

Dr. Seyed Mehdi RakhtAla



- ✓ **Head of Electrical and Electronic Department of Golestan University**
 - ✓ **PhD, Assistant Professor , Department of Electrical Engineering, Golestan University**
 - ✓ **Head of Electrical and Electronic Group of Fuel Cell Research Center in Mazandaran- Babol University**
 - ✓ **Sabbatical leave with Cagliari university of Italy**
- E-Mail:sm.rakhtala@gu.ac.ir**
<http://gu.ac.ir/elec-grp/ContextPage?id=7174>

Education

Ph.D. in Control Engineering

- Jan 2008 – June 2013, Mazandaran University, Mazandaran, Iran.
 - **September 15, 2011 – March 25, 2012, Visiting Researcher at Auto Lab, Dept of Electrical and Electronic Eng. University of Cagliari , Cagliari , Italy.**
 - Dissertation: “Finite time convergence of using nonlinear observer to control of nonlinear systems with delay, **application in PEM Fuel Cell**”.
- With Grant of SANA (Renewable energy organization of Iran).**

M.Sc. in Power Electrical Engineering

- 2003 – 2006, Mazandaran University, Mazandaran, Iran
 - Major in Renewable energy
 - Thesis:“Improvement of Direct Methanol Fuel cell Performance with Electrical Modelling and Simulation”.
- With Grant of government.**

B.Sc. in Electronic Engineering

- 1994 – 1998, Isfahan University , Iran
- Major in Electronic Engineering.

My professional career details are be included 3 steps for over 18 years:

Professional Career Details

(A) Academic Positions

Now, Head of Electrical Department of Golestan University-Iran.

Assistant Prof. in Electrical Engineering Department in Golestan University, Iran, 6/2012 (4.5 years).

(B) Research /Industrial/Professional Positions :

Head of Control and Electronic Group in Fuel Cell Research Center in Mazandaran (Babol University), Iran -6/2004 - 6/2008 (for 5 years).

(C) as a Master of Electronic Engineer in Tehran- Battery company, Iran -1998- 2004. (for 7 years)

- **Relevant skills:**
- **PLC Programming, PLC Siemens STEP 7- FESTO-LS Korea.**
- **TIA software for Siemens PLCs**
- **WINCC and WINCC Flexible.**
- **HMI (LS-Siemens) for software control**
- **MATLAB**
- **LAB VIEW**
- **C/C++ for Microcontrollers**
- **Industrial PCs, RTU, SCADA.**
- **ProfiNet-ProfiBus- Industrial network**
- **PCB Design-PROTEL- Altium: PCB Design Software**

Fields of Research Interests and Researching Subjects:

- **Robot Control – Robotic – Mechatronic Subjects (Unmanned Aircraft Systems with Passing of Field Electrical Field for Special aim in Electrical industries : Hot Line Washing Insulators- Inspection of Power Lines - 2017-Iran)-. Nonlinear control of Knee Joint Human drive/ Exoskeletons/Wearable/Rehabilitation robots.**
- **Industrial Robot Control and Generating of PLC code for ABB Robot and Mitsubishi Robot (2016)-(battery packing project).**
- **(Professional Career for 15 years) Industrial Automation (PLCs) - PROFIBUS system and SCADA and Telemetry**
- **Hybrid Electric vehicle including UC/Battery /Fuel Cell/ Wind /PV**
- **Renewable energy and Zero Energy System(Now, Grant by Distributed Electric organization-Iran).**
- **Nonlinear Control, Sliding Mode Control, High Order Sliding Mode Control, High Order Sliding Mode Observer**
- **Nonlinear Control of Renewable energy (Fuel Cells). (PhD Thesis)**
- **Design and implementation of fuel cell power system (Project with Mazandaran -Babol University)**
- **Design and control of hybrid fuel cell system with Battery/Super capacitor. (Project with IPDC-Iran Power Development Co)**
- **Design and control of switching power converters in hybrid fuel cell system with Battery/Super capacitor.**

