

**Sami El Ferik**

**Resume**

---

December 11, 2009

## Contents

<b>1.1 SUMMARY OF EXPERIENCE RECORD .....</b>	<b>- 1 -</b>
PERSONAL INFORMATION: .....	- 1 -
EDUCATION: .....	- 1 -
1.1.1 EMPLOYMENT HISTORY .....	- 1 -
CAREER OBJECTIVES AND RESEARCH INTERESTS .....	- 2 -
<i>Area of Specialization:</i> .....	- 2 -
<i>Research Interests:</i> .....	- 2 -
<i>Scholarship, Recognition and Affiliation:</i> .....	- 2 -
1.1.2 LAST THREE-PERFORMANCE EVALUATIONS AT KFUPM:.....	- 2 -
1.1.3 INDUSTRIAL EXPERIENCE .....	- 4 -
<b>1.2 TEACHING .....</b>	<b>- 4 -</b>
1.2.1 TEACHING EVALUATION .....	- 4 -
1.2.2 TEACHING INVOLVEMENT AT KAUST .....	- 4 -
1.2.3 TEACHING INVOLVEMENT AT KFUPM.....	- 5 -
1.2.4 COURSE COORDINATION .....	- 5 -
1.2.5 COURSES AND LAB DEVELOPMENT .....	- 5 -
1.2.6 PARTICIPATION IN SHORT COURSES .....	- 6 -
1.2.7 SUPERVISING COOP AND SENIOR PROJECT STUDENTS .....	- 7 -
<i>Examples of Coop work:</i> .....	- 8 -
1.2.8 STUDENT ADVISING: .....	- 8 -
<b>1.3 RESEARCH.....</b>	<b>- 9 -</b>
1.3.1 LIST OF PUBLICATIONS.....	- 9 -
<i>Papers in Internationally Recognized Refereed Journals</i> .....	- 9 -
<i>Journal Papers under Review:</i> .....	- 10 -
<i>Journal Papers under Preparation:</i> .....	- 10 -
1.3.2 PAPERS IN REFEREED PROCEEDINGS IN INTERNATIONAL CONFERENCES SPECIALIZED SYMPOSIA.....	- 10 -
<i>International Conferences</i> .....	- 10 -
<i>Regional Conferences</i> .....	- 11 -
<i>Invited Seminars</i> .....	- 12 -
1.3.3 REFEREED TECHNICAL REPORTS : .....	- 12 -
1.3.4 GRADUATE STUDENTS ADVISING.....	- 12 -
1.3.5 LIST OF RESEARCH PROJECTS AT KFUPM .....	- 13 -
<i>Project with Local/International Industries:</i> .....	- 13 -
<i>Applied Research Projects:</i> .....	- 13 -
<i>Basic Research Projects</i> .....	- 14 -
<i>Applied Research Projects Under Review:</i> .....	- 14 -
1.3.6 INVOLVEMENT IN RESEARCH AND INNOVATION CENTERS (UNDER REVIEW) .....	- 15 -

<b>1.4 PROFESSIONAL ACTIVITIES:</b> .....	<b>- 19 -</b>
1.4.1 CONFERENCE ORGANIZATIONS: .....	- 19 -
1.4.2 AWARDS.....	- 19 -
1.4.3 PAPER REVIEW .....	- 19 -
1.4.4 TECHNICAL SEMINAR.....	- 20 -
<b>1.5 UNIVERSITY AND DEPARTMENT SERVICES</b> .....	<b>- 21 -</b>
1.5.1 COMMITTEE WORK .....	- 21 -
1.5.2 DEPARTMENT SERVICES:.....	- 24 -

## 1.1 Summary of experience and Record

---

## 1.1 Summary of Experience Record

### Personal Information:

Nationality: Canadian.  
Address: POB # 1137, Dhahran 31261, Saudi Arabia.  
Telephone: 9663860-2542 (Office), 9663860-6171 (Residence)  
Mobile: 966506842597  
E-mail: [selferik@kfupm.edu.sa](mailto:selferik@kfupm.edu.sa)

### Education:

1991-1996 Ph.D. Electrical and Computer Engineering Department  
“Optimizing Flexible Manufacturing Systems under Hedging Control Policy,”  
Ecole Polytechnique, University of Montreal, 1996.  
1989-1991 M.Sc. Electrical and computer Engineering Department  
“Identification of a renewal stochastic model for electrical thermal loads,”  
Ecole Polytechnique, University of Montreal, 1991  
1984-1988 B.Sc. Electrical Engineering, Laval university (Quebec).

### 1.1.1 Employment History

Sept-2009-Present **Visiting Associate Professor**, Mechanical Engineering, Division of Physical Science and Engineering, King Abdullah University of Science and Technology (KAUST).  
Winter 2010 **Invited Faculty** Winter Enrichment Program (WEP) King Abdullah University of Science and Technology (KAUST).  
July 2009-Present **Associate Professor**, Control and Instrumentation Systems Engineering, Systems Eng. Department. King Fahd University of Petroleum and Minerals.  
Sept-2000-July 2009 **Assistant Professor**, Control and Instrumentation Systems Engineering, Systems Eng. Department. King Fahd University of Petroleum and Minerals.  
Dec.-1999-Aug-2000 **Staff Controls Analyst (grade 48)**. Pratt and Whitney Canada, Montreal, Quebec.  
Apr-1998-Dec-1999 **Senior Controls Analyst: (grade 46)**. Pratt and Whitney Canada, Montreal, Quebec.  
Fall 99 **Assistant Professor**. University of Montreal, Canada.  
1997-1998 **Controls Analyst: (grade 44)**. Pratt and Whitney Canada, Montreal, Quebec.  
1996 -1997 **Postdoctoral Fellow**, University of Montreal, Canada.

