Conference Program

2019 6th International Conference on Control, Instrumentation and Automation (ICCIA)

Sanandaj, Kurdistan, Iran| October 30-31, 2019

دانشگاه کردستان
University of Kurdistan

Address: University of Kurdistan, Sanandaj, Iran

Prepared by:

Smart/Micro Grids Research Center (SMGRC)

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Welcome Address

Greetings from Kurdistan

On behalf of the conference organizing committee, we are honored to hold the 2019 6th International Conference on Control, Instrumentation and Automation (ICCIA) at the University of Kurdistan.

The conference has received a total number of 180 papers, from which 92 papers are accepted through a careful, accurate and strict review process.

The ICCIA 2019 will be held on October 30th and 31st, in Sanandaj, Kurdistan, Iran, organized by University of Kurdistan (UOK) and Smart/Micro Grids Research Center (SMGRC) in cooperation of the Iranian Society of Instrumentation and Control Engineers.

The ICCIA brings together an international community of researchers, practitioners and experts to discuss the latest findings in the scope of control, instrumentation and automation. The conference will feature various kinds of presentations (invited, technical paper and etc.), workshops, exhibits and discussion panels by experts representing both industry and academia.

Prospective researchers and experts have been invited to submit original contributions or tutorials containing the latest finding about the conference topics to ICCIA 2019 via the conference online submission system.

Sanandaj is the capital of Kurdistan Province, 490 kilometers far from capital, Tehran. It is the 21th biggest city in Iran with population of around 500,000. The native language is Kurdish and Kurdish traditions are very popular in this city. It is one of the most beautiful cities in Iran because of its scenic views and topography. The city is surrounded by mountains and hills, and has a mountainous climate where summers are relatively hot and winters cold.

We wish you a pleasant stay in Sanandaj and Kurdistan.

Finally, we would like to thank all of you for active participation in the conference and making the ICCIA 2019 as a successful conference.

Kind Regards,

The ICCIA 2019 organizing committee.

October 2019

Access to the conference venue:

Participants from foreign countries can travel to Tehran. From Tehran, there are two options for traveling to Sanandaj: either via the land routes or the airways. To come to Sanandaj through the airways, participants may use the web address https://sanandaj.airport.ir/ and receive flight information and book tickets. If Sanandaj flights are not available at your favorite dates, you may fly to Kermanshah and then travel to Sanandaj (120 km) through the land road. For this purpose, please refer to the web address https://kermanshah.airport.ir. To use land routes to travel from Tehran to Sanandaj (490 km), you can also visit the website http://kordestan.rmto.ir/Pages/HomePage.aspx and get bus information.

In case of facing any problems, or needing further information, you can contact the ICCIA 2019 secretariat by E-mail (iccia2019@uok.ac.ir) or phone (+988733611413).

Welcome to Kurdistan!

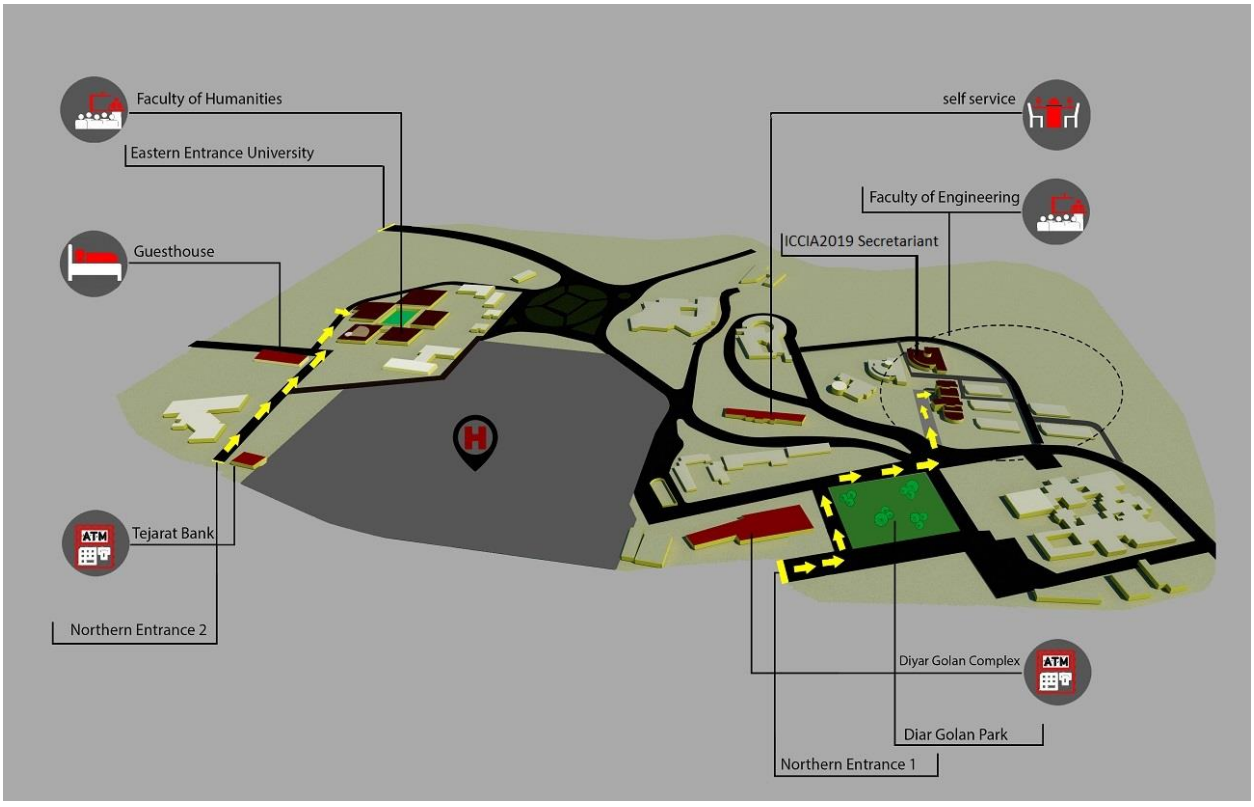

Figure 1. UOK campus map.

