

Iran Section Vahid Ahmadi

IEEE Iran Section Report

November 2021



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Section Vitality

IEEE Iran Section Membership Development Committee (MDC) is responsible for recruiting and retaining members. This committee is trying to improve the benefits for the members through MoU and different contacts. The committee also implements member awareness of the value of IEEE membership, financial support for membership, and local benefits for members. The **vision** of this committee is to prevent the decline and increase of the number of members to over 800 people (situation in 2019) after two years (in 2023).

Reasons for reducing membership:

- Membership dues are very high for our members due to local currency devaluation against the other currencies
- Prevention of holding conferences in person due to Covid-19 in the last two years

Executive priorities

- Notices and notifications
- Motivational actions
- Donations
- Payment facility

Activities done by MDC

- Prepare letters to universities to facilitate the payment of grants
- Participate in MGA meetings and webinars and report on them
- IEEE Introduction and Membership Benefits Webinar: Registration / Renewal Training and How to Pay for Membership

Planned Activities

- Hold webinars to express the benefits of membership as well as teach and facilitate the membership process
- Present lectures at the beginning of specialized webinars and encourage students to join
- Provide membership lists for student branches for on-campus activities (email to people who have not specified their university)
- Restrict the issuance of certificates of participation in specialized webinars only for members
- Negotiate with the Conference Committee to provide further discounts on the cost of registering for internal conferences for members
- Contact with the Industry Relations Committee to provide a discount on the cost of some services such as Internet membership fees, etc. to members
- Provide discounts on welfare services-online stores for members

Students

- Currently, we have 58 Student Branches (SB) which some of them are very active. In order to develop this network, we conducted two annual meetings. These well help SB and YP gather together which consequences of improving their connections with each other, new collaborations, discuss new ideas or issues, meeting in person with Iran Section ExCom to discuss challenges and provide them new packages.
- We are planning for the 12th IEEE Iran Section Awards Ceremony which will be held virtually. This meeting is very important due to the gathering of the whole section and beyond. There are some industry sponsors which will support this event through MoU.
- Achieving the position of the top branch, worthy book and selected title in digital content by Tarbiat Modares University (TMU) student branch in the Harekat festival. This festival is one the important festivals in the country which is held annually.
- Achieving the 37th Place in the World in IEEEXtreme Competition by Khajeh Nasir Toosi University of Technology (KNTU) Student Branch
- Achieving the position of the best counselor in the Harekat festival.
- Achieving the first place in the IEEE PELS Day 2021 competition by Buin Zahra Higher Education Center of Engineering and Technology (BZTE) student branch
- Establishing a benchmark for reviewing student conferences



Planned Activities

- Student Membership Development
- Expanding and developing international activities
- Expansion of domestic and foreign industrial relations
- Expansion of competitions
- Expansion student seminars and workshops
- Expanding activities to startups and working with accelerators
- Scientific and industrial visits and tours
- Cooperation in organizing conferences
- Create a business club
- Scientific trips
- Trying to create CoOp

Affinity Groups

Young Professionals

Mission

- Inspiring and equipping youth to be proactive and responsible, become more successful professionals, stronger leaders, and more conscientious citizens,
- Provide professional development opportunities for Young Professionals,
- Create the building blocks for lifelong and diverse professional networks: while school ties end at graduation, support from IEEE lasts through your entire career.

Vision

Facilitate successful transition of IEEE student members through young professionals to senior members, as future leaders of the techno-economic ecosystem.

Planned Activities

- Support student members by bridging the transition from young professional to senior membership.
- Provide students and young professionals with career services/advice via talks/seminars/webinars and job fairs/demonstrations.
- Provide students and young professionals with soft skills education via talks/seminars/webinars.
- Provide students and young professionals with technical/professional training via talks/seminars/webinars.
- Enable better networking and engagement between senior and younger members.
- Create a society-wide mentoring community based on volunteering.

Activities done since the last Report

- Infrastructure Asset Management with Power System Application -- with models for predictive maintenance Webinar
- How IEEE PES shaped my professional career & what's in it for you? Webinar
- Climate change and Resiliency Webinar
- Key Insights to Career Management Webinar

Communication Committee

Vision

Hybrid http://november-2021.ieeer8.org/ Frankfurt, Germany, 6–7 November 2021



Communications Committee strives to improve the identity, brand, and position of the IEEE Iran section at the national and international level through media, personal, and social interactions.