External Funding (Documents are available)

- **Design of Zero Energy system based on low speed wind/ PV/Battery (Now).**
- **Robot Control – Robotic – Mechatronic Subjects (Unmanned Aircraft Systems for Special aim in Electrical industries as washing robot and observation robot-2017-Iran).**
- **Control and simulation of Hybrid Fuel cell /Battery/Super capacitors in Distributed Generation (DG), Researching project with IPDC (Iran Power Development Co- Tehran, 2012).**
- **Control and Monitoring for Loading Arm of Liquid Gas & 32 Zone Flame Detector & Trucks**

Loading System and control of Deluge Valves for National Oil Company with Labview software and Modbus protocol and Advantech card USB4711A. April 2011, NIOPC (OIL Company).

- **Design and Implementation of 3D Printers (2016-New-Preparation).**
- **Design and fabrication of 32 channel Pressure Data logger based on Lab view software-2017-Iran.**
- **Open loop Control of Inverters in Rangin Kaghaz Khazar (This project included: 12 Inverter of 0.75KW-1.5 KW-2.5KW-5KW-7.5 KW-10 KW-22KW) with HMI LS company with Modbus protocol -Babol- Iran-2014.**
- **Permanent and Maintenance of Telemetry – SCADA system of Gorgan water and wastewater Company with 29 node-Gorgan-Iran -2014.**
- **Design and implementation of ECU for Diesel , Researching project with DESA Amol, 2012.**

Academic Experience:

- ✓ **Head of Electrical and Electronic Department of Golestan University (April/2014- Present)**
- ✓ **Assistant Professor, PhD, Department of Electrical Engineering, Golestan University (September/2012-Present)**
- ✓ **Sabbatical leave with Cagliari university of Italy (September/2011- March/2012).**

- ✓ **Head of Electrical and Electronic Department of Fuel Cell Research Center in Mazandaran- Babol University**

- ✓ **Director of Academic studies at Golestan University: Bachelor of Electrical students Degree Program at Golestan university-Gorgan-Iran.**
- ✓ **Supervisor of Scientific Community: Bachelor of Electrical students Degree Program at Golestan university-Gorgan-Iran.(2013-2017).**

Scientific Leadership:

- ✓ **Head of Control and Electronic Group in Fuel Cell Research Center in Mazandaran- Babol University at 2004-2008.**
- ✓ **Head of Research group: Unmanned Aircraft Systems Since(2017): Design and implementation of Unmanned Aircraft Systems for Special aim in Electrical industries as a washing robots and inspectors robots in Hot line system.**
- ✓ **Head of Research group: Design and Implementation and precision control of 3D Printers (2016)**
- ✓ **Advisor of Robotic Group in Golestan University- (since 2017). (Document is available).**

Industrial Experience:

- ❑ **(Professional Career for 15 years) Industrial Automation (PLCs) - PROFIBUS system.**
- ❑ **Robot Control – Robotic – Mechatronic Subjects: Design and implementation of Unmanned Aircraft Systems Pass Field Tests for Special aim in Electrical industries as a washing robots and inspectors robots (2017).**
- ❑ **Design of Zero Energy system based on low speed wind/ PV/Battery (Now).**
- ❑ **Design and Implementation of 3D Printers- (2017)**

- ❑ Industrial Automation (PLCs) – Monitoring with HMI and WINCC based on PC- Profibus.
- ❑ Nonlinear Control, High Order Sliding Mode Control, High Order Sliding Mode Observer
- ❑ Nonlinear Control of Renewable energy (Fuel Cells). (PhD Thesis)
- ❑ Design and implementation of fuel cell power system (Project with Mazandaran -Babol University)
- ❑ Design and control of hybrid fuel cell system with Battery/Super capacitor.(Project with IPDC-Iran Power Development Co)
- ❑ Design and control of switching power converters in hybrid fuel cell system with Battery/Super capacitor.
- ❑ Head of Electrical and Electronic Department of Fuel Cell Research Center in Mazandaran- Babol University (2004-2010) for project “design and implementation of 1.5 kW direct methanol fuel cell system.”
- ❑ Master Engineer in Battery Company (June/1999- 2004).
- ❑ Grants in Industrial Projects mentioned in Page 7,8 and section: Research Grants -Work experience.

