

Mr. Markana Anilkumar
Lecturer
Instrumentation & Control Department
Institute of Petroleum Technology, Gandhinagar
Raisan
Gandhinagar-382007 (Gujarat, India)

Phone: 91-79-23275041
Mobile: 9099385884
E-mail: anil.markana@iptg.ac.in

Key Qualifications and Salient Features:

Education

M.Tech.(Systems & Control Engineering), Indian Institute of Technology, Bombay
Thesis: Performance Analysis of Optimal Controllers.
B.E. (Instrumentation & Control), Gujarat University

Scholastic Achievements

- Ranked 1st in AISSE conducted by CBSE in Sainik School Balachadi, Jamnagar
- Ranked 3rd in AISSCE conducted by CBSE in Sainik School Balachadi, Jamnagar
- Qualified in GATE 2007
- Passed UPSC, NDA examination in 1996

Total Professional Experience

Institute of Petroleum Technology, Gandhinagar [since Jan-2009]
Role: Lecturer

Honeywell Automation India Ltd, Pune [July-2008 to Dec-2008]
Role: Senior Technical Trainer
Responsibilities: Imparting Training on Honeywell products like Experion DCS, ML-200 PLC, SCADA, Alerton, Honeywell Webs, Trends, etc to customers as well as employees

Atmiya Institute of Technology & Science, Rajkot [Aug 2002 to July 2008]
Role: Lecturer
Responsibilities: To teach subjects of Instrumentation & Control and Electrical Engg. Dept. by means of lectures and developing laboratories

Paragon plastics [Aug 2000 to July 2001]
Role: Service Engineer
Responsibilities: Operation and maintenance

Teaching & research interests

Advance Process Control, Optimal Control strategies like Model Predictive Control, Linear Quadratic Gaussian Control, GPC, Minimum Variance Control, Industrial Automation, Distributed Control Systems, and Modelling etc.

Key Academic Projects /Seminars

PID controller implementation for hybrid tank system

Hybrid two tank set up has separate inflow and outflow. The ADAM data acquisition system is used to transmit and receive measured and control signals respectively. Level in tank-2 is to be controlled using flow control in tank-1 with given operating conditions using suitable discrete 2 DOF PID structure so as to meet desired specifications.

Pole placement controller for an inverted pendulum

The inverted pendulum is a two dimensional laboratory idealization. It is a benchmark non-linear unstable system, which is used as a test bed for control algorithms. We have designed a state feedback controller by the pole placement approach, in order to stabilize the inverted pendulum about the quiescent operating point at zero degrees.

Pole placement controller and its extensions [Seminar]

The seminar describes basic methods of pole placement controller design using state variable feedback for continuous and discrete linear systems. New structure called proportional integral plus (PIP) which is logical extension of PI controller was also described.

PI controller for coupled tank level control system

The coupled tank system is an interacting system. Task is to control the level of tank-2 by controlling the inflow of tank-1 using microcontroller. Discrete PI controller was realized using velocity algorithm and moving window. Interfaced with PC through Lab View for display purpose.

M.Tech project

Performance assessment of optimal controllers

Performance assessment methods are generally concerned with reduction in input and output variance. The achievable performance of a control strategy is given by a tradeoff curve known as performance curve. Using these performance plots, comparison is made among Generalized Minimum variance control (GMVC), Generalized Predictive Control (GPC), Model Predictive Control (MPC) and Linear Quadratic Gaussian Control (LQG) schemes. It is shown that GMVC and GPC does not behave gracefully when weighing on controller effort goes to zero and gives unstable responses when implemented on a non-minimum phase systems. State space MPC with input and state constraints achieves stable response but gives higher values of variance than that of LQG. It is shown that LQG controller is recommended as a benchmark, against which, performance of other controllers can be compared.

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Training programmes attended

- 1 month vocational training at GNFC Bharuch, Gujarat
- On job industrial training at TPS Sikka, Gujarat
- AICTE-ISTE sponsored short term training program on “Process control in Chemical Industries” organized by faculty of Engg. & Technology, Annamalai University, Annamalaiagar, Tamilnadu

Seminar/Workshops attended

- Workshop on Scilab conducted by Continuing Education and Quality improvement programmes, IIT Bombay
- National level seminar on “Bioinformatics-Emerging trends” organized by Virani Science college, Rajkot
- State level seminar on “College Science Education: Challenges and Opportunities” organized by Hemchandracharya North Gujarat University, Patan
- National level seminar on “Efficient utilization of Electrical energy” organized by Electrical Engg. Department, Atmiya Institute of Technology & Science, Rajkot
- Satcom based patent awareness workshop, organized by Gujarat Council of Science & Technology and Dept. of Science & Technology, Govt. of India
- Workshop on “Pollution of coastal and marine environment of Saurashtra and Kachchh, present scenario and perspectives” acted as convener of organizing committee.
- State level seminar on soft computing organized by Dept. of Information & Technology, G.H.Patel College of Engg. & Technology, Vallabh Vidyanagar

No. of paper presented: ‘04’ in National conference organized by IEEE Gujarat section.

Programming skills: MATLAB, SCILAB, LabView

Extra-curricular activities and achievements

- House captain of Garuda house in Sainik School Balachadi, Jamnagar
- Stood 3rd in inter house cross country and marathon race
- Participated in Open Gujarat marathon race
- Attended Combined Annual Training camp organized by Directorate General NCC
- Passed NCC Certificate ‘A’ examination conducted by Ministry of Defense
- Participated in Annual day cultural and sports festival every year in school

Memberships

- Life member of 'The Indian Society for Technical Education'
- Member of 'Instrument Society of America'