Missions

The Communication Committee pursues the following two major missions:

- 1. Facilitate, deepen and develop intra-organizational (institutional) communication.
- 2. Development of communication with the community of stakeholders and audiences outside the association in national and international arenas.

To achieve missions, the Communications Committee designs produces and disseminates printed publications, electronic communications, audio-visual presentations and other communications tools appropriate to the mission.

Planned Activities

- Activate newsletter and website and improve the effectiveness of information for the activities of IEEE Iran Section in both English and Persian languages
- Preparation of reporting instructions from the committees of the IEEE Iran Section
- Preparation of vTools instructions interactively and notification to committees and related sectors in Iran Section
- Pursue the allocation of job advertisements for job seekers and also recruitment for industry owners and companies
 in the website of IEEE Iran Section in order to make the process of attracting graduates for employment in industrial
 sectors more effective.
- Defining and allocating a platform for international communications in the Iran Section
- Planning to create a place for registration, management and issuance of automatic certificates of participation in section courses and webinars on the section website.
- Preparation of IEEE Iran Section introduction package to present to different audiences
- Coordinating educational and research activities, competitions, webinars and seminars with useful content for the Industrial Relations Committee
- Propose general policies for defining specialized areas for holding webinars in interaction with committees, chapters and working with student branches to receive ideas and titles for webinars, competitions and seminars
- Preparation of instructions and work process for content production, preparation of standard framework for posters, webinars, etc. and notification to all units in Iran Section
- Planning to create a special resources section for members in the branch website (with the aim of archiving the section webinars and roundtables which is held in Persian)
- Facilitating and developing academic, industrial and business relations in the domestic and international dimension through national and personal relations of the committee members, within the framework of the approved and strategic plan of the Iran Section
- Domestic and international reflection of all activities of IEEE Iran Section among committees, Chapters, domestic and international university complexes, students and graduates
- Effective reflection of holding webinars and seminars with more active participation of chapters and committees and effective notification to university chapters and reflection of relevant news through websites, newsletters, section channels in Telegram and LinkedIn
- Providing a suitable platform for storing and recording information of IEEE Iran Section

Educational Activities Committee (EAC)

- Responsible for managing and conducting lectures, workshops, seminars and webinars (educational events)
- Evaluate and, if necessary, negotiate and advise on requests for events in various fields of electrical and computer engineering
- Proposal to the Board of Directors to issue a license to use the IEEE Iran Section logo

Mission and Vision

Holding or supporting direct and indirect events (courses, workshops, seminars, webinars, lectures, etc.) with the aim of increasing the scientific ability of compatriots to achieve humanitarian goals

Goals

- Maximum use of domestic and foreign capabilities to increase the knowledge of individuals, especially the young generation of the country for humanitarian purposes
- Appreciate the teaching and learning activities of the young generation of the country to leave the future of the country in their hands



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- Efforts to strengthen ethics in education and research
- Guiding young people to work in scientific fields

Using the cooperation of faculty members and experts in the fields of:

- Supervising event organizers
- Forming a group and holding cryptocurrency webinars at three levels: basic, intermediate and advanced
- Forming a group and holding soft skills courses applicable in absentia
- Forming a group and holding ethics training courses in science and technology
- Forming a group and presenting instructions and solutions for conducting laboratories online (virtual)
- Forming groups and holding webinars of smart networks,
- Forming a group and holding artificial intelligence webinars
- Forming a group and holding entrepreneurial webinars
- Writing paper and paper mining in databases and citations
- Holding appropriate workshops in cooperation with other reputable scientific associations
- Holding workshops in cooperation with women affairs of Iran Telecommunication Research Center
- Holding appropriate events for high schools, industry and universities with the cooperation of experts and student branches
- Holding training workshops in the post-Corona period, cooperating with other committees and groups of the department, especially the committee of professional activities
- Review and confirm the proposed events for using the logo of the Iran Section
- Evaluation and issuance of digital certificates in Iran Section