- 1991-1996            **Lecturer.** University of Montreal.
- Modeling and Simulation of Dynamic Systems.
  - Control System design Instrumentation and Real Time Control.
  - Data acquisition, system identification and performance evaluation
  - Lab Development.
- Fall. 1991            **Software Developer.** University of Montreal
- Numerical analysis and simulation of probabilistic dynamics of flexible manufacturing systems (Partial differential equations with boundary constraints)/Realization of a simulation software (C).
  -

## Career Objectives and Research Interests

### Area of Specialization:

Instrumentation, control theory, and system modeling; process control loop performance monitoring; flexible manufacturing systems, inventory control; load and energy management; stochastic processes.

### Research Interests:

Sensing, monitoring, and control theory and design with strong multidisciplinary research and applications in strategic fields such as:

- load management and energy efficiency,
- control of drug administration,
- process control and control loop performance monitoring,
- control of systems with delays,
- modeling and control of stochastic systems,
- analysis of network stability and networked control systems,
- condition monitoring, and condition-based maintenance.

### Scholarship, Recognition and Affiliation:

- Represented Systems Engineering, Control and Instrumentation, in KFUPM-Yokogawa collaboration in research and development discussions held in Japan, Yokogawa headquarter, in August 10-18, 2008
- Recommended for best Ph.D. Thesis, Electrical and Computer Engineering department, Ecole Polytechnique, University of Montreal, 1996.
- Recommended for best Master's degree thesis, Electrical and Computer Engineering Department, Ecole Polytechnique, University of Montreal, 1991.

### 1.1.2 Last three-performance evaluations at KFUPM:

- 2006-2007    Distinguished (A+)
- 2004-2005    Distinguished (A+)

- 2002-2003    Excellent    (A)

### 1.1.3 Industrial Experience

I joined Pratt and Whitney Canada from 1997 until August 2000. During this period, I have been promoted three times, from Controls Analyst: (grade 44) to Staff Controls Analyst (grade 48), which is exceptional. With the promotion come also increased and different responsibilities. During my industrial experience, I have been performing the following tasks:

- Lead analytical and development tasks to provide gas turbine engine control and monitor systems that satisfy customer requirement on time, within budget for aerospace as well as industrial applications.
- Provide realistic estimates, monitor progress, and ensure delivery of product as per schedules and budgets.
- Develop and test real time control software.
- Support/Follow supplier's progress and ensure proper development and application of company processes and policies.
- Support gas turbine engine testing and integration.
- Upgrade of company standard-work document.
- Assess process and lead improvement initiatives.
- Develop and simulate models of gas turbine engines for aerospace and industrial applications.
- Model and simulate hydro-mechanical control components.
- Coordinate/support of the collaboration with other department and divisions.
- Support gas turbine engines field problem with customer technical support troubleshoot, analysis, and recommendation for improvements.
- Prepare test plans and conduct testing of gas turbine engine for validation and verification of dynamic performance (following DO178A/B FAR33 and 27)
- Design embedded control system.
- Prepare Software Requirement Specification (SRS) and Software Development Plan (SDP)
- Design the software architecture; prepare the Software Design Document (SDD).
- Lead a 3-member software development team following RTCA-DO178B procedures and best software practices.
- Lead a team of six persons for gas turbine engine certification testing. Produce Validation and Verification (V&V), Validation Test Report (VTR), support engine testing.

The industrial experience was very enriching and stimulating. I have been also involved in companywide symposium and delivered many technical presentations for other companywide departments.



## 1.2 Teaching

---

## 1.2 TEACHING

### 1.2.1 Teaching Evaluation

During the last 10 academic years, I taught 12 different undergraduate courses at different levels, 3 different undergraduate labs, and 4 graduate courses. In addition, I proposed two new courses: one undergraduate and one graduate.

In the special undergraduate course SE439 ( CISE433)“Condition-based maintenance and control loop performance monitoring,” taught during term 072, five invited professional engineers from as many industrial companies presented lectures on latest industrial practices and technologies closely related to the course’s topics. My average student evaluation per semester is reported in the table below. My instructor average for the last six years is 8.99/10 while the department average is 8.19/10.

<i>Semester</i>	<i>Average Evaluation</i>	<i>SE. Department Average undergraduate</i>
031	8.96	8.54
032	8.96	8.69
041	9.46	8.1
042	9.4	8.49
051	8.83	8.06
052	9.32	7.98
061	8.96	8.04
062	9.16	8.29
071	8.59	8.02
072	9.05	8.13
081	9.02	7.89
082	8.20	8.01
<b>Average Teaching Evaluation</b>	<b>8.99</b>	<b>8.19</b>

### 1.2.2 Teaching involvement at KAUST

<i>Course</i>	<i>Title</i>	<i>Semester</i>
ME210	Control Practice	Fall 2009
ME410	Introduction to Networked Control Systems	Winter Enrichment Program 2010
ME313	Systems Modeling and Identification	Spring 2010

### 1.2.3 Teaching Involvement at KFUPM

#### Undergraduate Courses:

<i>Course</i>	<i>Title</i>
SE 201	Intro. to Systems Eng.
SE 207	Modeling and Simulation
SE 301	Numerical Methods
SE 302	Linear Control Systems
SE 401	Computer Control Systems
SE 418	Industrial Process Control
SE 439	Special Topic in Automation: Condition-Based Maintenance and Control Loop Performance Monitoring
SE 461	Comp. Aided MFG and Robotics
SE 463	Theory of Stochastic Systems
CISE 201	Introduction to Control and Instrumentation Sys. Eng.
CISE 302	Linear Control Systems
CISE 318	Computer Control Systems
CISE 316	Control System Design
CISE 433	Condition-Based Maintenance and Control Loop Performance Monitoring

#### Graduate Courses:

<i>Course</i>	<i>Title</i>
SE 505	Real-Time Computer Systems
SE 513	Systems Modeling & Identification
SE 514	Optimal Control
SE 537	Adaptive Control
SE 590	Special Topic in Eng.: Advanced Condition-Based Maintenance

### 1.2.4 Course Coordination

I coordinated at least one course per semester. These courses are SE301-Numerical Methods, SE302-Control System Theory, SE201-Introduction to Systems Eng., SE207-Modeling and Simulation, and SE401-Computer Control Systems, to name a few.