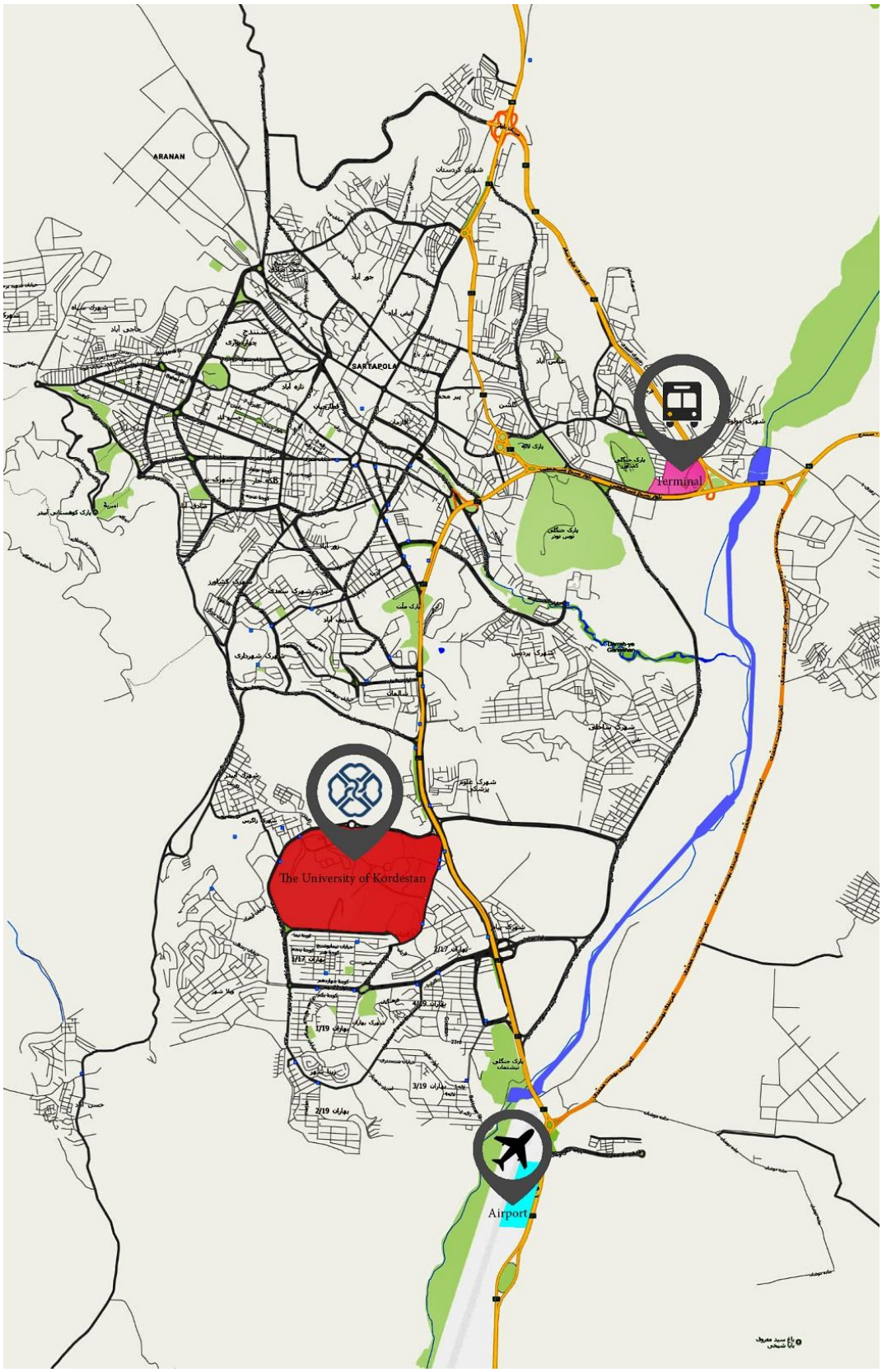

Figure 2. Sanandaj map.

Keynote Speakers

Prof. Ali Khaki-Sedigh

Dr. Ali Khaki-Sedigh is graduated with a B.Sc. degree in Mathematics from University of Newcastle, England (1983), M.S. degree in Control System, UMIST, England (1985), and Ph.D. in Control Engineering from University of Salford, England (1988). He is now a professor in the Department of Electrical Engineering, K. N. Toosi University of Technology.

He has been elected as The Outstanding Academic Staff, the title awarded by the Ministry of Science, Research and Technology (1997-1999), and also as The Outstanding University Researcher (1996-1997), the title awarded by K. N. Toosi University chancellor. Dr. Khaki-Sedigh has been the President of the K. N. Toosi University of Technology (2003-2007 and 2011- 2017). He has published 14 books in his major and many of his books has been elected as the book of the year at universities. He also has published 120 articles in international journals and 22 Persian research paper, and he has presented 160 articles in national and international conferences. His research activities include: Robust and Adaptive Control, predict Control and applications of Control engineering.

Title: Data-Driven Control

Abstract: Nowadays, with the development of science and technology, practical processes in chemical industry, metallurgy, machinery, electronics, electricity, transportation, and logistics have become more complex. Therefore, modeling processes using first principles or identification has become more difficult. For this reason, traditional model-based control (MBC) theory has become impractical for control of this systems. On the other hand, historical data collected from plants are easily available and can be used to design successful controllers. Data-driven control (DDC) systems are a group of methods in which the controller is directly designed based on the input/output (I/O) data collected from the controlled systems. Until now, there have been a few DDC methods, but they are characterized by different names, such as data-driven control, data-based control, modeless control, MFAC (model-free adaptive control), IFT (iterative feedback tuning), VRFT (virtual reference feedback tuning), and ILC (iterative learning control). Sorted according to the type of data usage, DDC methods can be summarized as three classes: those based on on-line data; those based on off-line data, and those based on both (hybrid DDC).

▶Prof. Frank Allgöwer

Professor Frank Allgöwer is director of the Institute for Systems Theory and Automatic Control and professor in Mechanical Engineering at the University of Stuttgart in Germany. His main interests in research and teaching are in the area of systems and control with a current emphasis on the development of new methods for optimization-based control, networks of systems, data-based control and systems biology.

He received several recognitions for his work including the IFAC Outstanding Service Award, the IEEE CSS Distinguished Member Award, the State Teaching Award of the German state of Baden-Württemberg, and the Leibniz Prize of the Deutsche Forschungsgemeinschaft.

Frank Allgöwer is President of the International Federation of Automatic Control (IFAC) for the years 2017-2020. He was Editor for the journal Automatica from 2001 to 2015 and is editor for the Springer Lecture Notes in Control and Information Science book series and has published over 500 scientific articles. Since 2012 he serves a Vice-President of the German Research Foundation (DFG).