Activities done by EAC

- Disruptive Change in University Educational methods After Covid 19 Webinar
- Discover the Golden Point Webinar
- Lecture by Eng. Hassan Etaat, Career Path Design for young graduates
- Lecture by Dr. Mehdi Shami Zanjani on digital transformation
- Lecture by Dr. Karim Mohammadpour Aghdam, Industry Relations Panel
- Near Field Antenna Pattern Measurement Webinar
- Swarm Robotics in Oil Spill Monitoring and Cleanup Webinar
- Introduction to IEEE Women in Engineering
- Haptic Technology in Intraocular Surgeries Webinar
- The first course of workshops for managers and activists in the field of Internet of Things with LoRaWAN approach,
- Step by step principles of starting and developing a startup,
- Developing a business plan and model,
- Digital marketing,
- Legal issues of starting a business,
- Interpersonal Influence in Computer-Mediated Interactions.
- Speech by Maciej Borówka, Chair of the IEEE District 8 Student Activities Committee
- Speech by Prasanth Mohan, Student Awards Officer, IEEE MGA Student Activities Committee

Professional Activities Committee (PAC)

- Professional Activities at IEEE Iran Section encompass meetings, conferences, competitions, networks, publications, and programs focused on the non-technical aspects of technology careers.
- These activities are designed to help members outreach to the public, develop an awareness of professional issues, and develop their skills in such areas as job searching, communications, and project management

Mission & Vision

The missions of IEEE Iran Section's Professional Activities Committee are:

- Develop programs within the scope of professional activities to provide additional value for members of IEEE in the Section
- Recruit volunteers to ensure the continuity of professional activities in the Section
- Promote professional interests of the Iran section members on their professional needs

Objectives

The Professional Activities Committee shall:

• Encourage and support the sections in ensuring the professional growth of the members at all levels in Region 8



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- Work with others in the Region to encourage, develop, and nurture programs that stimulate interest in science, technology, engineering, and math of pre-college students and encourage their later participation in the IEEE
- Submit the Professional Development Financial Report as required
- Coordinate the work to optimize the effectiveness of the professional activity interface with Region, state and local government entities
- Encourage student branches to hold events to promote professional awareness.

Responsibilities

As part of its role, Professional Activities Sub-Committee aims at reaching out to members and achieving the aforementioned goals by taking the following actions.

- Organizing workshops
- Funding attendance of speaker(s) in events organized by another IEEE Section
- · Representing IEEE and its members at national/international levels
- Facilitating the availability of PA-related resources through webinars, websites, etc.
- Publicizing PA products and services through written material
- Attending PA-related IEEE Activities
- Leveraging production of PA-related materials (offline webinars, etc.)

Activities done PAC

- Appointment of Vice-Chair and Secretary of the Committee
- Determining the structure and formulating the activities of the professional committee in the meeting for a period of 2 years
- 2-year plan correction and notification
- Program of workshops and webinars by professors and specialists abroad
- Program of workshops and webinars by professors and domestic experts
- Coordination of certification
- Website updates and maintenance
- Schedule and manner of digital advertising of committee performance
- Program and method of live broadcast of lectures and webinars
- Launching Parto magazine and preparing the form, template and layout of the magazine
- Holding competitions to solve industry challenges
- The Paradigm of Ensemble and Deep Neural Networks for Big Data and Analytics Webinar
- Disruptive Change in University Educational methods After Covid 19

Standards Committee

Missions

- Improve the quality and application of reliable products through the developments of standards
- Develop new standards for use in national industries
- Promote the recognition of the role of standards in the academic society.

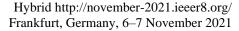
Vision

- Establishment of agreements and MOUs between related organizations such as national standard organizations
- IEEE Iran section and the academic community
- Holding workshops, conferences and seminar

Objectives

- Training and promotion of using IEEE standards in industries in cooperation with the Industry Relations Committee
- Cooperating with relevant technical ministries to prepare relevant national standards
- Cooperating with the country's standards organization to cooperate in preparing relevant national standards
- Proposing international standards to the IEEE Standards Development Committee
- Helping to introduce competent people from Iran to participate in the development of IEEE standards at the international level