Patents- Innovation with Award

- **Design and implementation of a full scale microcontroller based DMFC test station.**
- **Design and implementation of programmable control unit for AC/DC Rectifiers(Battery company with certificate)**
- **Design and implementation a Power system for Direct Methanol Fuel cell by PLC S7 Siemens. (University of Mazandaran- Babol with certificate).**

Teaching experience

Qualification: Teaching employees at automation solutions for 15 years(Documents are available).

Courses (8 MSc students- 14 Undergraduate level)

- **Sensors for robots (for Master of Science student in Golestan University-Iran.)**
- **Mechatronic I (for Master of Science student in Golestan University-Iran.)**
- **Mechatronic II (for Master of Science student in Golestan University-Iran.)**
- **Advanced control (for Master of Science student in Golestan University-Iran.)**
- **Nonlinear control (for Master of Science student in Aliabad Azad university-Iran.)**
- **Fuzzy control (for Master of Science student in Aliabad Azad university-Iran.)**
- **PLC (Programmable Logic Controller -S5, S7) (for BS Student in Babol Noshiravani Technology University- 10 years until Now)**
- **PLC (Programmable Logic Controller -S5, S7) (Shomal University, Amol , Iran 3 last Semester.)**
- **Instrumentations and control systems (for Bachelor student in Golestan University-Iran.)**
- **Industrial Control (for Bachelor student in Golestan University)**
- **Modern control (for Bachelor student in Golestan University.)**
- **Digital Control (for Bachelor student in Golestan University)**
- **Electrical Measuring Systems (for BS Student in Mazandaran University)**

- Control theory (for BS Student in Babol Noshiravani Technology University) (10 semester)
- Power Electronic (for Bachelor student in Golestan University)
- Control laboratory(for Bachelor student in Golestan University- 4 last Semester)
- Measurement Electrical Lab
- Digital Circuits Lab
- Power system analysis for BS Student
- Electronic I
- Power System

Pedagogical qualification for 2 semester (document is available, it can be sent) :

19.45 of 20 – 1 semester of October 2016.

19.20 of 20- 1 semester of February 2017.

Research Students Supervised/Trained

Level	Number of Trainees
Master Students	10 - supervisor
Undergraduate Students	40-supervisor

Participation in Thesis and Oral Examination Committees

Level	Number of Examinations
PhD Students	-
Master Students	3 - Oral Examination Committees

Education: Future work plans and development within respective activity

- **Teaching:** Industrial automation course-Industrial control-modern control –nonlinear control-Fuzzy control-Linear control- teaching of electrical Laboratories.
- Supervising of MSc students for **Nonlinear Control and intelligent control subject such as working in: Industrial robot generating codes / Renewable energy systems (Fuel cells...) / Hybrid electric vehicle/ Quad rotors systems/ 3D printers/Wearable and rehabilitation robot/ Unmanned Aircraft Systems**

Publications

Journal Papers

- 1- Seyed Mehdi RakhtAla, Monazzahalsadat Yasoubi, and Hassan HosseinNia, Design of Second Order Sliding Mode and Sliding Mode Algorithms: A Practical Insight to DC-DC Buck Converter, IEEE/CAA JOURNAL OF AUTOMATICA SINICA, VOL. 4, NO. 3, JULY 2017 487.
- 2- Seyed Mehdi Rakhtala, Mostafa Ahmadi, Twisting control algorithm for the yaw and pitch tracking of a twin rotor UAV, *Int. J. Automation and Control, Vol. 11, No. 2, 2017*
- 3- S.M.Rakhtala rostami , E. Shafiee Roudbari “Fuzzy PID control of a stand-alone system based on PEM fuel cell” **International Journal of Electrical Power & Energy Systems** ,Volume 78, June 2016, Pages 576–590.
- 4- Seyed mehdi rakhtala rostami, Reza Ghaderi, Abolfazl Ranjbar noei, Elio Usai “Design of Finite-time High-Order Sliding Mode State Observer; a Practical Insight to PEM Fuel Cell System” *Journal of Process Control,*

Volume 24, Issue 1, January 2014, Pages 203-224.