Title: The Past, Present and Future of Model Predictive Control

Abstract: During the past decades model predictive control (MPC) has become a preferred control strategy for the control of a large number of industrial control problems fromdistillation control to autonomous driving. Computational issues, application aspects and systems theoretic properties of MPC (like stability and robustness) are rather well understood by now and the theory is well developed even for nonlinear systems. However, during the past couple of years there have been some exciting new trends in MPC that promise to change the field in a lasting way. In this overview presentation we will give an introduction to and an overview over the general field of model predictive control focusing on new trends.

Most prominently one of those trends concerns the control objective to be achieved. In standard MPC formulations, the considered control objective is typically the stabilization of some (given) setpoint or trajectory to be tracked. In contrast, the main focus in so-called "economic MPC" is on closed-loop performance where the cost to be optimized is directly related to some economic objective. This shift in the typical control task to be solved is especially of interest for many industrial applications like robot control, autonomous mobility, or industrial production processes in the framework of Industry 4.0, and will be discussed in the talk.

Secondly, interesting new results for "distributed economic model predictive control" for the control of networks of systems have been developed recently and will be presented in the talk.

And, thirdly, the new possibilities arising from data science and learning have also led to exciting new developments in MPC that will also be briefly addressed in this presentation.

Prof. Dr. Leon Urbas

Leon Urbas (IEEE Member, Namur, VDI GMA, VDI/GVC ProcessNet) is a computational engineering scientist by training and earned his doctorate in process systems engineering for research on operator training systems at TU Berlin. Several years of work experience in process optimization and automation in the process industries and basic research on Human-Machine Interaction laid the foundations for the research of his group at TU Dresden on the key elements of digital transformation in the process industry: semantic information models of process systems engineering and process automation within a process-product-resource framework and their application in accelerated engineering methods and work flows in modular plants. This applied research provides directions for the group's basic research on the design of human-technology co-creation and collaboration in cyber-physical production systems.

At TU Dresden he is Dean of Studies for Information Systems Engineering, board member of the Process-to-Order Lab and spokesperson of the DFG research training group Conducive Design of Cyber-Physical Production Systems. He is member of the advisory board of the Process Net Process and Plant Engineering Division and spokesperson of the VDI/VDE GMA 5.16 Task Force on Future Automation Architectures.

Title: Optimizing Performance vs Data Privacy in Value Networks

Abstract: Closing control loops in value creation networks across different processes and companies is a promising aspect of digitization for robust circular flow economies. Open interfaces, modular automation architectures and new methods for the design of distributed controls offer the possibility to implement such applications. However, this requires the disclosure of process-related real-time information within the value network, which may include partners with different levels of trust.

The speech gives 1) an overview of current methods for privacy protection and 2) reports on current research on the opportunities and risks of information disclosure in value networks.

▶ Prof. Florian Dörfler

Florian Dörfler is an Associate Professor at the Automatic Control Laboratory at ETH Zürich. He received his Ph.D. degree in Mechanical Engineering from the University of California at Santa Barbara in 2013, and a Diploma degree in Engineering Cybernetics from the University of Stuttgart in 2008. From 2013 to 2014 he was an Assistant Professor at the University of California Los Angeles. His students were winners or finalists for Best Student Paper awards at the 2019/2013 European Control Conference, the 2016 American Control Conference, and the 2017 PES PowerTech Conference. His articles received the 2010 ACC Student Best Paper Award, the 2011 O. Hugo Schuck Best Paper Award, the 2012-2014 Automatica Best Paper Award, and the 2016 IEEE Circuits and Systems Guillemin-Cauer Best Paper Award. He is a recipient of the 2009 Regents Special International Fellowship, the 2011 Peter J. Frenkel Foundation Fellowship, and the 2015 UCSB ME Best PhD award.

Title: Data-enabled Predictive Control in Autonomous Energy Systems

Abstract: We consider the problem of optimal and constrained control for unknown systems. A novel data-enabled predictive control (DeePC) algorithm is presented that computes optimal and safe control policies using real-time feedback driving the unknown system along a desired trajectory while satisfying system constraints. Using a finite number of data samples from the unknown system, our proposed algorithm uses a behavioral systems theory approach to learn a non-parametric system model used to predict future trajectories. We show that, in the case of deterministic linear time-invariant systems, the DeePC algorithm is equivalent to the widely adopted Model Predictive Control (MPC), but it generally outperforms subsequent system identification and model-based control. To cope with nonlinear and stochastic systems, we propose salient regularizations to the DeePC algorithm. Using techniques from distributionally robust stochastic optimization, we prove that these regularizations indeed robustify DeePC against corrupted data. We illustrate our results with nonlinear and noisy simulation case studies from autonomous energy systems as well as aerial robotics.

Invited Speakers

Prof. Barat Ghobadian

Barat Ghobadian is a professor of Biosystems Engineering at Tarbiat Modarres University. He received his Ph.D in Mechanical Engineering at I.I.T. Roorkee University. He was advisor for Scientific Research and Mechanization to the Ministry of Jihad Sazandegi, advisor for R&D to managing director of the power train manufacturing of Iran Khodro car manufacturing group, chancellor of the Shahrekord University-state of Chahar Mahal and Bakhtiari, vice president for planning, education and parliamentary affairs- Atomic Energy Organization of Iran, consultant to the president of the Atomic Energy Organization of Iran and member of government expert commission for infrastructure, industry and environment. Dr. Ghobadian has been designing the syllabus for energy in agriculture at Ph.D level in Mechanics of Agricultural Machinery, designing the courses syllabus for M.E. level in Renewable Energy Engineering at University of Tarbiat Modarres, designing the courses syllabus for Ph.D level in Bioenergy at University of Tarbiat Modarres and designing the 25 years biofuels strategic plan designing in the National Research Center for Renewable Energies at Tarbiat Modarres University. He has been a founder of National Biodiesel Laboratory at Tarbiat Modarres University, founder of the National Biodiesel Workshop at Tarbiat Modarres University. He was advisor to the managing director of Megamotor company affiliated to Saipa Group of car manufacturing industries, member of board of directors for Megamotor Company Saipa car manufacturing group, vice president for R&D Megamotor, powertrain manufacturing company affiliated to Saipa Group of car manufacturing industries and execution of national biofuel projects. He has been scientific member of national renewable technology development board, Tehran, Iran, planning and execution of the national biofuel program for automotive section, member of the board for the national agricultural self-propelled machines. Prof. Ghobadian was also a faculty member at University of Tehran for the Faculty of New Sciences and Technologies.

General information

Invited talks

Presentation time for invited talks is 20 minutes.

Paper presentation

Presentation time is 15 minutes including Q&A.

Posters

Poster size is 0.7-meter-wide by 1-meter high. Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.