- Planned Activities Identify, promote and train at least three IEEE standards related to the computer chapter in Iranian industries
- Identify, promote and train at least three IEEE standards related to the power chapter in Iranian industries
- Identify, promote and train at least three IEEE standards related to the control chapter in Iranian industries
- Identify, promote and train at least three IEEE standards related to the electronics chapter in Iranian industries
- Identify, promote and train at least three IEEE standards related to Telecommunications and Information Theory in Iranian Industries
- Identification, promotion and training of at least three IEEE standards related to photonics and electromagnetism in Iranian industries
- Collaborate with the National Standards Organization to develop, translate and edit standards in IEEE-related areas
- Introducing the IEEE capabilities of the Iranian sector to cooperate in the development of international standards by IEEE SA
- Collaborate with relevant ministries to prepare national requirements and standards

Chapters

We have 8 active Technical Chapters as follows:

- 1) Communications and Information Theory Joint Chapter
- 2) Control Systems Joint Chapter
- 3) Electromagnetics and Photonics Joint Chapter
- 4) Power Joint Chapter
- 5) Electronics Joint Chapter
- 6) Computer Society
- 7) Computer Society
- 8) Electronics Chapter

Activities done by Technical Chapters

- Round Table on Sustainable Electricity Supply, peak load 1401 and after (Virtually)
- The second meeting of the Round Table on Sustainable Electricity Supply, peak load 1401 and after (Virtually)
- Cybersecurity and Resilience Enhancement of Smart Grids Webinar
- Fault Location in Power Network using Time Reversal Theory Webinar

Industrial Relations Committee (IRC)

Our active industry partnerships are well-known companies/trade unions in the country which have been mentioned already in our reports however they are listed as follows:

- Iranian Telecommunication Industries Syndicate
- Paya Communication Industries
- Mobinnet Telecommunication Company
- Nian Electronic Co.
- Faraz Co.
- R & D Development Company (Teta)
- Azmoon Keyfiat Co.
- Karen Antennas Technology Co.

Also, we have active industry partnerships with the top universities of the country:

- University of Tehran
- K. N. Toosi University of Technology
- Amirkabir University of Technology (this partnership is for CoOp program)

We have 15 internships this year, some of them are now active as full-time employees in top companies in the country.



We have 4 signed partnerships this year as follows:

- Avid Net Technology
- https://psp.ir/power
- Faravid Co.
- Monenco Iran Consulting Engineers

Planned Activities

- Monthly meetings with committee members
- Industry-related events (webinar, workshop, course, panel, etc.)
- Joint Internship Program
- Holding joint meetings with committees and chapters of the Iranian section:
 The presence of committee members in the chapters and committees of the Iranian section
- Participation in industrial events: Holding courses in telecom and other events
- Collaborate with the AFI Region 8 Committee and attend their meetings
- Inviting representatives of Iranian sector groups to join the Industrial Relations Committee
- Memorandum of Understanding with other industrial complexes
- Updating the industry relations page on the Iran section site
- Mentoring program and career path
- Financial support and sponsorship for industry-related issues: as already in the committee's program, support for the events will continue for the next two years.
- Compilation of white papers
- Review of KPIs and activities of other countries' industry relations committee
- Bilingual IEEE Iran Section Jobsite and advertising it
- Creating a directory of up-to-date topics for holding up-to-date webinars related to the industry

Activities done by IEEE Iran Section IRC since the last report

- Liaise with other committees and affiliated groups to increase interactions
- Holding international communication meetings in the field of industry in Region 8
- Encourage and promote industrial people and active organizations to cooperate voluntarily with the IEEE Iran Section
- Sending committee report to AFI
- Establishing a connection between the Iran section and the Payvast monthly (the most authoritative monthly in the field of communication) and publishing a history of the IEEE Iran Section in one of its chapters
- Supporting the booths of the IEEE Iran Section in conferences and exhibitions.
- Attending the AFI Region 8 Committee and their meetings
- Introducing White paper in the second AFI meeting IEEE Iran Section Vice-Chair
- Committee report in the third AFI meeting
- Translating of white paper on methods for developing TRL-MRL in the telecommunications industry entitled "Investment and Entrepreneurship Opportunities in the Communications and Information Technology Industry" to English

- Hybrid http://november-2021.ieeer8.org/ Frankfurt, Germany, 6–7 November 2021
- Support for CoOp project of Amirkabir University of Technology
- Discover the Golden Point Webinar
- Leadership in the Digital Age Webinar

