is making a profound impact by creating opportunities for students and strengthening the department's mission to produce leaders in engineering and computer science. Bechtel's support has directly empowered our students through scholarship funding, ensuring that financial barriers do not hinder the academic aspirations of talented individuals. These scholarships have opened doors for diverse talents to pursue engineering and computer science degrees, fostering an inclusive and thriving academic environment, recognized and rewarded academic excellence, motivating students to achieve their fullest potential, and reduced financial stress, allowing students to focus on their education, research, and career development. Bechtel's investment in scholarships demonstrates their dedication to nurturing the future of engineering and computer science by supporting the individuals who will lead these fields. Bechtel's partnership with the department has provided students with unique opportunities to work on cutting-edge research projects, equipping them with the skills and experience needed to excel in an ever-evolving technological landscape. Bechtel has demonstrated its commitment to supporting student success by providing **25,000 in scholarship funds**, benefiting students in the EECS department. Key highlights of their support include funding research initiatives that explore groundbreaking advancements in areas such as renewable energy, artificial intelligence, and advanced computing systems, creating opportunities for hands-on learning by integrating students into real-world projects and interdisciplinary teams, and enhancing research facilities and resources, giving students access to state-of-the-art tools and technologies that are critical to their professional growth. Through these initiatives, Bechtel has cultivated a learning environment that encourages innovation and equips students with the technical expertise and problem-solving skills to address global challenges.

9. AT&T

The Department of Electrical Engineering and Computer Science is thrilled to recognize and extend our deepest gratitude to AT&T for their generous financial contributions and unwavering support. This partnership has significantly enriched the academic experience of our students, enhanced departmental initiatives, and strengthened our mission to shape future leaders in engineering and computer science. The contributions of AT&T have been instrumental in ensuring the success of our Industry Advisory Board (IAB) meeting**.** These meetings serve as a vital platform for industry leaders, faculty, and students to exchange ideas, discuss curriculum innovations, and align the department's goals with industry trends. Their financial backing has enabled us to host productive sessions, fostering collaborations that bridge the gap between academia and the real world. The annual Engineering and Computer Science Day, highlighted by our Capstone Display Day, has become a hallmark event for the department, thanks to the support of AT&T. Their contributions have elevated this event by providing Resources for Capstone Projects and promoting engagement. This event underscores the department's commitment to

cultivating hands-on experiences that prepare our students for successful careers. AT&T has demonstrated its commitment to supporting department success by providing **25,000 in scholarship funds**, benefiting the EECS department. The Department of Electrical Engineering and Computer Science at Howard University extends its heartfelt gratitude to AT&T for their invaluable contributions. Their support is empowering students, advancing education, and fostering a culture of excellence and inclusion within industry.

These partnerships are essential in enriching our academic environment, fostering innovation, and preparing our students for successful careers in their respective fields.

- **Advancing Academic Initiatives**

I have contributed significantly to various initiatives, projects, and endeavors that have positively impacted our academic community.

- Established new Pathways to master's degree: 4-1 in the Computer Engineering Program. Four-year undergraduate degree; start with master's level courses in Senior Year, plus one year of master's level courses. The new program is established under the 1.2 million Apple Partnership.
- Successfully recruited and hired seventeen junior faculty. Under my leadership, transformational change in the EECS department led to hiring **9 t**enure-track faculty, **4** full-time non-tenure track faculty, and **4** adjunct faculty in seven years. **33%** of faculty members in the department are newly hired within five years. Resulting new hires are world-class in the scholarly sense, while bringing **25%** diversity within a three-year period.
- Established a robust and effective Industry Advisory Board, aligning its objectives with the college's mission and strategic plan to ensure relevance and impact in industry partnerships.
- Developed and implemented a workload policy: Recognizing the need for faculty workload optimization, I devised and implemented a workload policy aimed at enhancing productivity and fostering a conducive work environment.
- Developed and implemented an EECS Bootcamp. Bootcamp is a peer-tutoring program that is conducted by EECS undergraduates and provides academic support to first and second-year students.
- Conducted regular "town hall" meetings with students to discuss their needs in a systematic fashion. This has resulted in better feedback supporting efficient course delivery to keep students first.

FUNDED Grants:

- **Co-PI**, Center of Excellence in Artificial Intelligence & Machine Learning, DOD, **$7.50 million**, Sept 16, 2020-Oct 15, 2024.
- **PI**, Apple Innovation: Expanding Silicon and Hardware Engineering curriculum in partnership with Apple's experts, **Apple, $1.2 million**, June 17, 2021-July 15, 2024
- **Co-PI**, EAGER: SaTC-EDU: Discovery, Analysis, Research and Exploration Based Experiential Learning Platform Integrating Artificial Intelligence and Cybersecurity, **NSF, $300,000**, August 1, 2020-July 31, 2022.
- **Co-PI**, develop and implement an onboard intelligent model-based hybrid electric propulsion control system, **NASA, $800K**, May 15, 2021- June 15, 2024
- **PI,** Development of new Silicon Lab**, Microsoft, $100,000,** July 2012-December 31, 2023