### 1.2.5 Courses and Lab Development

- Finalized the Control Lab equipments definition and technical evaluation at King Abdullah University of Science and Technology (KAUST). The development will be in Spring 2010.
- **Developed two new labs**
  - “Computer Aided MFG and Robotics,” and
  - “Condition-Based Maintenance.”
- For each lab, I performed the following activities:

- Selected and ordered equipments.
  - Developed experiments and lab manuals for both “Computer Aided MFG and Robotics” and “Condition-Based Maintenance” courses, respectively.
- **Developed a new undergraduate course SE439:** “Condition-Based Maintenance and Control Loop Performance Monitoring.”
  - Five invited professional engineers from 5 different industrial companies presented lectures on latest industrial practices and technologies closely related to the course’s topics.
- **Developed a new graduate course SE590:** “Advanced Condition-Based Maintenance.”
  - Developed course material, simulation package, and project materials for this course.
- **Taught 3 different graduate core courses.** Developed course material, simulation package, and project materials for these courses. In particular, SE505-“Real Time Systems” is a graduate course that has not been taught for more than 8 years. No syllabus or course files were available. I succeeded to develop full electronic SE505 course material. The electronic lectures as well as an important database of papers and references were made available through the web to the entire graduate students. The projects assigned in this course were covering both theoretical and practical aspects. Students were encouraged to teamwork and implement their design using new SE - acquired experimental equipments.
- **Upgraded 3 Lab. Manuals for CISE 302, CISE316, CISE318.**

### 1.2.6 Participation in Short Courses

<i>Semester</i>	<i>Title of the short course</i>	<i>Number of participants</i>	<i>Teaching/Coordination</i>
021	<b>Aircraft Engine Design and Performance Control.</b> Open short course offered by Mechanical Engineering	≈8	2.5 hours
031	<b>Programmable Logical Controller.</b> Open short course offered by Systems Engineering	≈6	4 hours
061	<b>PCI 102 Introduction to Process Control</b> Closed short course offered for ARAMCO	12	8 hours and Coordinator
072	<b>Introduction to Signal Processing</b> Closed short course offered for AEC	14	12 hours/coordinator
072	<b>Basic Control Theory</b> Closed short course offered for AEC	14	10 hours

### 1.2.7 Supervising Coop and Senior Project Students

I supervised more than 20 senior projects and 30 coop students up to semester 082. Students are from both programs Control and Instrumentation Systems engineering (CISE) as well as Industrial Systems Engineering (ISE). In 072, 8 of my coop-students are from ISE program.

Examples of senior projects:

	<i>Student Name</i>	<i>Senior Project Title</i>	<i>Program</i>
1.	Ayman Karam and Hassan Trigui	Control Design of Unmanned Rotary Aerial Vehicle	CISE
2.	Mahmoud Ali	Intelligent Irrigation System	CISE
3.	Anas Al-Abd	Autopilot System Design and Implementation	CISE
4.	Mohammed Al-Junaid and Ahmad Qutbuddin	Multivariable System Control and Decoupling Techniques Development of an Educational Software tool	CISE
5.	Abdullah Al-Suwailem	Scheduled and Time Based Control strategies for the Soft-Starting of a Residential Air Conditioning Unit.	CISE
6.	Khan, Mohammed Fasahath A and Kolaib, Nader Muneer Ahme	Automation and Production Performance Monitoring of an Assembly Line.	CISE
7.	Al-Dharrab, Muataz Abdull	Internet-Based Monitoring and Control.	CISE
8.	Abu Ros, Dawood	Designing Test Bench for Single Screw Polymer Extruder	CISE
9.	Ibrahim Al-Safadi and Mohammad Shahab	Design of a Rotational Speed Measurement System by Computer Vision for Quality Testing.	CISE
10.	Abdalatti, Walid K M	Multivariable Control of a Single Screw Extruder for Polymer Application.	CISE
11.	Feras Al-Jushi	Assessing and Improving Warehouse Layout in Al-Kawthar Company.	ISE
12.	Al-Awami, Ala Shaker Saeed and Akram, Muneeb	Implementation of a PC-Based Diagnostic for Predictive Maintenance	CISE
13.	Al-Jawi, Meshaal Mohammed	Auto-Counting of the Incoming Empty Bottles Through Measuring of the Cage Weight.	CISE
14.	Al-Khalidi, Atif Jassim	Simulation and Multi-Variable Control of a Distillation Column Using Labview	CISE
15.	Al-Ghamdi Nedhal, Saad and Al-Sukairi, and Ali Isa Abdallah	Design of Motor Soft-Starter Using Labview Harmonic Analyzer.	EE

16.	Sulaiman Al-Judei and Majed A. Samman	Safety requirements and Location of KFUPM's Entertainment and Recreation Facilities.	ISE
17.	Ibrahim Mohammed A- Molla	Improving Traffic Safety and Security within KFUPM Schools	ISE

#### Examples of Coop work:

	<i>Student Name</i>	<i>Coop Title</i>	<i>Program</i>
1	Khalid Al-Samman	Instrumentation and Control of Chemical Reactor.	CISE
2	Amer S. Al-Amer	Process Improvement in Materials Planning Department At Saudi Aramco.	ISE
3	Ahmed Al-Shaik	Implementing OPC Trusted and Triconex in Emergency Shutdown Systems	CISE
4	Al-Jarbaa, Obeadah	Maintenance of SEC Power Plant No. 9 (PP9)	ISE
5	Ahmed Al-Ahmadi	Network Installation at Lucent Technologies	CISE
6	Humoud Nayef and Mutlaq Al-Duaij	Maintenance Activities Assessment at ARAMCO	ISE

#### 1.2.8 Student Advising:

I advised around 20 undergraduate students every semester for the last seven years.