IRC KPIs

- MoUs with other industries and partners
- Meetings with Affinity Groups, Chapters, and Student Branches
- Updating internships and mentorships statics in websites
- Joining industry and entrepreneurship events
- Inviting representatives of other groups and chapters to join IRC

Activities since the last report

IEEE Iran Section has done the following main activities:

- Development of activities of YPs, WiE, and the other Affinity Groups
- Participate in the development of national standards
- Communication of the student sector of the Industrial Relations Committee with the R8 committees such as AFI
- Receive performance reports of committees
- Call for IEEE Iran Section Awards
- Evaluate nominees of section awards
- Funding awards
- Compilation of regulations for holding webinars and workshops
- Review conferences regulations
- Planning for the annual ceremony
- Approve and support the Big Data Challenge Contest
- Support for conferences and workshops
- Financial support for the membership of the students

Planned activities

Our future planned activities are as follows:

- Promotion of activities in international cooperation (participation in R8 committees)
- Invite prominent international researchers to introduce their program and activities in person or online
- Holding regional and international events in Iran
- Efforts to develop and promote science and educational centers in the country
- Promote and develop industry relations to increase the growth of technology at the national level
- Cooperation with scientific research institutions and scientific associations
- Develop and promote the level of student activities
- Increasing the number of student branches in the country to expand the student network
- Introducing and promoting national awards in the field of education, research, student branches, and volunteer activities
- Increase IEEE membership
- Preparation of Iran Section strategic plan, action plan, and roadmap
- Development of Technical Chapters' activities to expand the network of faculty and student members in the country

How Region 8 can be of help to your Section, members, and activities

As we mentioned in our previous report, we are facing the following issues:



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- Our members especially students cannot effort it which causes a decrease in membership statistics. R8 can help us to convince headquarters to set the membership fee based on our local currency.
- Although most programs like Member-Get-a-Member (MGM), Future 50, etc. are not available for our members so they cannot take benefit from such a program which causes loss of motivation in the members. We believe that if some programs become available for our members it will motivate our students and members to interact more with IEEE and its benefits

Pictures







(b)
Picture 1. IEEE Introduction and Membership Benefits Webinar





Picture 2. Infrastructure Asset Management with Power System Application -- with models for predictive maintenance





Picture 3. How IEEE PES shaped my professional career & what's in it for you? Webinar

17:00 IRDT (UTC + 4:30)

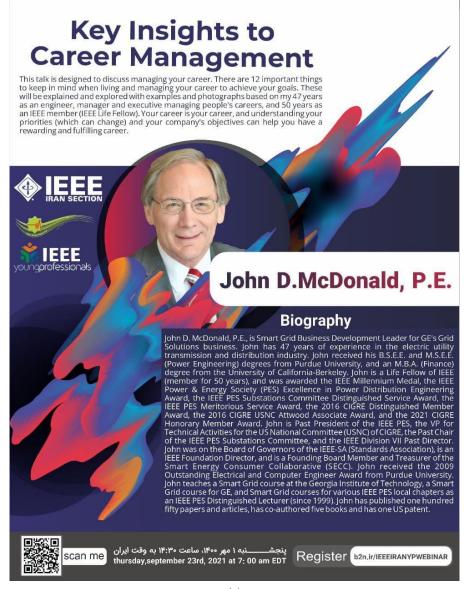
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Picture 4. Climate change and Resiliency Webinar





(a)



(b)

Picture 5. Key Insights to Career Management Webinar





Picture 6. Disruptive Change in University Educational methods After Covid 19





Picture 7. The Paradigm of Ensemble and Deep Neural Networks for Big Data and Analytics Webinar









Cybersecurity and Resilience Enhancement of Smart Grids

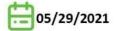


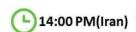
Dr. Amir Abiri Jahromi

School of Electronic and Electrical Engineering University of Leeds

Currently a Lecturer at the University of Leeds, Amir Abiri Jahromi received his Ph.D. degree in Electrical and Computer Engineering from McGill University, Montreal, Quebec, Canada in 2016. He was a Postdoctoral Fellow at the University of Toronto, Ontario, Canada from January 2018 to December 2019 and a Research Associate at the University of Toronto in 2020 collaborating with Hydro Quebec Research Institute (IREQ). His research interests are in the fields of power system modelling, cyber-physical security, reliability, economics and optimization of power systems.