Presentation certificate

Certificates will be given by the session chair after each presentation.

Conference photos

All the conference photos will be available for download through conference website within one week after the conference.

A/V Equipment

All the equipment needed for the presentations will be provided. The conference rooms will be equipped with laptops, laser pointer, and LCD projectors. The presenters should upload prepared PPT files previously to conference website. If the presenters did not send their PPT files on time, they should copy their presentation slides to the laptop 15 minutes before session starts.

Conference participants who plan to use their own laptops for some particular reasons, are strongly recommended to test their presentation file in advance with the LCD projectors in the room where presentation is scheduled.

Accommodation

The conference organizer does not provide free accommodation or room reservation service. Participants should book rooms by themselves.

ICCIA
2019 6th International Conference on Control, Instrumentation and Automation
30-31 October 2019, Sanandaj, Iran

Technical Program

October 30, 2019| Wednesday, Morning		
Molawi Amphitheatre, University of Kurdistan		
Time	**Program**	**Details**
8:00 – 8:30	Reception, Registration	
8:30 – 8:52	Quran, National anthem	
8:52 – 8:58	Honor chair , Welcome	Prof. Rahmat Sadeghi, University of Kurdistan President
8:58 – 9:05	General chair, Introduction	Prof. Hassan Bevrani, Conference Chair
9:05 – 9:45	Keynote Speaker I	Data-Driven Control **Prof. Ali Khaki-Sedigh**, *K. N. Toosi University of Technology, and Deputy Minister of Education.*
9:45 – 10:20	Invited Speaker I	**Prof. Barat Ghobadian**, *Deputy Minister of Industry, Mining and Trade*
10:20 – 10:50	Break	
10:50 – 11:25	Keynote Speaker II	The past, present and future of Model Predictive Control **Prof. Frank Allgower**, University of Stuttgart and President of the International Federation of Automatic Control (IFAC)
11:30 – 12:40	Panel I	University, Industry, Research and Development: Iran and Germany Experiences
12:40 – 14:00	Lunch time	

October 30, 2019| Wednesday, Evening		
Guĵan, University of Kurdistan		
14:00 – 16:00	**Workshops**	Sessions 1-5
16:00 – 16:15		Break
16:15 – 18:00		Poster Presentations
19:00 – 22:00	**Gala Dinner, Music and Halparke**	Kurd House

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Technical Program

October 31, 2019| Thursday, Evening				
Guîan, University of Kurdistan				
8:00 – 8:30	Reception, Registration			
8:30 – 9:00	Workshops	Keynote Speaker III	Optimizing Performance Vs Data Privacy in Value Networks **Prof. Leon Urbas**, Chair of Process Control Systems and Process Systems Engineering Group, TU Dresden, Germany.	
9:00 – 11:00		Sessions 6-9		
11:00– 11:30		Break		
11:30 – 12:05		Keynote Speaker IV (Remote)	**Prof. Florian Dörfler** *Associate Professor at the Automatic Control Laboratory at ETH Zürich*	
12:05 – 13:00		Panel II	The 4th Industrial Revolution in the Field of Automation: Challenges and Requirements	
13:00 – 14:30	Lunch time			

October 31, 2019| Thursday, Evening		
Molawi Amphitheatre, University of Kurdistan		
14:30 - 14:40	Closing Ceremony	Speech: The Iranian Society of Instrumentation and Control Engineers Chair
14:40 – 14:50		Report by the Technical Committee Chair
14:50 – 15:15		Best Paper, Poster, Presentation Awards
15:15 – 15:30		Music

October 30, 2019| Wednesday, Afternoon

Guîan, University of Kurdistan

Session 1 ***Power Systems and Smart Grids Control*** ***Chairperson: Dr. Maryam Dehghani, Dr. Ali Hesami Naghshbandi*** ***Venue: 302*** ***(Second Floor, Guîan Building, University of Kurdistan)***	
14:00-14:15	(PSSGC-1) ANN-Based Frequency and Tie-Line Power Control in Interconnected Microgrids Sharara Rehimi, Rahmatollah Mirzaei, Hassan Bevrani University of Kurdistan
14:15-14:30	(PSSGC-11) Lyapunov Exponent based Stability Assessment of Power Systems Maryam Dehghani, Mohsen Mohammadi, Ali Reza Khayatian, Mojtaba Amiri Shiraz University
14:30-14:45	(PSSGC-3) Decentralized Estimator-based Secondary Voltage and Reactive Power Control of an Islanded Microgrid Navid Mohammadi, Hassan Bevrani, Mohammad Beheshti, Hemin.Golpira, Keivan Mohammdai University of Kurdistan
14:45-15:00	(PSSGC-4) Robust Tracking Control of Boiler-Turbine Systems Mohammad Hassan Asemani, Mohammad Saeid Akbari, Navid Vafamand Aarhus University
15:00-15:15	(PSSGC-5) Sensor Fault Detection in a Distributed Power System via Decentralized Kalman Filters Abolghasem Sardashti, Amin Ramezani, Anahita Moradmand, Hadis Saadati Nezhad Tarbiat Modares University
15:15-15:30	(PSSGC-6) تزریق توان اکتیو و راکتیو به شبکه به روش کنترل مستقیم بهینه از طریق اینورتر نه سطحی تکفاز حسین قلی زاده نرم، معصومه محمودی دانشگاه صنعتی شاهرود
15:30-15:45	(PSSGC-7) کنترل تحمل پذیر خطای مرتبه کسری توربین بادی مبتنی بر ژنراتور القایی دو سو تغذیه هادی دلاوری، کامران زمانی زاده دانشگاه صنعتی همدان
15:45-16:00	Best Presentation Award & Session Group Photo

Session 2 ***Intelligent Control, Optimal Control, and MPC*** ***Chairperson: Dr. Roya Amjadifard, Dr. Mohammad Mehdi Arefi*** ***Venue: 303*** ***(Second Floor, Guîan Building, University of Kurdistan)***	
14:00-14:15	(ICOCM-1) A Safe Optimal Third-Order Decentralized Consensus of Uni-directional Heterogeneous Vehicular Platoons with Communication and Parasitic Delays Hossein Chahardoli Ayatollah Borujerdi University
14:15-14:30	(ICOCM-2) Robust Stabilization of Affine Fuzzy Large-Scale Systems Using Decentralized Controller Iman Zamani Shahed University