## **1.3 Research**

---

## 1.3 Research

### 1.3.1 List of Publications

#### Papers in Internationally Recognized Refereed Journals

1.	Mahmoud Magdi and <b>Sami El Ferik (2009)</b> . New Stabilization Schemes for Linear Hybrid Systems with Time-Varying Delays. To appear in ASME Journal of Dynamic Systems, Measurement and Control.
2.	Mahmoud Magdi and <b>Sami El Ferik. (2009)</b> <i>New Stability and Stabilization Methods for Nonlinear Systems with Time-Varying Delays</i> , To appear in Journal of Optimal Control, Applications and Methods. Available Online <a href="http://www3.interscience.wiley.com/journal/122506245/abstract?CRETRY=1&amp;SRETRY=0">http://www3.interscience.wiley.com/journal/122506245/abstract?CRETRY=1&amp;SRETRY=0</a>
3.	<b>Sami El-Ferik</b> and Mohamed Ben-Daya (2009) <i>Integrated production maintenance model Under Imperfect Age-based Maintenance Policy and Non-Negligible Maintenance Times</i> . To appear in the Asian Pacific Journal of the Operational Research.
4.	<b>S. El Ferik</b> , C. A. Belhadj, L. Benamor, and S. A. Hussain. (2008) <i>A microcontroller based soft-starter for residential air Conditioners: harmonic analysis</i> , International Journal for Computation and Mathematics in Electrical and Electronic Engineering (COMPEL) , 27 (5), pp. 1081-1097.
5.	<b>Sami El Ferik. (2008)</b> <i>Economic Production Lot-sizing for an Unreliable Machine Under Imperfect Age-based Maintenance Policy</i> , European Journal of Operational Research 186 (1), pp. 150-163.
6.	<b>S. El-Ferik</b> and M. Ben-Daya. (2008) <i>Model for imperfect age-based preventive maintenance with age reduction</i> , Journal of the Operational Research Society 59 (12), pp. 1644-1651.
7.	<b>Sami El-Ferik</b> and Mohamed Ben-Daya. (2006) <i>Age-based hybrid model for imperfect preventive maintenance</i> , IIE Transactions 38 (4), pp. 365-375.
8.	<b>Sami El-Ferik</b> , Syed A. Hussain and Fouad M. Al-Sunni. (2006) <i>Identification and weather sensitivity of physically based model of residential air-conditioners for direct load control: A case study</i> , Energy and Buildings, 38 ( 8), pp. 997-1005.
9.	<b>Sami El-Ferik</b> , Roland P. Malhame, and El-Kebir Boukas (1998) <i>A Tractable Class of Maximal Hedging Policies in Multi-Part Manufacturing Systems</i> , Discrete Event Dynamic Systems: Theory and Applications, 8 (3), pp. 299-331.
10.	<b>Sami El-Ferik</b> and Roland P. Malhame. (1997) <i>Pade Approximants for the Transient Optimization of Hedging Control Policies in Manufacturing</i> , IEEE Transactions on Automatic and Control, 42 (4), pp. 440-457.
11.	<b>Sami El-Ferik</b> and Roland. P. Malhame. (1994) <i>Identification of Alternating Renewal Electric Load Models from Energy Measurements</i> , IEEE Transactions on Automatic Control, 39 (6), pp. 1184-1196.



12.	Roland P. Malhamé, El-Kebir Boukas, <b>Sami El Ferik</b> (1993) <i>Transient analysis of the dynamics of a manufacturing system: A case study</i> , Control Engineering Practice, 1 (1), pp. 459–462.
-----	---

**Journal Papers under Review:**

13.	Basem Shihada, <b>Sami El-Ferik</b> , and Pin-Han Ho. (2009) <i>Modeling and Stability of FAST TCP over Optical Burst Switched Networks</i> . Submitted to Journal of Optical Communications Networking. (JOCN)
-----	---

**Journal Papers under Preparation:**

14.	Basem Shihada, <b>Sami El-Ferik</b> Design and Stability of Threshold-Based Fast TCP over OBS networks. Journal yet to be selected.
15.	Sami El-Ferik, Hosam A. Arabsy, Mahmoud Magdi. LMI-Based Control Of Nonlinear Time-Delay Model For “Type 1-Diabetic Patient” To be submitted to Control Engineering Practice Journal