- 5- Seyed Mehdi RAKHTALA, Abolfazl RANJBAR, Robust Feedback Linearization Control of Air-Feed System in PEM Fuel Cell against Practical Uncertainty, *IU-JEEE Vol. 16(1), (2016), 1981-1994.*
- 6- S.M.RAKHTALA, A. RANJBAR NOEI, R.GHADERI, E. USAI, "Control of oxygen excess ratio in PEM fuel cell system using high-order sliding mode controller and observer" *Turkish Journal of Electrical Engineering & Computer Science, Turk J Elec Eng & Comp Sci (2015) 23: 255 – 278.*
- 7- M. Shakeri, **S.M. Rostami** , and J. Imen, "A full scale microcontroller based DMFC test station" *ASME Journal. Fuel Cell Sci. Technol 6(1), Nov 05, 2008.*
- 8- Seyed Mehdi Rakhtala, control of hybrid fuel cell and battery system for tracking of performance in optimal point (Persian), **Vol.19 – No.3-October2016- in Iranian Journal of energy** ,2016.
- 9- Seyed Mehdi RAKHTALA, Abolfazl RANJBAR" Robust Feedback Linearization Control of Air-Feed System in PEM Fuel Cell against Practical Uncertainty" *IU-JEEE Vol. 16(1), (2016), 1981-1994.*
- 10- Seyed Mehdi RakhtAla and Roja Eini; Nonlinear Modeling of a PEM Fuel Cell System; a Practical Study with Experimental Validation; *International Journal of Mechatronics, Electrical and Computer Technology; Vol. 4(10), Jan. 2014, Special Number, pp. 1272-1296, ISSN: 2305-0543*
- 11- Control Techniques for Fuel Cell Systems; N Mirrashid, SM RakhtAla, *Turkish Journal of Engineering and Technology. Vol 2 (2), 14-19.*
- 12- Naghme Mirrashid, Seyed Mehdi RakhtAla; Optimizing Output Power and Stoichiometric Tracking Oxygen in PEM Fuel Cell System by Second Order Sliding Mode Controller with Super Twining Algorithm; *Research Journal of Engineering & Technology. Vol., 1 (3), 40-53, 2015.*
- 13- S.M.Rakhtala, R.Ghaderi, A.Ranjbar "Proton exchange membrane fuel cell voltage-tracking using artificial neural networks " *Springer, Journal of Zhejiang University Science C ,April 2011, Volume 12, Issue 4, pp 338-344.*
- 14- S.M. Rakhtala, E. Shafiee Roudbari "Application of PEM Fuel Cell for Stand-alone Based on an Fuzzy PID Control" *Electrical Power and Energy Systems 78 (2016) 576–590.*
- 15- S.M. Rakhtala , A. Ranjbar Noei, R. Ghaderi, "Systematic Approach to Design a Finite Time Convergent Differentiator in Second Order Sliding Mode Controller", *International Journal of Engineering (IJE). IJE TRANSACTIONS B: Applications Vol. 26, No. 11 (November 2013) 1357-1368.*
- 16- S.M.Rakhtala , R.Ghaderi, A.Ranjbar" Control of PEM fuel cell system via higher order sliding mode control" *Int. J. Automation and Control, Vol. 6, Nos. 3/4, 2012.*