14:30-14:45	(ICOCM-3) Robust Stabilization of Discrete-time Switched Systems with State Delay and Parametric Uncertainty via Model Predictive Control Approach Amin Taghieh University of Tabriz
14:45-15:00	(ICOCM_4) Fault Tolerant Kalman Filter-Based Distributed Predictive Control in Power Systems Under Governor Malfunction Anahita Moradman, Abolghasem Sardashti, Amin Ramezani, Hadis Saadati Nezhad Northeastern University
15:00-15:15	(ICOCM-5) پیاده سازی سخت افزاری کنترلرهای عصبی عمیق برای کاربرد سیستم های انسان در حلقه عباس محمدی، حامد شهبازی، مهران رضایی، کمال جمشیدی دانشگاه اصفهان
15:15-15:30	(ICOCM-6) هوشمندسازی فیلتر کنترل کننده تطبیقی با استفاده از سیستم ANFIS بهینه شده با الگوریتم ژنتیک حسین احمدیان پوررنجبر، علیرضا خیاطیان، محمد مهدی عارفی دانشگاه شیراز
15:30-15:45	(ICOCM-7) درمان سرطان مغز استخوان مبتنی بر کنترل پیش بین زهرا رحمانی، زهرا روحی، محمدرضا زمانی بهبهانی دانشگاه صنعتی نوشیروانی بابل
15:45-16:00	Best Presentation Award & Session Group Photo

Session 3 ***Adaptive and Robust Control*** ***Chairperson: Dr. Behzad Moshiri, Dr. Hamid D. Taghirad*** ***Venue: 305*** ***(Second Floor, Guîan Building, University of Kurdistan)***	
14:00-14:15	(ARC-2) Robust Fault Tolerant Position Tracking Control for a Quadrotor UAV in Presence of Actuator Faults Roya Amjadi Fard, Ali Akbar Ahmadi, Mahsa Hassan Shahi Kharazmi University
14:15-14:30	(ARC-3) Fault Tolerant Control Scheme using Adaptive Sliding Mode Control Allocation Reza Jafari, Ali Khaki Sedigh, Mehdi Naderi, Navid Abbasi K.N.Toosi University Of Technology
14:30-14:45	(ARC-4) Adaptive PID Control Design for longitudinal Velocity Control of Autonomous Vehicles Arash Maraashian, Abolhassan Razmi Nia, Abolfazl Simorgh Persian Gulf University
14:45-15:00	(ARC-5) Fuzzy Control of an Uncertain Robot Manipulator with Input Constraint Maryam Shahryari Kahkeshi, Meysam Mahdavi Shahrekord University
15:00-15:15	(ARC-6) Robust H_∞ Observer-based Sliding Mode Control for Discrete 2-D Systems with Parametric Uncertainties Hamidreza Ahmadzadeh ,Masoud Shafiee Amirkabir University Technology
15:15-15:30	(ARC-7) On Adaptive Chaos Control and Synchronization of a Novel Fractional-order Financial System Hamidreza Tavakoli, Ahmad Hajipour Hakim Sabzevari University
15:30-15:45	Best Presentation Award & Session Group Photo

Session 4 ***Systems Identification and Modeling*** ***Chairperson: Dr. Hamid Khaloozadeh, Dr. Amin Ramezani*** ***Venue: 306*** ***(Second Floor, Gulan Building, University of Kurdistan)***	
14:00-14:15	(SIMPC-1) Estimation of V47/660kW Wind Turbine State and Fault Detection with Extended Kalman Filter Alireza yazdizadeh, Mojtaba Heidarzadeh Ghareveran Shahid Beheshti University
14:15-14:30	(SIMPC-2) Improve the Frequency Identification in SSVEP based BCI Systems with Moving Windows Algorithm Mohammad Ali Manoochehri, Sandeep Reddy Surakanti, Seyed Alireza Khoshnevis, Aryan Yousefyan Kelareh Tarbiat Modares University
14:30-14:45	(SIMPC-3) Optimal Gait Design for the Lower Extremity Exoskeleton (Exoped) Elyar Zvari, Jafar Kazemi, Sadjaad Ozgoli Tarbiat Modares University
14:45-15:00	(SIMPC-4) Chaotic Time Series Forecasting using Emotional Learning-Based Neural Networks Roya Amjadi Fard, Fatemeh Amani Kharazmi University
15:00-15:15	(SIMPC-5) Unscented Kalman Filter in Gas Pipeline Leakage Detection and Localization Amir Hossein NikooFard, Hamid Khaloozadeh, Roya Doshman Ziyari K.N.Toosi University Of Technology
15:15-15:30	(SIMPC-6) Analytical Approach to Nonlinear Behavior Study of an Electric Vehicle Cyrus Mehdipour, Fazel Mohammadi, Iman Mehdipour University Of Windsor
15:30-15:45	(SIMPC-7) Smith Predictor Based Sliding Mode Control for Torsional Vibration Control of Drillstring with Input Delay Roya Sadeghi Mehr , Amir Hossein NikooFard, Ali Khaki Sedigh K.N.Toosi University Of Technology
15:45-16:00	Best Presentation Award & Session Group Photo

Session 5 ***Nonlinear Control Systems*** ***Chairperson: Dr. Masoud Shafiee, Dr. Saeed Tavakoli*** ***Venue: 307*** ***(Second Floor, Gulan Building, University of Kurdistan)***	
14:00-14:15	(NCS-1) Robust Adaptive Controller Design for a DC-DC SEPIC Converter in Photovoltaic Application Seyed Morteza Ghamari Shahrood University Of Thechnology
14:15-14:30	(NCS-2) Optimal State Estimation of Air Handling Unit System without Humidity Sensor using Unscented Kalman Filter Rezvan Abbasi, Attaoallah Azarbani Qazvin Islamic Azad University
14:30-14:45	(NCS-3) Design of a Nonlinear Model-based Predictive Controller for a Wind Turbine based on PMSG using an Augmented Extended Kalman Filter Mona Faraji, Meysam Masoum Far, Nasrin Kalamian K.N.Toosi University Of Technology
14:45-15:00	(NCS-4) Design of a Suboptimal Controller based on Riccati Equation and State-dependent Impulsive Observer for a Robotic Manipulator Hossein Mehrabi Zadeh, Mona Faraji, Nasrin Kalamian K.N.Toosi University Of Technology