**1.3.2 Papers in Refereed Proceedings in International Conferences Specialized Symposia**

**International Conferences**

1.	Chokri A., Belhadj and <b>Sami El-Ferik</b> , "Electric and Magnetic Fields Estimation for Live Transmission Line Right of Way Workers Using Artificial Neural Network," ISAP'09 The 15th International Conference on Intelligent System Applications To Power Systems November 8-12th 2009 Curitiba - Brazil.
2.	<b>Sami El Ferik</b> , Chokri A. Belhadj, Lotfi Benamor, and A. S. Hussain. “A Micro-Controller Based Soft-Starter for Residential Air Conditioners: Harmonic Analysis,” International Conference on Power Electrical Systems, SDD-PES, Hammamet, Tunisia, (2007, March).
3.	Lotfi Benamor, Chokri A. Belhadj, <b>Sami El Ferik</b> , A. S. Hussain. “A Simulator For Single Phase Induction Motor-Converter Performance,” Series on Energy and Power Systems, (2006, June), pp. 388-394.
4.	<b>Sami El Ferik</b> , Chokri A. Belhadj, L. Benamor, and A. S. Hussain “Harmonics Induced By Triac-Based Soft Starting Of an Induction Motor in a Residential Air Conditioner,” Proceedings of the 25th IASTED International Conference on Modeling, Identification, and Control, MIC, (2006, February), Spain, pp. 137-142.
5.	<b>Sami El Ferik</b> and Chokri A. Belhadj “Predicting AC Power Consumption Using A Stochastic Markov Chain Simulating Weather Conditions,” Proceedings of the 14th IASTED International Conference on Applied Simulation and Modeling, art. no. 469-802, (2005, June), pp. 247-252.
6.	Chokri A. Belhadj and <b>Sami El Ferik</b> “Segregated residential air conditioner load model Behavior with temperature and humidity,” Series on Energy and Power Systems, art. no. 468-811, (June, 2005), pp. 132-137.
7.	<b>Sami El Ferik</b> , Syed Ameenuddin Hussain and Fouad M. AL-Sunni “Identification of Physically Based Models of Residential Air-Conditioners for Direct Load Control Management,” Proceeding of 2004 5th Asian Control Conference, (2004, June), pp.

	2079-2087.
8.	<b>Sami El-Ferik</b> and Chokri. A. Belhaj “ <i>Neural Network Modeling Of Temperature And Humidity Effects On Residential Air Conditioner Load,</i> ” Series on Energy and Power Systems, art. no. 442-152, (2004), pp. 557-562.
9.	<b>Sami El Ferik</b> , Syed Ameenuddin Hussain and Fouad M. AL-Sunni “ <i>Weather Sensitivity of Physically Based Model Of Residential Air-Conditioners for Direct Load Control: A Case Study,</i> ” Proceedings of the IASTED International Conference on Applied Simulation and Modeling, art. no. 443-103, (2004, June), pp. 189-194.
10.	<b>Sami El Ferik</b> “ <i>Optimal Control for a failure Prone Manufacturing System Under Imperfect Age-Based Maintenance,</i> ” Second International Conference on Signals Systems Decision and Information Technology, Sousse, Tunisia, (2003, March).
11.	<b>Sami El-Ferik</b> and Nigel Dove “ <i>A Software Tool to Automate Review/Analysis of Test Data,</i> ” United Technologies Engineering Coordination Activities (UTECA) (1998, April)..
12.	<b>Sami EL-Ferik</b> , Roland P. Malhame “ <i>Pade Approximants for the Transient Optimization of Hedging Control Policies In Manufacturing,</i> ” Proceedings of the IEEE Conference on Decision and Control 3, . (1995, December) , pp. 2627-2628.
13.	<b>Sami El-Ferik</b> and Roland P. Malhame “ <i>Optimizing the Transient Behavior of Hedging Control Policies in Manufacturing Systems,</i> ” 11th Conference on Analysis and Optimization of Systems, Sophia-Antipolis, France, Springer-Verlag, (1994, June), pp.563-571.
14.	<b>Sami El-Ferik</b> and Roland P. Malhame “ <i>Correlation Identification of Alternating Renewal Electrical Load Models,</i> ” 31st IEEE Conference on Decision and Control, Tucson, Arizona (1992, December).
15.	Roland P. Malhame, EL-Kebir Boukas and <b>Sami El-Ferik</b> “ <i>Transient Analysis of the Dynamics of Manufacturing Systems,</i> ” IFAC (International Federation of Automatic Control), 7th IFAC/IFIP/IFORS/IMACS/ISPE symposium on information control problems in manufacturing technology, Toronto, Canada, (1992, May).

### Regional Conferences

16.	<b>Sami El Ferik</b> “ <i>Design Requirements of a Newly Developed UAV as a Research Platform at KFUPM: Control, Telemetry, and Navigation Systems,</i> ” Saudi Society for Aerospace and Sciences. UAV Scientific Meeting and Exhibition, Jeddah, Saudi Arabia, (2006).
17.	<b>Sami El Ferik</b> , Syed A. Hussain and Fouad M. AL-Sunni “ <i>Residential Air-conditioning Load Management Using Model Predictive Control of Physically Based Models,</i> ” Third Workshop on Industrial Systems and Control 2004, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia (2004).
18.	<b>Sami El Ferik</b> , Syed A. Hussain and Fouad M. AL-Sunni. “ <i>Constrained Optimal Control of An Aggregated Physically Based Model of a Residential air Conditioner for Load Management,</i> ” Second IIEC 2004 Riyadh, Saudi Arabia (2004).
19.	<b>Sami El Ferik</b> and Mohamed Ben Day “ <i>Imperfect hybrid-preventive Maintenance Model Involving Maintainable and non-maintainable Failure</i>

	<i>Mode”</i> , Second IIEC 2004 Riyadh, Saudi Arabia, (2004).
20.	<b>Sami El Ferik</b> “ <i>Electrical Power Management of residential air-conditioning loads,</i> ” Second Workshop on Industrial Systems and Control 2002, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, (2002).

### Invited Seminars

1	<b>Sami El Ferik</b> “ <i>University-Industry Collaboration: Working Together to Create and Transfer Knowledge,</i> ” Honeywell Users’ Group Middle East Conference, Abu-Dhabi April 1-3, 2008.
2	<b>Sami El Ferik</b> “ <i>Latest Advances in Process control Techniques and Instrumentation technology,</i> ” Honeywell Users' Group Middle East Conference. Manama, Bahrain, (2006, April).