Conference Papers

بهینه سازی توان خروجی و ردیابی استوکیومتری اکسیژن در سیستم پیل سوختی PEM با استفاده از کنترل مد لغزشی مرتبه اول و دوم؛ هشتمین کنفرانس بین المللی مهندسی برق با محوریت انرژی های نو سال 1394

۲- نغمه میررشید- سیدمهدی رخت اعلا

بهینه سازی توان خروجی و ردیابی استوکیومتری اکسیژن در سیستم پیل سوختی PEM با طراحی کنترلر فوق پیچشی بهره متغیر؛ هشتمین کنفرانس بین المللی مهندسی برق با محوریت انرژی های نو سال 1394

۳- نغمه میررشید- سیدمهدی رخت اعلا

بهینه سازی توان خروجی و ردیابی استوکیومتری اکسیژن در سیستم پیل سوختی PEM با کنترلر مد لغزشی مرتبه ۲ با الگوریتم فوق پیچشی؛ سومین کنفرانس هیدروژن و پیل سوختی؛ 22-23 اردیبهشت ماه ۱۳۹۴-تهران، سازمان پژوهش های علمی و صنعتی ایران.

۴- جمال قاسمی، سید مهدی رخت اعلا، کمیل اسفندیاری کلائی

طراحی و شبیه سازی کنترلر فازی برای پیل سوختی پلیمری جهت کاربرد خانگی؛ نخستین همایش ملی انرژی ساختمان و شهر- سال ۱۳۹۴

۵- جمال قاسمی، سید مهدی رخت اعلا، کمیل اسفندیاری کلائی

طراحی و شبیه سازی کنترلر فازی-ژنتیک بهینه شده برای پیل سوختی پلیمری؛ سومین کنفرانس ملی و اولین کنفرانس بین المللی پژوهش کاربردی در مهندسی برق-مکانیک و مکاترونیک

3rd national conference and 1st international conference on applied research in electrical mechanical and mechatronic.

6- S Poorinezhad, SM RakhtAla; Chattering analysis of second order sliding mode algorithms for linear plants with disturbance; 2nd international conference Knowledge-Based Engineering and Innovation (KBEI), 2015.

7- M.ahmadi, SM RakhtAla; Twisting control algorithm for the yaw and pitch tracking of a twin rotor UAV; 2nd international conference Knowledge-Based Engineering and Innovation (KBEI), 2015

8- **S.M.Rakhtala**, R.Ghaderi, A.Ranjbar, T.Fadaeian and Ali Nabavi "Current Stabilization in Fuel Cell/Battery Hybrid System Using Fuzzy-Based Controller" IEEE, Electrical Power and Energy, October, 2009 Montreal, Quebec, Canada. (**Hybrid fuel cell system**)

9- **S. M. Rakhtala**, A.Gholamian, A.Ashourpouri "Power control of battery /UC and fuel cell in Hybrid system application in D.G" The 8th International Energy Conference, 24-25 May 2011/IRIB International conference center, Tehran, Iran. (**Hybrid fuel cell system**)

10- T.Fadaeian, **S.M.Rakhtala**, **R.Ghaderi**, **A.Ranjbar** and ali nabavi niaki, "A Control Strategy For Hybrid Fuel Cell Battery System Optimization" The 23th Int.Conf. Power System, Iran-PSC2008. (**Hybrid fuel cell system**)

11- **S.M.Rakhtala**, R.Ghaderi, A.Ranjbar "sliding mode control of DC_DC Bi-Directional converter for fuel cell" The 1th Int.Conf. Renewable energy, Iran-Birjand, 2009. (**Hybrid fuel cell system**)