- **PI,** Development of new Silicon Lab**, Autodesk, $100,000,** July 2012-December 31, 2023
- **PI,** Bridging the Gap Between Academia and the Real World for Underrepresented Students: Cisco Tech Fellows Program," **Cisco**, **$585,000**, January 7, 2021-October 31, 2024.
- **PI**, Improving Undergraduate Student Performance in Electrical Engineering, Computer Engineering and Computer Science Programs at Howard University, **Intel, $600,000**, July 1, 2017-June 30, 2022
- **PI**, Enhancing Pipeline of Talented Students from Underrepresented Background with Research Experiences in Emerging Areas of Technology, **Intel**, **$230,000**, June 15, 2021-July 1, 2023
- **PI,** Cloud Computing Research and Curriculum Development, **Intel Labs, $100,000**, January 18, 2022-December 31, 2022.
- **PI**, Unmanned Aerial Vehicle Testbed for Cyber Security Attack: Analysis, Modeling and Mitigation, **Microsoft, $134,000.00**, June 1, 2021- July 31, 2023.
- **PI**, Preparing the Next Generation Workforce in chip design, **Micron Foundation**, **$100,000**, December 31, 2022, January 1, 2023.
- **PI**, Experience in Teamwork, and Industrial-Grade Design Validation: Autodesk Tech Fellow Program, **Autodesk**, **$184,500**, July 1, 2020-June 30, 2022
- **PI**, Microsoft Tech Fellows Program, **Microsoft**, **$127,563.00** May 1, 2018- Dec 30, 2021.
- **PI**, "Practical and Research Experiences in Undergraduate Education," **Aerospace**, **$75,000,** Sept 1, 2021- July 31, 2023.
- **PI,** Enhancing the Quality of Undergraduate STEM Education**, Precise Foundation, $32,000,** May 31, 2021-April 30, 2022**.**
- **PI**, Bechtel $25,000: Bechtel Corporation Fund, April 2024
- **PI,** AT&T, $25,000: AT&T Corporation Fund, July 2024
- **PI**, Development of Multidisciplinary Control-System Laboratory for Training Undergraduate Students in Control Technologies, **Moog Aerospace**, **$190,000**, August 1, 2004-July 31, 2007.
- **PI**, A Nationwide Consortium of Universities to Revitalize Electric Power Engineering Education by State-of-the-Art Laboratories, **DOE,** University of Minnesota, Subcontract, **$25,000**, 7/1/ 2010-6/30/2012.
- **PI**, Built-in Intelligent Controller and Associate Hardware for Power Converters, **Army Research Office**, **$260,000.00,** November 15, 2001-December 14, 2003.
- **PI**, Experimental Evaluation of Motor Drive Technologies for Future Aerospace Applications, **NASA Headquarters**, **$312,543.00, July** 01, 1997-June 30, 2000.
- **PI**, Development & Implementation of High-Performance AC Drives Using Neural Designs, **NASA Glenn Research Center**, **$300,000.00,** August 8, 1994- July 31,1997.

AWARDS AND RECOGNITION

- Named 2015 IEEE Fellow, for "Contributions to the Development of High-Performance Controls for Electric Motor Drives."
- Recipient, 2011 American Society for Engineering Education (ASEE) Robert G. Quinn Award for excellence in engineering experimentation and laboratory instruction. The award consists of a gold-plated medal, and a bronze replica, in June 2011.
- Recipient, 2012 Career Award, College of Engineering, Architecture and Computer Sciences, Howard University (HU), April 2012.
- Recipient, 2007 IAS Transactions 2nd Place Prize Paper Award, IEEE IAS, September 2007.
- Recipient, 2006 Best Paper Award, ASEE Division of Experimentation and Laboratory Oriented Studies (DELOS), June 2006.
- Recipient, 2nd Place Prize Paper Award, IACC of the IEEE-IAS, October 2006
- Inducted into CETLA Hall of Fame, Howard University, March 2006
- Recipient, 2005 Exemplary Teaching Award, HU, April 2005
- Recipient of a Software Release Award, NASA Glenn, August 2004.

- Recipient, 2002 IEEE-IAS Transactions Honorable Mention Prize Paper Award, Oct. 2002.
- Recipient, 2001 Distinguished Educator Award, ASEE Middle-Atlantic Section, April 2001.
- Recipient, 1998 Professor of the Year Award, School of Engineering, HU, March 1998
- Recipient, 1997 Professor of the Year Award, School of Engineering, HU, March 1997
- Recipient, 3rd Place Prize Paper Award, Industrial Automation and Control Committee (IACC) of the IEEE-IAS, May 2010
- Recipient, 2011 Outstanding Service Award", ASEE DELOS, June 2011
- Recipient, 2009 Outstanding Service Award", ASEE DELOS, June 2009
- Recipient, "Leadership and Service Award", IEEE-IAS IACC, Oct. 2004

- **Engagements of keynote Speeches at International Conferences**

My expertise and experience in engineering education have been sought by international universities. I have delivered keynote speeches at their sponsored international conferences and served as a Conference co-chair. These engagements have further solidified our university's reputation as a leader in engineering education and research.

- **Keynote Speaker**, "Computational Intelligence Technique-Based Development and Control of Electric Motor Drives for Motion Control Industry", 3rd International Conference on Recent Advances in Electrical Systems (ICRAES'18), December, 23-25 December 2018, Hammamet, Tunisia,
- **Keynote Speaker**, "Hardware/Software Implementation of an Extended Kalman Filter-based PI-/PD-like Fuzzy-Neural-Network Controller for Industrial Drives," 3rd International Conference on Advanced Systems and Emergent Technologies IC_ASET 2019, March 19-22, 2019, Hammamet- Tunisia
- **Keynote Speaker**, Hands-On Laboratories: Real-Time Experimentation for Engineering Education, 4th International Conference on Recent Advances in Electrical Systems, December 23-25, 2019, Hammamet, Tunisia.
- **Plenary Session Speaker** (Virtual), "Innovation in Undergraduate Controls Education at Howard University," 4th International Conference on Advanced Systems and Emergent Technologies (IC_ASET'2020), Hammamet, Tunisia, Dec 15-18-2020
- **Keynote Speaker**, Computational Intelligence Technique-Based Development and Control of Industrial Drives: Hardware/Software Implementation, 1st Maghreb International conference on Sciences and Techniques of Automatic control and computer engineering (MI-STA 2021), Tripoli, Libya—North Africa, May 25, 2021.
- **Keynote Speaker**, DSP-Based Hybrid H∞ Adaptive Fuzzy Tracking Control Structure for High Performance Drives: A Real-Time Implementation, 2nd IEEE International Conference on Signal, Control and Communication (SCC 2021) December 20 – 22, 2021, Tunisia.
- **Keynote Speaker**, Hierarchical Control of Interconnected Power Systems: A Two-Level Supervisory Controller for Transient Stability Crisis, 21st international conference on Sciences and Techniques of Automatic Control and Computer engineering (STA′2022), Sousse, Tunisia, December 19-21, 2022.
- **Keynote Speaker**, Adaptive Network Architecture-based Fuzzy Control Scheme for dc-dc Converters, 2022 IEEE 2nd Maghreb International Conference on