### 1.3.3 Refereed Technical Reports :

TRP1	Chokri A. Belhaj and <b>Sami El-Ferik (CI)</b> ‘Micro-Controller Based Soft-Starter for Residential Air Conditioners’. ARI-043, Applied Research Income Grants Program, Research Institute King Fahd University of Petroleum and Minerals.
TRP2	<b>Sami El Ferik (PI)</b> , Syed A. Hussain and Fouad M. AL-Sunni ‘Identification of Physically Based Models of Residential Air-Conditioners for Direct Load Control Management’, ARI-021, Applied Research Income Grants Program, Research Institute King Fahd University of Petroleum and Minerals.
TRP3	Mohamed Ramady, <b>Sami El Ferik (CI)</b> , Umar Yakubu, Ali Shah “Diversifying Sources of Funding For King Fahd University of Petroleum and Minerals,” KFUPM Strategic Planning Grant.
TRP4	<b>Sami El Ferik (PI)</b> and Mohamed Ben Daya ‘Age-Based Imperfect Preventive Maintenance Models’ Fast Track Research Grant FT-2002/04
TRP5	Stephen E. Calcich, Alhassan G.Abdul-Muhmim and <b>Sami El Ferik (CI)</b> , ‘Propensity to Bargain and Bargaining Styles—Basic Research in a Field Setting’ Fast Track Research Grant FT-2001/05.

### 1.3.4 Graduate Students Advising

<i>Student Name</i>	<i>Thesis Title</i>	<i>Status</i>	<i>Role/Type</i>
Sharif Al Sharif	An Improved Active Contour Model For Medical Images Segmentation	May, 2009	Supervisor/Master’s degree.
Hosam Arabasy	LMI-Based Control Design for a Nonlinear Plasma Glucose Control For Type 1 Diabetic Patients	May, 2009.	Supervisor/Master’s degree.
Muhammad Sabih	Valve Stiction Detection and Compensation.	June, 2009.	Supervisor/Master’s degree.
Mohammad Nadeemullah Shareef	Detection of Plant wide Oscillations.	Dec, 2009.	Supervisor/Master’s degree.
Basem Al-Saif	Benchmarking MPC Control for	In Progress	Supervisor/Mast

	de-butanizer column.		er's degree.
Mustafa Al-Naser	Automated Insulin Delivery Using LMI Approach	December, 2008.	Supervisor/Master's degree.
Hussain, Syed Ameenuddin	Identification and Control Strategy Applied in Load Management of Residential Air-Conditioners	January, 2004.	Supervisor/Master's degree.
Hamza Chaal	On Sliding Mode Control Schemes for Power Electronics	In Progress	Member/Ph.D. degree.
Ali Y. Al-Rayyah	Robust Stability and Feedback Stabilization Criteria for Systems with Time-Varying Delays	June, 2008.	Member/Master's degree.
Wed Hussain Al-Sadah	Adaptive Tracking Using Inverse of Signals	June, 2007.	Member/Master's degree.
Khalid Musa Al-Zahrani	Fuzzy Takagi-Sugeno and LMS Based Control Techniques	June, 2005.	Member/Master's degree.
Agus Rohmat Widodo	Adaptive Fuzzy Internal Model Control	May, 2004.	Member/Master's degree.
Saleh Ibrahim Al-Rumaih	New Algorithms for the Identification of a Class of Hammerstein-Wiener Nonlinear Systems	December, 2004.	Member/Master's degree.
Syed Omer Farooq	Identification and Control of a Class of Nonlinear Systems	June, 2003.	Member/Master's degree.
Fahd A. Al-Sulaiman	Test Facility Development for Small Centrifugal Compressor (Design Stage)	June, 2003.	Member/Master's degree.

### 1.3.5 List of Research Projects at KFUPM

<b>Project with Local/International Industries:</b>		
<b>Project</b>	<b>Title</b>	<b>Status</b>
<b>PR1</b>	<b>Sami El Ferik (PI)</b> "Support Honeywell R&D and operation through applied R&D and hands-on practices," Project with Honeywell Middle East Advance Process Control Group completed September 12, 2008.	Completed
<b>Applied Research Projects:</b>		
<b>Project</b>	<b>Title</b>	<b>Status</b>
PR1.	Moustafa Elshafei, Mohamed A. Habib, Radwan Abdel-Aal, <b>Sami El-Ferik (CI)</b> "Inferential Sensing Methods for Emission Monitoring from Industrial Boilers" The 1st Five Year National Plan for Science and Technology (NSTP), Environment Protection, KACST.	Started

PR2.	Hanafy Omar, <b>Sami El Ferik (CI)</b> , Abdelhafid Bouhraoua “Design and Adaptive Anti-Swing Controller for Flying Cranes based on Time-Delayed feedback” Submitted for funding to KACST under National Plan for Science and Technology (NSTP) program.	Submitted
PR3.	<b>Sami El Ferik (PI)</b> and Chokri A. Belhaj “Advanced Soft-Starting Strategy For Window Type Air Conditioner Used In The Kingdom Of Saudi Arabia” SABIC-Fast Track grant FT2006011.	In Progress
PR4.	<b>Sami El Ferik (PI)</b> , Dr. Abdulwahid Al-Saif, Dr. Samir Al-Amer “Online Course Development: SE301 Numerical Method” KFUPM e-learning center Grant.	Completed
PR5.	Chokri A. Belhaj and <b>Sami El-Ferik (CI)</b> ‘Micro-Controller Based Soft-Starter for Residential Air Conditioners’. ARI-043, Applied Research Income Grants Program, Research Institute King Fahd University of Petroleum and Minerals.	Completed
PR6.	<b>Sami El Ferik (PI)</b> , Syed A. Hussain, and Fouad M. AL-Sunni ‘Identification of Physically Based Models of Residential Air-Conditioners for Direct Load Control Management’, ARI-021, Applied Research Income Grants Program, Research Institute King Fahd University of Petroleum and Minerals.	Completed
PR7.	Mohamed Ramady, <b>Sami El Ferik (CI)</b> , Umar Yakubu, Ali Shah “Diversifying Sources of Funding For King Fahd University of Petroleum and Minerals,” KFUPM Strategic Planning Grant.	Completed