- 12- **S. M. Rakhtala**, R.Ghaderi, A.Ranjbar “Prolong the Stack Life of PEM Fuel Cell System Via Higher Order Sliding Mode Control” The 2nd International Conference on Control, Instrumentation, and Automation, shiraz 2011.
- 13- **S.M.Rakhtala**, R.Ghaderi, A.Ranjbar, T.Fadaeian and Ali Nabavi, Senior Member, IEEE, “PEM Fuel Cell Voltage-Tracking using Artificial Neural Network” IEEE ,Electrical Power and Energy, October, 2009 Montreal, Quebec, Canada.
- 14- Pisano, D. Salimbeni, E. Usai, **S.M. Rakhtala**, A.R. Noei “Observer-based output feedback control of a PEM fuel cell system by high-order sliding mode technique” **2013 European Control Conference (ECC) July 17-19, 2013, Zürich, Switzerland.**
- 15- **S. M. Rakhtala**, **Usai E.**, “State Estimation and Robust Control in Nonlinear Systems: an Application to Fuel cells”, 7th Workshop on Structural Dynamical Systems: Computational Aspects (SDS2012), Capitolo, Monopoli, Italy, 11-15 June 2012 (invited talk).
- 16- **S.M.Rakhtala**, R.Ghaderi ”Model Predictive Control of Proton Exchange Membrane Fuel Cell by Feedback Linearization” NEEC2010 - Int.Conf. Power System, Iran-Najaf abad -NEEC2010.
- 17- **S.M.Rakhtala**, J. Rouhi ,J. Imen and M.Shakeri," Design and fabrication of a control system for a single cell direct methanol fuel cell ".The 21th Int.Conf. Power System, Iran, 13-15 Nov.2006, and pp259.
- 18- **S.M.Rakhtala** ,J. Imen, M. Shakeri, K. Sedighi, A.A. Ghoreashi, M. Faleha “Design a single cell direct methanol fuel ” The 11th Int.Conf., Eng .Chemical , Tarbiat Modares , Tehran ,Iran , Nov.2006.
- 19- **S.M.Rakhtala**, T.Fadaiian,R.Ghaderi, A.Ranjbar and M.Shakeri "Temperature control system for PEM Fuel cell" Fundamentals and Developments Fuel Cells 2008 Conference -Dec10-12 th , 2008 ,Nancy,France.
- 20- **S.M.Rakhtala**, J.Imen, M. Shakeri,"An innovative control system for a 1.5 KW DMFC test bench", Fundamentals and Developments Fuel Cells 2008 Conference -Dec10-12, 2008,Nancy,France.
- 21- **S.M.Rakhtala Rostami**, M. Shakeriand J. Rouhi, "Determination of optimum operating point of a DMFC by computer simulation software" NEEC2008 - Int.Conf. Power System, Iran-Najaf abad -NEEC2008.

۲۲- طاهره فداییان ، سیدمهدی رخت اعلا رستمی

ارائه استراتژی کنترل جهت بهینه سازی عملکرد سیستم هیبرید پیل سوختی/ باتری؛ بیست و سومین کنفرانس بین المللی برق - سال: 1387

Journals Reviewer(11 Journal Reviewers):

- 1- IEEE Access Journal-IEEE- Impact Factor: 1.270.

- 2- Asian Journal control, Print ISSN: 1561-8625 Online ISSN: 1934-6093, Impact Factor: 1.411.
- 3- ISA Transaction, ELSEVIER, ISSN: 0019-0578, Impact Factor: 2.256.
- 4- Intelligent Industrial systems-Springer.
- 5- TURKISH JOURNAL OF ELECTRICAL ENGINEERING & COMPUTER SCIENCES, ISSN 1300-0632.
- 6- Nonlinear Dynamics-Springer- ISSN: 0924-090X (print version).
- 7- Computational Intelligence in electrical engineering-university of Isfahan journal systems, ISSN: 6530-2251.
- 8- Springer, Iranian Journal of Science and Technology, Transactions of Electrical Engineering.
- 9- TABRIZ JOURNAL OF ELECTRICAL ENGINEERING (TJEE)
- 10- Journal of Iranian Association of Electrical and Electronics Engineers
- 11- International Journal of Dynamics and Control

BOOK

1-“Control of induction motor, Industrial Inverter DELTA “**S. M. Rakhtala**, Ahmad esfand mod, Morteza Ardeshiri, ISBN:987-964-8424-60-7-2009.