Sciences and Techniques of Automatic Control and Computer Engineering, May 23-25, 2022, Sabratha, Libya

- **Keynote Speaker**, Development and Implementation of Fuzzy-Neural-Network Structure-Based Self-learning Controls of Industrial Drives, International Conference on Electrical Systems & Automation (ICESA), May 29-30, 2023, Al Hoceïma, Morocco.
- **Keynote Speaker,** Emerging Methodologies in Artificial Intelligence (AI): A Real-Time Hardware Implementation Using Electric Drive System, IEEE 22nd International Conference on Sciences and Techniques of Automatic Control and Computer Engineering (STA'2025), December 20–22, 2025, Hammamet, Tunisia.
- **ABET Accreditation Workshop,** A three-day workshop titled, "Achieving Global Excellence in Engineering Education through ABET Accreditation: Strategies, Best Practices, and Success Stories," IEEE 22nd International Conference on Sciences and Techniques of Automatic Control and Computer Engineering, December 20–23, 2025, Hammamet, Tunisia.
- **Research Lectures,** Real-Time Applications-Based Electric Drive System in Self-Learning Intelligent Control Schemes, National Institute of Applied Sciences and Technology (INSAT), University of Carthage, Tunisia, March 23-25, 2026
- **Keynote Speaker**, Two-Level Hierarchical Control Architecture-Based Transient Emergency State for Electric Utility Industry, International Conference on Advanced Systems and Emergent Technologies (IC_ASET), March 26-28, 2026,
- Hammamet, Tunisia.

Howard University---Chair, College Decanal Transition Committee (Jan 19, 2016)

I played a major role as the chair of the College Decanal Transition Committee (DTC), which formed, in part, to create new Bylaws. In close collaboration with the faculty, we developed and unanimously adopted new Faculty Bylaws to support the college transformation over the next decade. It was transformed from 15 pages of constraints to five dynamic pages outlining the aspirational vision of our future as a college. Importantly, it streamlined cumbersome administrative layers. **On April 15, 2016,** the Board of Trustees approved the new Bylaws, a new college structure, and the new college name: College of Engineering and Architecture. Under my leadership, the following instrumental changes were reflected in the new Bylaws produced by the Decanal Transition Committee:

1. The "School" layer of administration was eliminated,
2. Combining the Electrical and Computer Engineering, and Computer Science Departments into the new "Department of Electrical Engineering and Computer Science (EECS),
3. The School of Architecture became the "Department of Architecture", with the same level of academic autonomy, and
4. The name of the college was changed from "The College of Engineering, Architecture and Computer Sciences" to the "College of Engineering and Architecture."

My experiences working with the Dean and members of the DTC have given me clear insight into what works and what doesn't when lead to a successful college transformation. Those experiences led me to view the position of Dean as the ideal level where I can personally best serve to have clear impact. Additionally, my teaching, research, and service experiences at HU have provided me with the necessary foundation to successfully serve as Dean.

Howard University---Chair, Ad Hoc Faculty Appointment, Promotion and Tenure Policies committee (February 2018)

As Chair of the Appointment, Promotion, and Tenure (AP&T) Committee for the College of Engineering and Architecture, I played a pivotal role in the development of a new and comprehensive "Faculty Promotion and Tenure Policies, Procedures, Guidelines, and Criteria" for the College of Engineering and Architecture. This initiative was undertaken to address the evolving needs of the College and to ensure alignment with institutional standards for tenure and promotion. The committee's efforts focused on creating clear, fair, and rigorous criteria that reflect the diverse contributions of faculty in teaching, research, service, and professional development. The resulting document provides a structured framework for evaluating faculty performance and achievements, supporting their career advancement while upholding the College's mission of academic and professional excellence. This work underscores the College's commitment to fostering a transparent and equitable pathway for faculty development and recognition.

Howard University---Chair, School and College Appointment, Promotion and Tenure (APT) Committees (2000-2011, 2013-July 2016)

Knowledge of the institutional dynamics at the top academic administrative management levels, and comprehension of the functional responsibilities shared between Office of the President and the Office of the Provost are envisioned to strengthen the background of a prospective candidate for the Dean. My previous interactions with the Dean and the Office of the Provost are believed to have enhanced my potential for effectively engaging interactions at these levels. During my tenure at HU as the Chair of the then School of Engineering Appointment, Promotion and Tenure (APT) Committee (2000-2007), and the Chair of the then College of Engineering, Architecture and Computer Sciences APT Committee (2007-2011, 2013-2016), I was directly involved in preparing and recommending promotion and tenure (P&T) cases. I am fully knowledgeable about P&T criteria and requirements and know the hiring process. At HU, I evaluated annual faculty performances and did annual evaluation of all tenured/untenured faculties for renewal of faculty appointments. I also evaluated tenured faculty performances including department chairs and I am knowledgeable about the guidelines and procedures of the academic system for annual faculty evaluation. In addition, I spent considerable time in mentoring junior faculty, and in advising them on how to develop their research as part of their professional career. Internally, I have gained the respect and trust of my colleagues across several departments.

Howard University---Graduate Director (2000-2010)

The Graduate Director is the graduate department's chief liaison with the Graduate School and chief departmental-level administrator of the graduate program. As the Graduate Director, I was integrally involved in coordinating all activities pertaining to the graduate program in electrical and computer engineering including recruitment, TA assignments, major policy changes, promotion of the program, and verification and implementation of all policies. I was responsible for developing for the first time the Graduate Studies Handbook for the department. Graduate enrollment increased during this period through increased recruitment efforts. I have also established international student exchanges and partnerships with industry, foundations, and other institutes. My responsibilities and accomplishments as a Graduate Director and in working with the faculty should be valuable in my role as Dean, and the required interactions with the faculty and graduate students. One of my key priorities at HU has been to attract and recruit diverse

graduate students. To this end, enrollment in the graduate program increased by 20%.