**Basic Research Projects**

<i>Project</i>	<i>Title</i>	<i>Status</i>
PR8.	<b>Sami El Ferik (PI)</b> and Mohamed Ben Daya ‘Age-Based Imperfect Preventive Maintenance Models’ Fast Track Research Grant FT-2002/04.	Completed
PR9.	Stephen E. Calcich, Alhassan G. Abdul-Muhmim and <b>Sami El Ferik (CI)</b> , ‘Propensity to Bargain and Bargaining Styles—Basic Research in a Field Setting’ Fast Track Research Grant FT-2001/05.	Completed

**Applied Research Projects Under Review:**

<i>Project</i>	<i>Title</i>	<i>Status</i>
PR10.	Hanafy Omar, <b>Sami El Ferik (CI)</b> , Abdelhafid Bouhraoua “Design and Adaptive Anti-Swing Controller for Flying Cranes based on Time-Delayed feedback” Submitted for funding to KACST under National Plan for Science and Technology (NSTP) program.	Submitted
PR11.		

### 1.3.6 Involvement in research and innovation centers (Under review)

<b>Proposals for the creation of Innovative Technology Centers:</b>			
<b><i>Project</i></b>	<b><i>Title</i></b>	<b><i>Role</i></b>	<b><i>Status</i></b>
<b><i>1</i></b>	Sensing and Monitoring Technology Innovation Center	PI	Submitted
<b><i>2</i></b>	Process Modeling, Simulation, and Design Technology Innovation Center. Thrust: Internet-based Control	Thrust Supervisor	Submitted
<b><i>3</i></b>	Technology Innovation Center in Refrigeration & Air Conditioning (TICRAC): Thrust I	Thrust Supervisor	Submitted

## **1.4 Professional Activities**

---

## 1.4 Professional Activities:

### 1.4.1 Conference Organizations:

I was involved in many activities related to conferences. The table below summarizes my involvement and my role.

<i>Title</i>	<i>Type</i>	<i>Role</i>
Sixth Symposium on Industrial Systems and Control 2010, organized by Systems Engineering department, May 11-12, 2010, Dhahran	Symposium	Chairman
2 <sup>nd</sup> Saudi Engineering Forum, organized by the University, March 2009, Dhahran	Forum	Member
Fifth Workshop on Industrial Systems and Control 2008, organized by Systems Engineering department, November 2008, Dhahran	Conference	Chairman
13th Saudi Technical Exchange Meeting (STEM), organized by College of Engineering department, March 2008, Dhahran.	Exchange Meeting	Member
Fourth Workshop on Industrial Systems and Control 2007, organized by Systems Engineering department, May 2007, Dhahran	Conference	Chairman
Ninth IASTED International Conference on Power and Energy Systems held January 3 – 5, 2007, Clearwater, Florida, USA. Organized by The International Association of Science and Technology for Development (IASTED).	Conference	International Program Committee
Third Workshop on Industrial Systems and Control 2004, May, 2004.	Conference	Member

### 1.4.2 Awards

- Best Teacher Award, College of Computer Science Engineering, KFUPM, 2007-2008.
- Best Service Award, College of Computer Science Engineering, KFUPM, 2006-2007.
- Students' Recognition Award, Systems Engineering Department, KFUPM, 2006-2007.
- Award of Merit in Recognition of Inter-Departmental Collaboration, College of Computer Science Engineering, KFUPM, 2003-2004.

### 1.4.3 Paper Review

#### Journals

- Papers for IIE transactions
- Papers European Journal of Operation Research.
- Papers Asian-Pacific Journal of Operation Research.
- Papers for the Journal of Maintenance and Quality.



**Symposiums/Conferences/workshops**

- Review papers for the International Association of Science and Technology for Development (IASTED) EUROPES 2008.
- Review papers on Robotics for the 6<sup>th</sup> Engineering Conference.

**1.4.4 Technical Seminar**

Senior design Project: Process and Components	03/15/2004	KFUPM
Coordination of Multi-Section-Courses	04/031	KFUPM

## **1.5 University, Departmental and Public services**

---

## 1.5 University and Department Services

I was involved in many activities related to the university and the department. The table below lists all of these activities.

### 1.5.1 Committee Work

<i>Name of the committee</i>	<i>Formed By</i>	<i>Position</i>	<i>Type</i>	<i>Approx. Number of meetings</i>
<b>1<sup>st</sup> Year 2000-2001 (001- 002)</b>				
• Labs. Committee	Dept.	Member	Standing	6
• 2001 Workshop Committee	Dept.	Member	Ad-hoc	5
• SE100 Evaluation Committee	Dept.	Member	Ad-hoc	6
<b>2<sup>nd</sup> Year 2001-2002 (011- 012)</b>				
• Planning Committee	Dept.	Chairman	Standing	4
• Industrial Liaison Committee	Dept.	Member	Ad-hoc	1
• Library Committee	University	Member	Standing	19
• Library Safety Sub-Committee	University	Chairman	Ad-hoc	5
• Workshop Organization Committee	Dept.	Member	Ad-hoc	5
<b>3<sup>rd</sup> Year 2002-2003 (021- 022)</b>				
• Planning Committee	Dept.	Chairman	Standing	4
• Industrial Liaison Committee	Dept.	Member	Standing	1
• Library Committee	University	Member	Standing	19
• Library Safety Sub-Committee	Dept.	Chairman	Ad-hoc	5
• College Awards Committee	College	Member	Ad-hoc	4
• Control and Automation Group	Dept.	Member	Standing	8
• Ph.D. Evaluation Committee	Dept.	Member	Ad-hoc	4
• Senior Project Ad-hoc Committee	Dept.	Member	Ad-hoc	4
<b>4<sup>th</sup> Year 2003-2004 (031- 032)</b>				