Electric power systems are at the verge of significant technology transformation moving toward a smarter operating environment in which system components are enabled to engage in optimal power system operation and planning. This is happening while the uncertainties in power systems are rapidly increasing due to the massive integration of renewable energy resources, electrification of road transportation, and continuously aging power system legacy assets. Concurrently, the cyber vulnerability of power systems is on the rise by the increased reliance on distributed control and information technology. These rapid shifts in the electric power industry should be addressed properly. Otherwise, power system economics and reliability will be challenged by disruptive and costly electricity interruptions. In this talk, we investigate the accelerated pace of digital transformation in electric power substations such as the emergence of interoperable communication protocols like IEC 61850, deployment of smart grid technologies, adoption of Internet of Things (IoT) devices and cloud services. Despite the unquestionable benefits of this transformation in reducing costs, improving reliability, automating and streamlining protection, control and asset management, it introduces complex cybersecurity concerns that need to be appropriately addressed. Co-simulation platforms are then introduced as a cost-effective solution for studying the vulnerabilities of smart grids to cyberattacks. The importance of data analytics and artificial intelligence for addressing the cyber vulnerability of digital substations is further highlighted.





(-) Register: https://forms.gle/4MJqpL2Zqdzzk75A6 Login: https://vc.sharif.edu/ch/ee-webinar1

Picture 8. Cybersecurity and Resilience Enhancement of Smart Grids Webinar









Fault Location in Power Network using Time Reversal Theory



Dr. Reza Razzaghi Department of Electrical and Computer Systems Engineering Monash University

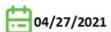
The development of modern and future power systems is associated with the definition of new approaches for their simulation, control, and protection. To give an example, the increasing connection of massive renewable energy conversion systems is justifying the integration of DC infrastructures (eventually, multi-terminal HVDC) in the current AC power grids. Furthermore, the existing passive distribution networks are evolving by integration of decentralized and intermittent generation units, which results in Active Distribution Networks (ADNs). Therefore, complex topologies are emerging requiring adequate simulation tools capable to reproduce, possibly in real-time, their dynamic behavior. In this context, future operation/protection practices of power networks might rely on the availability of chip-scale real-time simulators (RTS) that will enable the implementation of efficient protection/fault location processes that, in principle, should be capable to comply with the restrictive constraints associated with these complex systems.

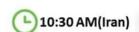
Within this context, this seminar presents the integration of new concepts of the fault location in AC/DC systems that can be deployed in chip-scale real-time simulation hardware represented by Field Programmable Gate Arrays (FPGAs).

First, an original fault location method based on the Electromagnetic Time Reversal (EMTR) theory will be presented. It will be shown that the proposed method is suitably applicable to different topologies including MTDCs and ADNs.

Next, a new automated FPGA-based solver for RTS will be presented. The developed FPGA-RTS uses an automated procedure to couple the simulation platform with an offline simulation environment. Thanks to the use of particular parallel computational algorithms, it can accurately simulate, in real-time, Electromagnetic Transient (EMT) phenomena taking place in power converters and travelling wave propagation along multi-conductor transmission lines within very small simulation time steps (in the order of some hundreds of nanoseconds).

Finally, a specific application of the developed FPGA-RTS will be presented for the development of a fault location platform by leveraging the EMTR theory.





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Picture 9. Fault Location in Power Network using Time Reversal Theory Webinar





Picture 10. Round Table on Sustainable Electricity Supply, peak load 1401 and after





Picture 11. The second meeting of the Round Table on Sustainable Electricity Supply, peak load 1401 and after

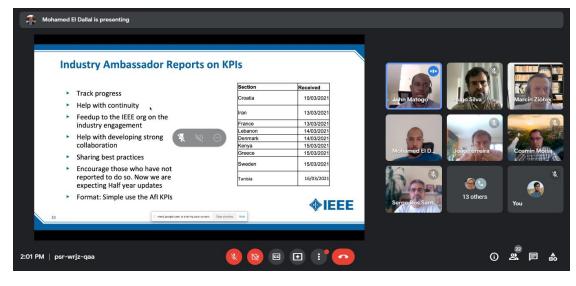




Picture 12. Discover the Golden Point Webinar



Picture 13. Leadership in the Digital Age Webinar



Picture 14. AFI Meeting





(a)