15:00-15:15	(NCS-14) طراحی و مقایسه سه کنترل‌کننده غیرخطی برای سیستم پانکراس مصنوعی شادیه خداکرم زاده-یزدان باتمانی دانشگاه کردستان
15:15-15:30	(NCS-6) Analyzing the Effect of Output Measurements Interval and Impulses Distance of an Impulsive Observer on the Control System of HIV Seyedeh Nazanin Hosseini K.N.Toosi University Technology
15:30-15:45	(NCS-7) Total Sliding-Mode Voltage Tracking for DC-DC Buck-Boost Converter Ameneh Moosavi, Amin Mirzaei, Amir Hossein Abolmasoumi University of Arak
15:45-16:00	Best Presentation Award & Session Group Photo

Wed, Afternoon

October 31, 2019| Thursday, Morning

Gulîan, University of Kurdistan

Session 6 Nonlinear Control Systems Chairperson: Dr. Heidar Ali Talebi, Dr. Iman Zamani Venue: 301 (Second Floor, Gulîan Building, University of Kurdistan)	
09:00-09:15	(NCS-9) Exponential Synchronization of a Complex Dynamical Network with Piecewise-homegeneous Markovian Jump Structure and Coupling Delay Ali Sadr, Ali Kazemi, Mona Faraji, Nasim Akbari Iran University of Science & Technology
09:15-09:30	(NCS-10) State Estimation of a Quantum Cavity Driven by single-photon Abolghasem Daeichian University of Arak
09:30-09:45	(NCS-11) Output Voltage Control of Inverters Using SDRE Tracking and LQT Controllers Pouya Shafiee, Yazdan Batmani University of Kurdistan
09:45-10:00	(NCS-12) کنترل گام متغیر برای یک کوادروتور با استفاده از کنترل کننده مد لغزشی ترمینال و مد لغزشی ترمینال سریع مریم مسلسل-مهدی خدابنده دانشگاه صنعتی همدان
10:00-10:15	(NCS-13) طراحی کنترل کننده مدلغزشی برای سیستم فتوولتاییک/باتری محمدحسین مودب-هادی دلاوری دانشگاه صنعتی همدان
10:15-10:30	(NCS-5) Time Delay Controller Design for Dynamic Positioning of ROVs based on Position and Acceleration Measurements Alireza Hossein Nezhad, Mehdi Loueipour Isfahan University of Technology
10:30-10:45	Best Presentation Award & Session Group Photo

Thurs, Morning

Session 7 ***Networked Control Systems; Industrial Automation and Instrumentation Systems*** ***Chairperson: Dr. Hadi Delavari, Dr. Hamidreza Momeni*** ***Venue: 302*** ***(Second Floor, Gulan Building, University of Kurdistan)***	
09:00-09:15	(NSIA-1) Distributed Robust Finite-time Non-linear Consensus Protocol for High-order Multi-Agent Systems via Coupled Sliding Mode Control Alessandro Pisano, Masoud Hajimani, Milad Gholami, Zohreh Alzahra Sanai Dashti University of Zanjan
09:15-09:30	(NSIA-2) Soft Sensor Design for Distillation Columns Using Wavelets and Gaussian Process Regression Ali Akbar Safavi, Ali Karami Ghanavati, Morteza Zadkarami University of Shiraz
09:30-09:45	(NSIA-3) سیستم کنترل تحت شبکه امن با کنترلر پیش بین رمز شده علی اکبر صفوی، لادن صادقی خرمی دانشگاه شیراز
09:45-10:00	(NSIA-4) طراحی و پیاده سازی بلادرنگ کنترل کننده پیش بین بر روی زیمنس برای S7 های سری PLC کنترل فرآیندهای صنعتی رباب ابراهیمی، سعید صفار، مهدی زینعلی، معدی قربانی، نیما ایوبی دانشگاه صنعتی سهند تبریز
10:00-10:15	(NSIA-5) طراحی و پیاده سازیاتوماسیون فیدر توزیع برمبنای و پیشنهاد IEC61850 پروتکل توسعه مدل کابردی استاندارد حمیدرضا مومنی، محمد جواداسدی لاری، معصومه صادقی دانشگاه تربیت مدرس
10:15-10:30	Best Presentation Award & Session Group Photo

Session 8 ***Linear Control Systems; Applications in Control Engineering*** ***Chairperson: Dr. Ali Akbar Safavi, Dr. Ali Khaki Sedigh*** ***Venue: 303*** ***(Second Floor, Gulan Building, University of Kurdistan)***	
09:00-09:15	(LSACE-1) Distributed Actuator Fault Detection and Estimation for Linear Multi Agent Systems Pourya Naderi Bani, Maryam Shahriari Kahkeshi ShahreKord University
09:15-09:30	(LSACE-2) Optimal Feedforward Design for a Class of Non - minimum Phase Integrating Systems with Time Delay Abolhassan Razminia, Abolfazl Simorgh, Zahra Ahmadi Persian Gulf University
09:30-09:45	(LSACE-3) Accuracy Improvement of GPS/INS Navigation System using Extended Kalman Filter Mohammad Haeri, Pouya Abbasi Islamic Azad University, Science and Research Branch, Tehran
09:45-10:00	(LSACE-4) Metro Traffic Regulation by Considering the Effect of Transfer Stations Bijan Moaveni, Fatemeh Khosrosereshki Amirkabir University of Technology
10:00-10:15	(LSACE-5) Data-driven MIMO Discrete-time Predictive model-free Adaptive Integral Terminal Sliding Mode controller Design: Application to the Robotic Manipulators Driven by Pneumatic Artificial Muscles Ali Farzamnia, Babak Esmaeili, Mehdi Baradarannia, Mina Salim Amirkabir University of Technology

10:15-10:30	(LSACE-6) Fault Tolerant of Ship Roll Motion Using the Control Allocation Approach Ali Khaki Sedigh, Mehdi Naderi, Navid Abbasi, K. N. Toosi University of Technology
10:30-10:45	(LSACE-7) Observer-based Sensor Fault Detection in Islanded AC Microgrids using Online Recursive Estimation Abolghasem Sardashti, Amin Ramazani, Anahita Moradmand, Hadis Sadati Nezhad Tarbiat Modares University
10:45-11:00	Best Presentation Award & Session Group Photo

Session 9
Nonlinear Control Systems; Adaptive and Robust Control
Chairperson: Dr. Hossein Gholizade-Narm, Dr. Ali Kazemi
Venue: 304
(Second Floor, Gulan Building, University of Kurdistan)