Research Grants -Work experience

- **Project1- Feasibility and Design of Zero Energy system based on low speed wind/ PV/Battery (Now).**
- **Project2- Design and Implementation of 3D Printers (2016-New)**
- **Project3- Robot control based On PLC Siemens (2016-New)**
- **Project4- Open loop Control of Inverters in Rangin Kaghaz Khazar (This project included: 12 Inverter of 0.75KW-1.5 KW-2.5KW-5KW-7.5 KW-10 KW-22KW) with HMI LS company with Modbus protocol -Babol- Iran-2014.**
- **Project5 -Permanent and Maintenance of Telemetry – SCADA system of Gorgan water and wastewater Company with 29 node-Gorgan-Iran -2014.**
- **Project6: Control and simulation of Hybrid Fuel cell /Battery/Super capacitors in Distributed Generation (DG), Researching project with IPDC (Iran Power Development Co) Tehran, 2012.**
- **Project 7: Design and implementation of ECU for Diesel , Researching project with DESA Amol, 2012.**
- **Project 8: Control and Monitoring for Loading Arm of Liquid Gas & 32 Zone Flame Detector & Trucks Loading System and control of Deluge Valves for National Oil Company with Labview software and Modbus protocol and Advantech card USB4711A. April 2011,NIOPDC (OIL Company).**
- **Project 9: Design and implementation a Power system for Direct Methanol Fuel cell by PLC S7 Siemens (University of Mazandaran-Babol).**
- **Project 10: Design and Fabrication of 1KwTest Station for Direct Methanol Fuel Cell (University of Mazandaran-Babol).**

Software Skills

- 1- PLCs (S7 Siemens-TIA software Siemens -FESTO-LG-Mitsubishi, S5,...) with certificate PLC –FESTO - Mini PLC: Logo, Zen Omron(Professional)
- 2- HMI and Monitoring software (Professional).
- 3- LabView (Professional).
- 4- Matlab (Simulink/m-file)-Real time in Matlab (Professional).
- 5- C++ software- C51 software for microcontroller with certificate (Professional).
- 6- PCB, Computer Electronic Circuit Design (Protel) (Professional).
- 7- EWB
- 8- Power Point ,Word, Excel, Access(Professional).

ADDITIONAL EXPERIENCE

- 1- Control cylinders with Mini PLC Siemens LOGO OBA5 –godosha company, babolsar, Iran(2009).
- 2- Control Diesel Generator MWM 250 KVA with Mini PLC Siemens LOGO OBA5 - Hospital Boali Sina, Sari, Iran(2007).
- 3- Temperature monitoring (16 inputs) by Data acquisition card Advantech 1710HG with Labview software (2007).
- 4- Design and implementation of a control valve 20 channel (20 output Triac), based on microcontroller 89C5X consist of LCD & Design with Protel- Battery Company, Tehran, Iran.
- 5- Design and implementation of a Digital VCO(Voltage Control Oscillator) Set with microcontroller 89C5X & Design with Protel - Battery Company ,Tehran ,Iran.
- 6- Design and implementation of a Charger programmable Set with microcontroller 89C5X (Input Keyboard, LCD Display, 16 outputs Relay) Design PCB with Protel in Battery Company, Tehran, Iran.
- 9- Design and implementation of a minimum system, based on microcontroller 89C5X consist of LCD, A/D, D/A, MUX, Keyboard, LED Display.

Tutoring Experiences

- PLC for NIOPDC(National Iranian Oil Products Distribution Company) -Sari - mazandaran-2010 with certificate.
- PLC (Programmable Logic Controller -LOGO,S5, S7,) , Novin parsian institute , Fani Mazandaran institute-babol.
- LabView
- **Micro controller MPC555 for DESA**
- PLC S5 Siemens Sari Pooya Company
- Micro controller 89C5X