Howard University---Director, Motion Control & Drives Laboratory (2004-present)
During my professional career at HU at a different capacity, I developed a strong research program focused on several emerging related technologies with a primary focus on the development of control technologies by way of intelligence. My research program encompasses both experimental and computational work with extensive contributions in the areas of electric motor drives, prototype development, power systems, and several related areas of motion control in a broad range of industrial systems applications. I have published nearly 80 archival journal articles, referred conference articles, and book chapters, and have presented over 100 papers in national and international conferences. Research funding for this work has come from a variety of federal and private sources. My research capability resulted in the establishment of the Motion Control & Drives Laboratory (MCDL) at HU, which was funded by Moog Aerospace. MCDL is committed to developing students' laboratory skills and advanced hardware design. I have gained invaluable administrative experience as the Director of the lab; in this capacity, I have worked toward promoting MCDL to the university administrators and the local industry, and in garnering their support and commitment to help establish MCDL as a national lab. Through these efforts, a major accomplishment was the development of the curriculum and research program for the Electric Motor Drives and Motion Control streams within the Electrical Engineering Program at HU. The lab received funding from Moog Aerospace for several years.

Chair, Publications Department of IEEE Industry Applications Society (2011-Jan 2018)
Through my service as the IAS Publications Department Chair, I have made a significant impact on the IAS publishing program through my efforts to ensure the high quality of the IAS Transactions and Magazine. Perhaps the most important contribution that I had made to the IAS through the Executive Board was leading the way on addressing the problem of the IAS Impact Factor, rallying the ranking of IAS publications. Specifically, I developed realistic, effective, ethical, and coherent guidelines that were adopted by the IAS Executive Board to further improve the ranking of IAS publications, particularly that of the Transactions on Industry Applications. The goal is to further enhance the professional quality of the IAS Transactions, built over time by our predecessors, for the benefit of the next generation of engineers. Consequently, numerous special issues have been proposed for the IAS Transactions and approved by the Executive Board. Such special issues, with their exhaustive bibliographies, are very popular with the readership. Beginning in the first half of the year 2012 and the first half of the year 2016, I played a leadership role in leading the society's Five-Year Review. As the leader of this task, I developed the assessment methodology, data collection and analysis approach. The charge was over the course of twelve months to ensure that the IAS publications comply with IEEE policies & procedures. Because of this review, I produced written step-by-step instructions for each aspect of the review process that further ensure all the IAS publications continue to maintain the highest of standards. Accomplishing this task will mean that the Dean must develop and lead a team that elevates the research and academic profile of the College. I also coordinated the opportunities for writing and presenting technical papers in IAS, including practical suggestions for organizing papers as well as addressing some of the most common problems encountered by engineering students. The position at the IEEE-IAS provided me with broad-based experience in leading a considerable group of personnel involved in research, program planning, managing, and allocating budgets and

resources, developing new initiatives etc. I believe these experiences and networking with peers will be beneficial for a leadership position such as that of a dean.

PROPOSALS SUBMITTED—July 2016-present.

- Co-PI, Center of Excellence in Artificial Intelligence & Machine Learning, DOD, **$7.50 million**, Sept 16, 2020-Oct 15, 2024.
- PI, Apple Innovation: Expanding Silicon and Hardware Engineering curriculum in partnership with Apple's experts, Apple, **$1.2 million**, June 17, 2021-July 15, 2024
- Co-PI, EAGER: SaTC-EDU: Discovery, Analysis, Research and Exploration Based Experiential Learning Platform Integrating Artificial Intelligence and Cybersecurity, NSF, $300,000, August 1, 2020-July 31, 2022.
- PI, develop and implement an onboard intelligent model-based hybrid electric propulsion control system, NASA, $800K, May 15, 2021- June 15, 2024
- Co-PI, "FedSec-IoBT: Research and Educational Infrastructure for Machine Learning Enabled Federated Cloud Computing and Cybersecurity for Mission Critical Internet-of-Battlefield-Things," DOD, $600,000, 6/1/2019-5/31/2020.
- Co-PI, DoD Center of Excellence in Artificial Intelligence & Machine Learning, DOD, $7,500,000.00, October 1, 2020-August 31, 2025.
- PI, "Excellence in Research: Indoor Smart Grids for High-Performance Buildings using Computational Intelligence Methods," NSF, $500,000, 8/1/2018 – 7/31/2021
- Co-PI, "Excellence in Research: Blockchain Empowered Resilient Decentralized Control for Networked Unmanned Autonomous Systems," NSF, $500,000, 8/15/2018 – 7/15/2021
- PI, "Development of Robust Coordination of Unmanned Aerial Systems (UAS) and Terrestrial Vehicles for Planetary Exploration," NASA JPL, $50,000.00, 8/15/2018 – 7/15/2019
- Co-PI, "Collaborative Excellence in Research: An Interdisciplinary Collaboration for an Application-Specific FPGA-based UAV for Wildfire Environments," NSF, $2,209, 031, 09/01/2018– 8/31/2021

GRADUATE STUDENTS SPONSOREDS:

- Claude R. Ndzami Kolloh, **M.S**., May 2018
  Thesis: Bearing Fault Diagnosis for Induction Motor Drives using Extended Kalman Filtering FNN Learning Technique
- Bell Allen, **Ph.D**., Dec. 2012
- Thesis: Indoor Smart Grids applied to Electrical Power Distribution Systems in Buildings
- Paul Young, **M. S**., Summer 2010
  Thesis: dSPACE DSP-Based Fuzzy-Neural-Network Controllers using EKF for Motor Drives
- Janet Jerry, **M. S**., Spring 2010
  Thesis: DSP-Based Laboratory Implementation of Switching Fuzzy-Control for Appliance Industry
- Musa Hassan, **M. S**., Fall 2009
  Thesis: Adaptive State Feedback Control-Based Observer using Recursive Least Square
- Marcel Castro, **Ph.D**., August 2007
  Thesis: Artificial Intelligence-based Real-Time Controllers for Industrial Drives
- Abdul Ofoli, **Ph.D**., May 2006
  Thesis: Development and Implementation of Intelligent Controllers for Automation and Power Industry.
- Donatus Cobbinah, **M.S**., May 2005
  Thesis: dSpacs DSP-based Industrial Controllers for Engineering Education
- Michaela E. Amoo, **M.S**., May 2005
  Thesis: Fuzzy Logic-Based Two-level Hierarchical Control
- Abdul Ofoli, **M.S**., December 2003

Thesis: Multilayer Fuzzy Logic Control for Electric Utility Industry

- Raj Kotaru, **M. S**., May 2002.
  Thesis: Identification and Control of Electric Drives using Artificial Neural Networks.
- Daniel Ricketts, **M. S**., May 2000.
  Thesis: Adaptive Fuzzy Control for High Performance Brushless DC Motor Drives.
- Oscar Urbina, **M. S**., December 1999.
  Thesis: Adaptive Tracking Controller for High Performance Induction Motor Drives.
- Victor Udo, **M.S**., May 1991
  Thesis: Hierarchical Adaptive Load Frequency Control of Interconnected Power Systems

CONTRIBUTIONS TO ENGINEERING EDUCATION:

As an educator, Prof. Rubaai provides leadership facilitating a high-quality engineering education. He has developed laboratory courses, introduced several cross-disciplinary design courses, contributed to curricular innovation by developing open-ended problems for his courses, and developed instructional software packages for engineering education. He is one of the first engineering faculty members to develop comprehensive, open-ended problems in his courses. He has been a leader within the HU Engineering faculty in creating and implementing the concept of hands-on training as part of the curriculum. In recognition of his scholarly work and dedication to the improvement of engineering education, his work is recognized by the larger community of engineering educators, as verified by his receipt of the 2011 ASEE Robert G. Quinn Award and the Distinguished Educator Award of the Middle-Atlantic Section of the American Society for Engineering Education. This recognition is a clear demonstration and confirmation of his peers' high regard for his contributions to engineering education. His novel contributions are outlined below:

Founder and Lead Developer of Motion Control and Drives Laboratory

Prof. Rubaai is the Founder and Lead Developer of the College of Engineering Motion Control and Drives Laboratory that provides engineering students with valuable hands-on and "real-world" experiences." A three-year funding and a generous equipment donation from Moog Aerospace have enabled Prf. Rubaai, to construct the lab using state-of-the-art control systems technology. The lab is committed to developing students' laboratory skills and advanced hardware design. The laboratory stresses real-time control design and experimental implementation, prototype development, technical documentation, team building, and enables both graduate and undergraduate students to develop and implement designs for a novel and innovative learning experience. The key hardware element of such capability is an embeddable dSPACE DSP-based data acquisition and control system that can be connected to various sensors and actuators, depending upon the system objectives.

Development of Computer-Aided Design Software Packages for Engineering Education

- Developed an optimizing software package for power transformer design with three parts: synthesis, analysis, and optimizing routine. The package comes in an executable form, and both "FORTRAN" and C++ source-code. A manual gives clear directions for editing and recompiling the code. In general, the software package serves as the basis of a design methodology and is continually upgraded as new materials and better formulas, or new empirical factors become available. Hence, this software represents a careful, systematic, and logical method of design for power transformers, and is utterly novel and unique. From an educational point of view, this software provides engineering professors with a modern design tool that is both attractive and useful to undergraduate students. This work has generated a substantial amount of interest. As evidence of this, the package and its user manual have been requested and utilized by teaching/research institutions worldwide.
- Developed an interactive software package, combining both engineering and economic considerations of purchasing and operating transformers or induction motors. The package is completely menu-driven,

and contains appropriate help commands and instructions, which enable it to be used without additional documentation. Upon starting, the student is given the option of accessing a detailed instruction file, creating, or editing a data file, or running a saved case.

Published Instructional Materials

Influencing many of the decisions made regarding curriculum revision are the ABET requirements. Key points of the ABET requirements pertain to curriculum content, adequate laboratory experience, adequate use of computers throughout the curriculum, and engineering design.

A. Journal Articles:

1. A. Rubaai, "Computer Aided Instruction of Power Transformer Design in the Undergraduate Power Engineering Class," IEEE Trans. Power Systems, Vol. 9, No. 3, pp.1174-1181, August 1994.
   *(According to the Google Scholar, this paper has been **cited 42 times**.) Developing optimizing software for power transformer design with three segments: synthesis, analysis, and an optimizing routine. In general, the software package serves as the basis of a design methodology and is continually upgraded as new materials and better formulas or new empirical factors become available.*
2. A. Rubaai, "Training of Undergraduate Engineering Students in Sensing and Control Technologies," Int. Journal of Engineering Education, Vol. 16, No. 6, pp. 534-543, December 2000.
   Naturally, training students in sensing and control technologies will indeed improve the quality of the nation's engineering research, education, and human resources. The goal is to develop a much needed pool of hands-on researchers in control technologies, to support a fast growing, high demand market and future workforce, and to provide students with the necessary edge to excel in the marketplace.
3. A. Rubaai and M. Shwehdi, "PC Software for Teaching Transformer and Induction Motor Economics," Int. Journal of Engineering Education, Vol.10, No. 4, pp.373-381, 1994. *This paper is the first to offer an educational tool for machine analysis-based sound economics. The tool is designed to allow undergraduate students to conveniently analyze the costs of losses and initial investments for transformers and induction machines. It provides students with a better understanding of both the physical machine losses and engineering economic.*