09:00-09:15	(ARC-8) کنترل فرکانس یک ریزشبکه جزیره ایی با استفاده از کنترل کننده پس گام تطبیقی مبتنی بر مکانیزم رخداد-تحریک علی رفیعی، فرحناز احمدی، یزدان باتمانی، حسن بیورانی دانشگاه کردستان
09:15-09:30	(ARC-9) طراحی کنترل کننده میراگر بر پایه ی داده های حاصل از اندازه گیری های فازوری حوزه وسیع آذین عطاردی، هیمن گل پیرا، یزدان باتمانی، حسن بیورانی دانشگاه کردستان
09:30-09:45	(NCS-15) طراحی رویتگر بازه‌ای بهبودیافته برای سیستم آشوبناک چن در حضور اغتشاش بهروز رضایی، زهرا رحمانی، علی شرف زاده، مصطفی فرامین دانشگاه صنعتی نوشیروانی بابل
09:45-10:00	(NCS-16) رویکردی از نظریه ی بازی ها برای جبران لقی و کاهش خطای ردیابی در فیدبک خروجی سیستم انتقال حرکت دنده ای و پیاده سازی عملی بر روی سخت افزار امیرحسین نیکوفرد، حمید خالوزاده، مرتضی عبادی دانشگاه خواجه نصیرالدین طوسی
10:00-10:15	(NCS-18) Glucose Control in Diabetic Patient Considering Daily Real Life Factors Paknvsh Karimaghaei, Farnvsh Rahmanian, Mohsen Mohammadi, Mariam Dehghani University of Shiraz
10:15-10:30	(ARC-1) Cascade Terminal Sliding Mode Control of a Deployable Cable Driven Robot Philippe Cardou, Hamid Reza Taghirad, Roohollah Khoram Bakht, Seyed Ahmad Khalilpour ,Mohammad reza Jafari Harandi K.N.Toosi University Technology
10:30-10:45	(ICOCM-9) Design a New Intelligent Control for a Class of Nonlinear Systems Fazel Mohammadi, Jafar Tavoosi University of Windsor, ON, Canada
10:45-11:00	Best Presentation Award & Session Group Photo

Poster Presentations

Poster

Venue: Guĵan Building *(Second Floor, Guĵan Building, University of Kurdistan)* *Time: 16:15: 18:00*
(PSSGC-8) Polytopic-LPV Robust Control of Power Systems Connected to Renewable Energy Sources Fatemeh Otoofi, Mohammad Hassan Asemani, Navid Vafamand Aarhus University
(ICOCM-8) A 3-PRS Parallel Robot Control Based on Fuzzy-PID Controller Fazel Mohammadi, Jafar Tavoosi University of Windsor, ON, Canada
(ICOCM-10) Adaptive Neural Observer -Based Nonsingular Terminal Sliding Mode Controller Design for a Class of Nonlinear Systems Fazel Mohammadi, Hamede Karimi, Reza Ghasemi University of Windsor, ON, Canada
(ICOCM-11) A New Type-II Fuzzy System for Flexible-Joint Robot Arm Control Fazel Mohammadi, Jafar Tavoosi University of Windsor, ON, Canada
(ICOCM-12) A hybrid controller design based on iterative learning method and model predictive control for a nonlinear process system Behroz razaee, Zahra Rahmani, Mohammad Reza Zamani Behbahani Babol University of Technology
(LSACE-8) Fault Detection and Control of Time-Delay Systems: A Disturbance Observer Approach Ali Akbar Afzalian, Mona Faraji, Fatemeh Khani Puyesh Institute of Higher Education
(LSACE-11) Connected Vehicles Are Now Abolishing the Conventional Traffic Measuring Tools Ali Akbar Safavi, Majid Rostami, Klaus Bogenberger Bundeswehr University Munich
(PSSGC-2) High-Performance Robust Grid-Connected Power Systems Elham Bahrampour, Farid Badfar, Mohammad Hassan Asemani, Navid Vafamand Aarhus University
(SIMPC-8) Simultaneously Parameter Identification and Measurement-Noise Covariance estimation of a Proton Exchange Membrane Fuel Cell Abolghasem Daie, Chiyan-Razie Ghaderi University of Arak
(NSIA-6) Modeling and Simulation of Fieldbus Physical Layer Using HSPICE Ali Akbar Safavi, Mliha Goli University of Shiraz
(NSIA-8) Design, Implementation and Control of a Multilevel Cascade Inverter for AC Drive Application with Improved Low Speed Operatio Mazdak Abadi University of Arak
(ARC-10) Robust Fixed-order Dynamic Output Feedback Controller Design for Delayed Vehicle Active Suspension System with Polytopic Uncertainty Eliar Zoari, Pouia Badri, Mahdi Sajvdi Tarbiat Modares University
(ARC-12) Robust $\boldsymbol{H_2}$ and $\boldsymbol{H_\infty}$ Controller dDesign for DC Position Motor Control under Uncertainties Shiva Amini, Heman Golpira, Hassan Bevrani University of Kurdistan

Poster

(NCS-8) Neural Networks Adaptive DSC Design of Nonlinear Systems in the Presence of Input Saturation and External Disturbance
Nahid Abbasi
Isfahan University of Technology

(NCS-17) An Adaptive Fuzzy Cerebellar Model Articulation Controller for Syncronization of Chaotic Systems
Shaian Spehvand, Mahdi Poorgholi
Shahid Beheshti University

(NCS-19) Variable Structure Control of Spacecraft based on Nonlinear Sliding Surface
Farhad Fani Saberi, Ali Kasiri, Mahdi Bahrkashgol
Amirkabir University of Technology

(NCS-20) Fuzzy Active Vibration Control and Energy Regeneration Study in Tall Structures
Amirhossain Abolmasvmi, Mahdi Solaimani, Saed Mohammad, Ali Beladipoor
University of Arak

(NCS-21) Industrial Boiler-turbine -generator Process ControlUsing State Dependent Riccati Equation Technique
Abbas Ahmadi, Shahabedin Najafi, Yazdan Batmani
University of Kurdistan

(ICOCM-13) سیستم فتوولتاییک با MPPT شبکه عصبی در شرایط تغییرات سریع تابش
سیدجمال الدین سید حاتمی، عبدالمجید دژم خوی
دانشگاه محقق اردبیلی

(LSACE-10) طراحی کنترل کننده PI چندگانه برای پانکراس مصنوعی با استفاده از مدل مینیمال برگمن با در نظر گرفتن سه وعده غذایی
ثامانج امین نژاد، شادیه خداکرم زاده، یزدان باتمانی
دانشگاه کردستان

(LSACE-13) نظارت بر عملکرد سیستم کنترلی چندمتغیره با رویکرد اعمال آزمون فرضیه ها بر روی ماتریس کواریانس خروجی ها
جواد پشتان، نشاط مقبلی
دانشگاه علم و صنعت ایران