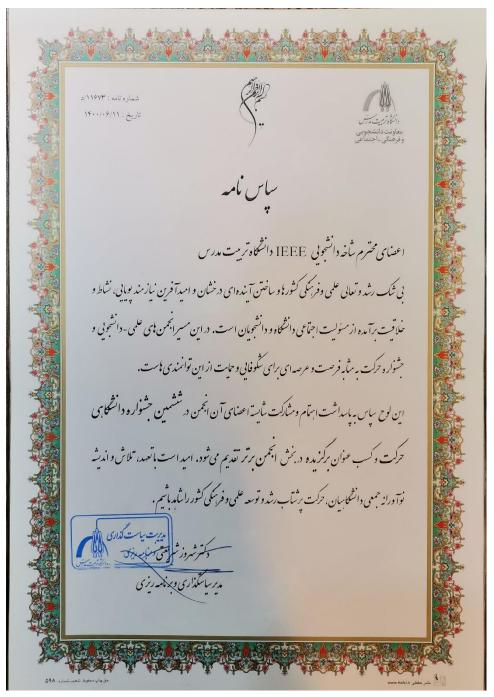






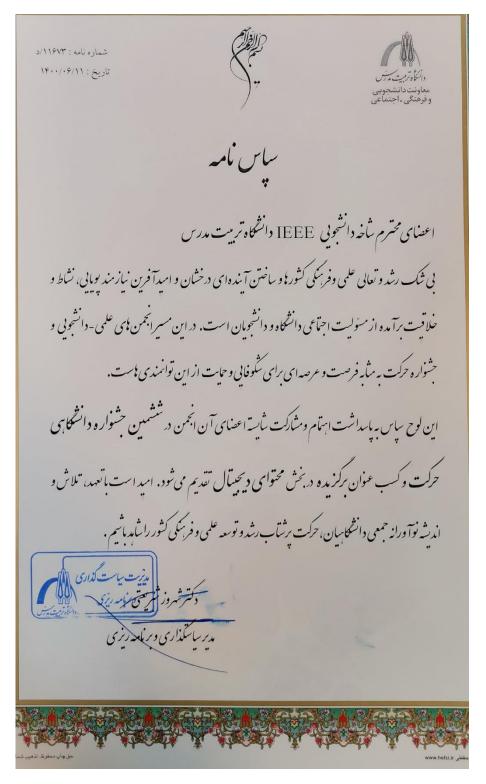
Picture 15. Call for IEEE Iran Section Awards





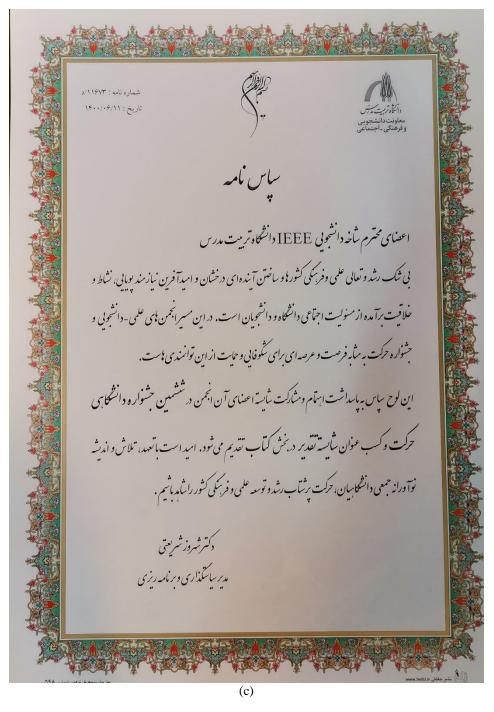
(a)





(b)





Picture 16. Achieving the position of the top branch, worthy book and selected title in digital content by Tarbiat Modares University (TMU) student branch in the Harekat festival





Picture 17. Achieving the 37th Place in the World in IEEEXtreme Competition by KNTU Student Branch



IEEE Power Electronics Society

Takes pleasure in presenting this certificate to the

IEEE Iran Section BZTE Student Branch

in recognition and appreciation as a participant of the

PELS Day 2021 Photo Contest

Liuchen Chang President 2021-2022

Harish Krishnamoorthy PELS Day Chair 2021





Picture 18. IEEE PELS Day 2021 competition