B. ASEE Annual Conferences

4. A. Rubaai and A. Ofoli, "Teaching Power Electronics Converter Experiments using Fuzzy Logic Approach," Proceedings of the 2011 ASEE Annual Conference and Exposition, Vancouver, BC, Canada June 26-29, 2011.
5. Ahmed Rubaai, "Laboratory Innovations in Undergraduate Control Engineering Education," Proceedings of the 2010 ASEE Annual Conference and Exposition, Louisville, KY, June 20-23, 2010.
6. A. Rubaai and R. Chawla, "Laboratory Experimentation and Real-Time Computing: An Integrated Environment," Proceedings of the 2009 ASEE Annual Conference and Exposition, Austin, TX, June 14-17, 2009.
7. A. Rubaai, R. Chawla, and J. Cannon "Laboratory Implementation of Bang-Bang Controller-Based Motor Drive Module for Modeling and Controls Courses," Proceedings of the ASEE Annual Conference and Exposition, Pittsburgh, PA, June 22-25, 2008.
8. A. Rubaai and J. H. Johnson, "DSP-Based Real-Time Control Systems Design, Analysis, and Implementation for Reinforcement of Controls Education," Proceedings of the ASEE Annual Conference and Exposition, Chicago, IL, June 18-21, 2006.
9. A. Rubaai, J. H. Johnson, and D. Cobbinah, "The New Motors and Controls Laboratory at Howard University," Proceedings of the ASEE Annual Conf. & Exposition, Portland, Oregon, June 12-15, 2005.
10. A. Rubaai, M. F. Chouikha, "Design of Intelligent Controllers for DC-DC Converters in Undergraduate Engineering Laboratory," Proceedings of the ASEE Annual Conference and Exposition, Salt Lake City, Utah, June 20-23, 2004
11. A. Rubaai, "Training of Undergraduate Students in Control Technologies," Proceedings of the ASEE Mid-Atlantic Conference, pp. 1B2-1-1B2-4, US Military Academy, West Point, NY, April 26, 1997.

12. A. Rubaai and J. J. Williams, "A PC-Based Educational Tool for Teaching the Design of Electric and Magnetic Portions of Transformers," Proceedings of the Frontiers in Education Conference, pp. 847-852, Washington, DC, Nov. 6-9, 1993.

CONTRIBUTION TO BOOK:

- "Fuzzy Logic Applications in Electrical Drives and Power Electronics," Chapter 37, Power Electronics Handbook, 3rd Edition, Editor, pp. 1115-1137, M. H. Rashid, Academic Press, January 2011.
- "Fuzzy Logic in Electric Drives," Chapter 35, Power Electronics Handbook, 2nd Edition, pp. 999-1013, Editor, M. H. Rashid, Academic Press, June 2007.
- "Fuzzy Logic Control for Power Networks: A Multilayer Fuzzy Controller," Chapter 18, Advanced Fuzzy Logic Technologies in Industrial Application Handbook, pp. 261-277, Editors, Y. Bai, H. Zhuang and D. Wang, Springer-Verlag London Ltd, January 2007.

PROFESSIONAL ACTIVITIES:

- **Chair**, **ASEE Robert Quinn Award Committee, June 2013-2016.**
  - Assist ASEE Headquarters with the administration of the award.
  - Coordinate and direct all the committee deliberations.
  - Assess and recommend the award winners.
- **Publications Chair, IEEE-Industry Applications Society (IAS) / Jan. 2012-JAN 2018**
  The Department Chair occupies a seat on IAS Executive Board and is responsible for implementing the publications policies and procedures approved by the IAS ExecBoard. Other Duties are:
  - Represent IAS at the IEEE Editorial Board.
  - Chair IAS Prize Papers Committee.
  - Recommend staffing, contract content and honorariums for editors for ExecBoard approval.
  - Responsible for updating the author's Guide and Guide to procedures for processing technical papers as needed (in coordination with IAS Transactions and IAS magazine editors).
  - Responsible for the continuity of operations in the Department irrespective of staffing changes.

- **Executive Board Member, IEEE IAS: January 2012-2018**
  - Represent the Publications Department before the IAS Executive Board
  - Responsible for efficient liaison with each Operating Department Vice-Chair-Papers.

- **Division Chair, ASEE Division of Experimentation and Laboratory Oriented Studies (DELOS): June 2009-June 2010, June 2011-June 2012.**
  - ✓ Prepare the annual report of DELOS activities and forward this report to the Society and members of the Division Officers.
  - ✓ Prepare the financial report of the Division operations for the year.
  - ✓ Secure external funding for the Division.

- **ASEE DELOS Technical Program Chair: June 2010-June 2011, June 2008-June 2009**
  - Coordinated the 2009 ASEE DOLES Technical Program with ASEE Headquarters for the 2009 ASEE Annual Conference & Exposition, Austin, TX.
  - Managed the review of abstracts, drafted papers and recommended more than 42 papers for acceptance to the 2009 ASEE Annual conference & Exposition.
  - Provided technical assistance to all authors and managed paper sessions.

- Administered and recommended 2009 DOLES Prize Papers and Awards.
- Created the division's call for papers for the 2010 Annual Conference & Exposition.

❑ **Executive Board Member, IEEE Industry Applications Society (IAS): Jan 2006-Jan 2008**

- Represented the Manufacturing Systems Development and Applications Department (MSDAD) before the IAS Executive Board.
- Promoted and encouraged nomination for IAS and IEEE awards.

Key Contributions as IAS Executive Board Member:

- This contributed significantly to the restoration of the Appliance Industry Committee (AIC) with a tremendous achievement.
- Successfully established the structure of the revitalized AIC and identified its primary officers.
- Pioneered efforts in preparing nominations for the IEEE Awards. As a result, three long-standing members of the MSDAD have received the coveted and prestigious "IEEE Richard H. Kaufman Award."