(LSACE-14) کنترل ازدحام در شبکه های مبتنی بر TCP با استفاده از ترکیب مد لغزشی مرتبه دوم و پیش بین حالت
محمد حسین هاشمی، هادی اشعریون
دانشگاه شهید بهشتی

(SIMPC-9) استخراج مدل و طراحی کنترل کننده مبتنی بر مدل برای پدستال با سه درجه آزادی
بهروز رضائی، سیدمحمدرضا ابراهیمی، مهدی توان
دانشگاه صنعتی نوشیروانی بابل

(NSIA-7)طراحی و پیاده سازی سیستم مدیریت مصرف انرژی در مراکز استخراج ارز دیجیتال
سعید علیشاهی، مهدی صادقی تازه کندی، هاشم قربان پناه
دانشگاه فردوسی مشهد، شرکت توزیع نیروی برق شهرستان مشهد

(NSIA-10) تحلیل و بررسی پاسخ زمانی و بسامدی سوپاپ هیدرولیک دو دهانه دو وضعیته تناسبی
پژمان نیک اندیش
دانشگاه صنعتی جندی شاپور دزفول

(ARC-11) طراحی کنترل کننده مد لغزشی فازی بر روی سیستم تعلیق شناور مغناطیسی با رویت گر کالمن پیوسته توسعه یافته
محمد عبداله زاده، مهدی پورقلی
دانشگاه شهید بهشتی

(NCS-22) طراحی کنترل غیرخطی مبتنی بر مشاهده گر اغتشاش برای سیستم های قابل نمایش با مدل هامرشتین
فاطمه خانی
موسسه آموزش عالی پویش

(NCS-23) کنترل کننده مد لغزشی مبتنی بر سه صفحه لغزشی تنظیم شده با الگوریتم شعله پروانه برای یک سیستم پاندول معکوس
حسن قاری زاده، سید محمد علم الهدایی، محمد ظاهر قربانی جویباری

دانشگاه صنعتی شاهرود

(NCS-24) کنترل غیرخطی موقعیت مجری نهایی بازوی مکانیکی سه درجه آزادی

حامد محمدی، سیروان فرهادی، یزدان باتمانی
دانشگاه کردستان

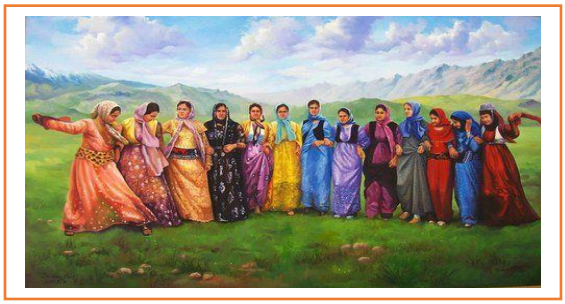
Introduction to Tourist Attraction:

Kurdistan Province located in the northwestern part of Iran covers a wide geographic area (28,203 kilometers) and has over 200 kms of shared border with Iraqi Kurdistan. Its neighbouring provinces are West Azarbaijan (north) and Zanjan (north and east), Hamedan (east), Kermanshah (south) Based on the last official state divisions in 2003, the province consists of 9 cities, 23 towns, 23 districts, 79 rural districts and 1,767 villages. The capital of the province is Sanandaj which is 512 kilometers from Tehran. The major cities of this province are Bana, Bijar, Diwandareh, Saqiz, Qorveh, Kamyaran, Sarvabad and Mariwan (see map). As per the last population census in 2003, Kurdistan Province has 1,574,119 inhabitants and the most populated cities being, in the order mentioned, Sanandaj (419,750 people) and Saghez.

Altitude development direction and establishment is in such a way to make the first rains fall on the highlands of the area to the west of the country. Atmospheric fallout is in the form of snow at high altitudes and rain in the lower parts. The average annual rainfall in the province is 500 mm and the highest average annual rainfall occurs in the city of Marivan (800 mm). In addition, the province has many rivers, lakes, and natural ice-stores. The province's rivers normally join two river basins: The Caspian Sea basin and Lake Urmia Basin and some also enter Iraq. Ghazalavzan River and its tributaries of Qomchoqay, Avezandareh, Traval and Shoor flow into the Caspian Sea. Zarrinehroud River, Khorkhora River and Siminroud River and their tributaries join Lake Urmia basin. Sirvan River is the longest river with the largest watershed and number of tributaries in Kurdistan Province. It runs between deep valleys and has a high water flow rate making it ideal for canoeing and white water rafting. It eventually joins the Tigris River in Iraq.

Kurdistan Province also has many natural caves including Karafto Cave, close to Divandarreh. It is a not only a natural cave but also an archeological site as it was used by humans in prehistory. The cave has four floors with room entrances and windows. On one of the hall ceilings on the third floor, the name of the Greek god Hercules is carved and is therefore known as the Temple of Hercules. On the fourth floor of the cave, tiles and ancient artifacts have been discovered which testify to human habitation of the cave in the Parthian and Sassanid eras and until the Islamic period. Another prominent cave in the region is Shoovi Cave which is 267 meters long and lies near the city of Bana.

The unique topography of this province, its beautiful nature and climatic variations have turned this area into an attractive spot for tourists. According to world standards, temperatures between 20 and 25 degrees of Celsius are highly favored by tourists; since the average daily temperature in this province from mid-May to mid-October ranges between 22 to 28 degrees Celsius, this period is the best time of the year for attracting summer tourists.



Kurdish dance or Halparkeh mirrors the past history of Kurdish people and by taking a closer look at Kurdish dance, we would find out that this art is a complete reflection of people's daily life and work. The roots of this art could be traced back into the people's religious beliefs, national festivals and celebrations, local games of war and defense, and inner feelings and moods. Kurdish dance has so many varieties throughout Kurdistan, but Sanandaj and Mariwan are two famous and rich cities in this regard and the varieties danced are named as follows: Garyan, Peshtpa, Halgerten, Fatah Pashayee, Chopi, Zangi, Shlan, Sehjar, and Khanameeri. Traditional musical instruments are still used for dancing to but modern electrical musical instruments are in wider use.

Kurdistan boasts one of the most beautiful costumes in the world. As it is written by many tourists in their travel books, Kurdish costumes are absolutely unique in terms of beauty, delicacy and color. Due to their positive attributes they have won the first place in several international festivals. Traditional Kurdish clothes are still widely used in everyday life in many parts of the province and gain special significance at weddings and religious ceremonies.

Arbaba Mountain, Bana, Kurdistan

Palangan village Kurdistan.