• Planning Committee	Dept.	Chairman	Standing	4
• Library Committee	University	Member	Standing	15
• Library Safety Sub-Committee	University	Chairman	Ad-hoc	5
• Textbook Committee	Dept.	Member	Standing	5
• Control and Automation Group	Dept.	Member	Standing	10
• Research Institute Patent Committee	University	Member	Ad-hoc	2
<b>5<sup>th</sup> Year 2004-2005 (041- 042)</b>				
• Strategic Planning	Dept.	Chairman	Standing	3
• Textbook Committee	Dept.	Member	Standing	2
• Lab Committee	Dept.	Member	Standing	2
• SE100 Textbook Committee	Dept.	Member	Ad-hoc	3
• Teaching and Learning	College	Member	Standing	5
• Library Affairs Committee	University	Member	Standing	18
• Safety and Security Library. Committee	University	Member	Standing	6
• CAG Program Revision Committee	Dept.	Member	Standing	6

<b>6<sup>th</sup> year 2005-2006 (051- 052)</b>				
• Strategic Planning Committee	Dept.	Chairman	Standing	4
• Textbook Committee	Dept.	Member	Standing	4
• Infrastructure Committee	College	Member	Standing	16
• Library Affairs Committee	University	Member	Standing	7
• Graduate Program Revision Committee	Dept.	Chairman	Ad-hoc	6
• CAG Program Revision Committee	Dept.	Member	Standing	6

<b>7<sup>th</sup> year 2006-2007 (061- 062)</b>				
• Community Affairs Committee	University	Member	Standing	9
• Infrastructure Committee	College	Member	Standing	20
• Strategic Planning Committee	Dept.	Member	Standing	1
• Graduate and Research Committee	Dept.	Member	Ad-hoc	1
• Faculty Recruitment Comm.	Dept.	Member	Standing	1
• Information and Social Events Committee	Dept.	Member	Standing	2
• Mr. Chaal's Ph.D. Evaluation Committee	Dept.	Member	Ad-hoc	1
• CISE Undergraduate Program Revision Committee	Dept.	Member	Ad-hoc	3
• CISE Group Committee	Dept.	Member	Standing	4
• WISC 2007 Organizing Committee	Dept.	Chairman	Ad-hoc	>50
<b>8<sup>th</sup> year 2007-2008 (071-072)</b>				
• Strategic Planning Committee	Dept.	Chairman	Standing	1
• Graduate and Res. Committee	Dept.	Member	Standing	3
• Faculty Recruitment Committee	Dept.	Member	Standing	6
• Faculty Affairs Committee	University	Member	Standing	19
• Faculty Affairs Performance Evaluation Subcommittee.	University	Member Deputy Chairman	Standing	50
• Guidelines for UG Multidisciplinary Research Course	University	Member	Ad-hoc	3
• 13 <sup>th</sup> Saudi Technical Exchange Meeting (STEM) organizing committee	College of Engineering	Member	Ad-hoc	3
• WISC 2008 Organizing Committee	Department	Chairman	Ad-hoc	>50

• 2nd KFUPM Workshop on Engineering Design scheduled for March 2009.	College of Engineering	Member	Ad-hoc	Not counted
• 2nd Saudi Engineering Forum Scheduled for March, 28-30 2009.	University	Member	Ad-hoc	Not counted
<b>9<sup>th</sup> year 2008-2009 (081-082)</b>				
• Faculty Affairs Committee	University	Member	Standing	18
• Faculty Affairs Performance Evaluation Subcommittee.	University	Chairman	Standing	39
• 13 <sup>th</sup> Saudi Technical Exchange Meeting (STEM) organizing committee	College of Engineering	Member	Ad-hoc	4
• ABET accreditation committee	Department	Member	Ad-hoc	➤ 75

### 1.5.2 Department Services:

- I was the recipient of Best Service Award, College of Computer Science Engineering, KFUPM, 2006-2007.
- I have been chairing the Organizing Committee of the 4<sup>th</sup> and 5<sup>th</sup> Workshop on Industrial Control Systems WISC for 2007 and 2008 respectively. The workshop has been very successful and upgraded to symposium; I also will chair the upcoming Symposium on Industrial Control Systems SISC2010.
- I initiated many interdepartmental-collaboration activities, in particular with Computer Engineering, Electrical Engineering, Mechanical Engineering, Industrial Management, and Chemical Engineering. I was awarded the Recognition Award attributed by the students of the Systems Engineering Department, in 2006-2007. In addition, I received the Award of Merit In recognition of Inter-Departmental Collaboration by the College of Computer Science Engineering in 2003-2004.
- I am overseeing the development of the condition based maintenance lab. Many contacts were initiated with different companies like SKF, SpectraQuest and Industrial Instrumentation and Control Systems Ltd to create a possible collaboration in the development of such unit. We selected finally SpectraQuest for the technology is aligned with our specifications, such as modularity of the equipments and the versatility that it may offer in terms of applications and cross-curricula integration. Indeed, courses like Instrumentation, Signal and Systems, IT, and Soft Automation can all be taught using these equipments.
- I completed a feasibility study on developing a control and instrumentation consortium. An overview of the present centers in the same field has been done. An extensive research on industry-university relationship best practices has been performed. A

collection of documents describing lessons learned from reputable centers and organization has been set. The aim is to create a framework where consortium activities are appealing and respond adequately to the need to each partner (university or industry). Thus, the objective is to have a strong collaboration continuum. It did also help us position our industry-KFUPM relationship vs. industry-university relationship worldwide. The result of the study has been presented to the department industrial liaison committee. The reaction of the members was very positive.,