❑ **Chair, IEEE-IAS Manufacturing Systems Development and Applications Department (MSDAD), Jan 2006-Jan 2008 …….. Jan 2018**

- Provided leadership to the MSDAD and entailed a role on the Executive Board.
- Organized and supervised the work of the Technical Committees of the MSDAD.
- Prepared a quarterly report of the MSDAD activities and forward this report to the Society President and members of the Executive Board.

Key Contributions as MSDAD Chair

- Established the MSDAD "Leadership and Service Award" (first presented at the 2007 IAS Annual Meeting), with a mission to strengthen, and serve the needs of the MSDAD membership and recognize individuals for their exceptional service and leadership.
- Promoted the initiative of special issue on "Display Technology" for the 2008 IAS Magazine.
- Provided leadership in guiding the merger of the Production and Application of Light Committee and Displays Committee. This effort has resulted in establishing the new Industrial Lighting and Displays Committee to deal with the impact of the new display technologies on the industry applications.

❑ **Chair, IAS Industrial Automation and Controls Committee (IACC), 2000-2002**

- Presided at all Committee and Executive Subcommittee meetings.
- Represented the Committee before the IAS Council and fulfill all responsibilities required to coordinate the smooth operation of the Committee with IEEE and the Society.
- Prepared a quarterly report of Committee activities and forward this report to the Chairman of the Manufacturing Systems Development and Applications Department.
- Prepared the financial report of Committee operations for each year.

Key Contributions as IACC Chair

- Initiated and advocated the establishment of the IACC 'Leadership and Service" Award (first presented at the 2002 IAS Annual Conference), with a mission to inspire scholarly paper contributions, and strengthen, and serve the needs of the IACC membership.
- Established the IACC "Best Reviewer Award" (first presented: 2008), with a mission to inspire scholarly paper contributions, and recognize the anonymous work of the referees.
- Spearheaded the re-instatement of the "Prize Paper Awards" within the IACC. The re-instatement

has, in part, re-energized the membership to increase the number and quality of papers submitted for IAS Annual Conferences.

- **Vice Chair and Technical Committee Program Chair, IACC-IAS, 1998- 2000**
  - Organized and coordinated the Industrial Automation and Control Committee (IACC) Technical Program for the IEEE/IAS Annual Conferences.
  - Identified the number and scope of the IACC paper sessions for the IAS Annual Conferences.
  - Served as Chairman of the Papers Review and Prize Awards Subcommittee.
  - Appointed session chairs and session organizers of the IACC Technical Program.
  - Sent out acceptance/rejection letters for the accepted and the dismissed papers.
  - Prepared & supplied a list of technical sessions sponsored by the IACC for the IEEE/IAS Annual Conferences to IAS General Technical Program Chairmen.

    Key Contributions as IACC Vice-Chair
  - Single-handedly cleared a backlog of un-reviewed Transactions-seeking papers. Sole architect is responsible for bringing the IACC up to date with the Transactions review process.
  - Assembled **9** technical sessions and reviewed and coordinated more than 150 papers for 2000 IAS Annual Meeting held in Rome, Italy, perhaps one of the busiest and largest IAS Conferences, ever. Organized **5** sessions, chaired **2** technical sessions, and served simultaneously as review coordinator and Transactions review coordinator in the same year.
- **Secretary, IACC-IAS, 1996-1998**
  - Prepared and distributed by Email and US Mail to each Committee member a copy of the minutes of each meeting including the attendance record, up-to-date membership roster, the minutes of all Subcommittee meetings and a copy of all reports presented at the meeting.
  - Prepared an agenda for the scheduled Committee meeting and distributed the agenda to all Committee members with the announcement for a Committee Meeting.
- **General Chair and Technical Conference Chair, Fall Regional Conference of the Middle Atlantic Section of the ASEE, Howard University, Nov. 1998**.
  - ✓ Provided technical assistance to all authors. Assured all papers are technically sound.
  - ✓ Reviewed and recommended more than 46 papers for presentation at the conference.
  - ✓ Designed and typed the tentative and the Final Conference Program.
  - ✓ Secured additional funding for the Conference ----- A total of $5,725.00.
  - ✓ Coordinated and directed all the Organizing Committee meetings.
  - ✓ Handled all the correspondence with the plenary, keynote and banquet speakers, authors, attendees, moderators, exhibitors, hotel managers, Dean, and the provost.
  - **PROFESSIONAL ACTIVITIES**
  - Serving as Associate Editor for the IEEE Transactions on Industry Applications.
  - Serving as regular reviewer for the IEEE Transactions on Engineering Education.
  - Serving as regular reviewer for the IEEE Transactions on Industrial Electronics.
  - Serving as regular reviewer for the IEEE Transactions on Energy Conversion.
  - Member, IEEE Industry Applications Society
  - Member, IEEE Industrial Electronics Society
  - Member, IEEE Power, and Energy Society.
  - Member, American Society for Engineering Education.

UNIVERSITY COMMITTEES:

- **College of Engineering, Architecture and Computer Sciences**
  - **Chair,** College-Wide APT Committee: 2007-2011, 2013-July 2016

- ✓ Perform annual evaluation of all tenured and untenured faculties including department chairs and directors for merit Awards.
- ✓ Directly involved in preparing and recommending promotion and tenure cases.
- ✓ Evaluate annual faculty performances of untenured faculties for renewal of faculty appointments.
- ▪ **Member,** College Executive Committee: 2000-2012, 2015-July 2016

❑ **School of Engineering and Computer Science**

- ▪ **Chair,** School APT Committee: 2000-2007
- ✓ Evaluate annual performances of all untenured faculties for renewal of faculty appointments.
- ✓ Directly involved in preparing and recommending promotion and tenure cases.
- ▪ **Faculty Senate Representative**: 1995– 2007

❑ **Electrical and Computer Engineering Department**

- ▪ **Graduate Director:** Chief liaison with the Graduate School and chief departmental-level administrator of graduate programs (2000-2010)
- ✓ Evaluated weekly applications for the new graduate students.
- ✓ Coordinated and administrated the Qualifying and Preliminary Examinations
- ✓ Corresponded daily with faculty and graduate students.
- ▪ **Chair,** Faculty Search Committee: 2000-2003
- ▪ **Member**, Executive Committee: 2000-2011

❑ **University-Wide Committees**

1. Member, Council of the Faculty Senate: 1995– August 2007
2. Member, Steering Committee of the University Senate: 1996- August 2007
3. Committee Chair, Merger Panel for the new College of Engineering, 1996-1997.

CONTRIBUTIONS TO THE ADVANCEMENT OF ENGINEERING, SCIENCE, AND TECHNOLOGY

Prof. Rubaai has made significant contributions to the development and control of electric motor drives for industrial system applications in a variety of roles including scientist, research engineer, university professor, and as IEEE volunteer and leader. His work is fundamental but covers a broad range of manufacturing and product applications and exemplifies his ability to bridge academic research and the application to industrial applications. The bridges that Prof. Rubaai has built between industry and academia represent a uniquely valuable contribution that can be matched by very few others in the academic world today. Of particular importance is his development of control technologies by way of intelligence that can provide robust, high bandwidth estimates at zero fundamental frequency/rotor speed, which dates to the late 1990s; laying the technological foundations for the production versions of high-performance drives used in an expansive array of industrial, commercial, and transportation applications today.

A significant contribution that Prof. Rubaai has made to his profession is his mentoring Ph.D. and M.S. students who have completed their graduate degrees under his supervision, including thesis research. During the past 22 years, these graduates have gone on to pursue successful careers in both industry and academia. Many of them are now considered technical leaders in motion control field themselves.

EVIDENCE OF TECHNICAL ACCOMPLISHMENT

PART 1: MOST IMPORTANT TECHNICAL CONTRIBUTIONS

1. **Ahmed Rubaai**, "Direct Adaptive Fuzzy Control Design Achieving H∞ Tracking for High Performance Servo Drives," IEEE Transactions on Energy Conversion, Vol. 14, No. 4, pp. 1199-1208, December 1999. *Laid the technological foundation for intelligent drive systems, opening up research directions and commercial possibilities in high performance drives. Has had a profound and lasting impact on the design and application of intelligent control for Drive Systems, and pointed towards the development of a new generation of high-performance motor drives that integrate H∞ tracking control with the*

intelligence.

2. **Ahmed Rubaai**, D. Ricketts and M. D. Kankam, "Experimental Verification of a Hybrid Fuzzy Control Strategy for a High-Performance Brushless DC Drive System," IEEE Transactions on Industry Applications, Vol. 37, No. 2, pp. 503-512, March/April 2001. *Impacted a wide range of automotive applications, including speed control of EVs/HEVs; has been foundational in Ford Motor Company's improvement of Engine Power and Speed Behavior in a Hybrid Electric Vehicle, leading to the achievement of overall vehicle efficiency, and enhancement of customer satisfaction.*
3. **Ahmed Rubaai**, A. Ofoli, L. Burge III, and M. Garuba, "Hardware Implementation of an Adaptive Network-Based Fuzzy Controller for DC-DC Converters," IEEE Trans. Industry Applications, Vol. 42, No. 6, pp. 1557-1565, Nov. /Dec. 2005. *Aided health care industry in modeling Intelligent Multi-Agent based E-health Care System for People with Movement Disabilities, and in developing Multi-Agent control of Bio-Robots. Decisive inputs to industrial controls systems of converters and motion controls.*

PART 2: IMPORTANT TECHNICAL ACHIEVEMENT/SELECTED PUBLICATIONS

4. **Ahmed Rubaai**, "A Neural-Net-Based Device for Monitoring Amtrak Railroad Track System," IEEE Transactions on Industry Applications, Vol. 39, No. 2, pp. 374-381, March/April 2003. *Addressing the need of integrating "Switch Status Detection" for monitoring Amtrak railroad track system and providing countless solutions for taking the Centralized Electrification & Traffic Control System operated by Amtrak to increasingly higher levels. It has a profound and lasting impact on the safety of the personnel in railway.*
5. Ahmed Rubaai, D. Ricketts, and M. D. Kankam, "Development and Implementation of an Adaptive Fuzzy-Neural-Network Controller for Brushless Drives," IEEE Transactions on Industry Applications, Vol. 38, No. 2, pp. 441-447, March/April 2002. *(**125 citations** according to Google Scholar.) Highly cited paper that presented valuable new concepts for control technology that enables the widespread use of high efficiencies, Ac machine drives, especially in applications that require low cost and/or high performance. This capability translates into significant improvements in robustness.*
6. **Ahmed Rubaai** and A. Ofoli, "DSP Based Real-Time Implementation of a Hybrid H∞ Adaptive Fuzzy Tracking Controller for Servo-Motor Drives," IEEE Transactions on Industry Applications, Vol. 44, No. 2, PP. 476-484, March/ April 2007. *Addressing and resolving practical issues and design limits encountered in the development of high-performance drives that integrate intelligent control. These practical issues point towards future innovations for intelligent drive systems.*
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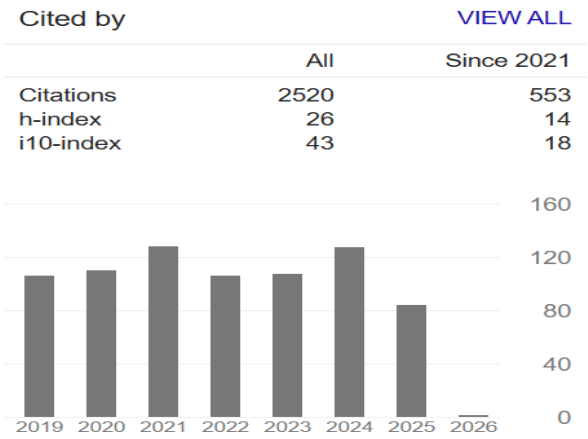
GOOGLE SCHOLAR



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