

Title: Special session deal Application on Intelligent Systems in Planning and Scheduling of Manufacturing Systems.

Scope:

Due to economical considerations, past years the scheduling research involving non-regular performance measures has received much attention from practitioners as well as researchers to respond to the increasing competitive pressure in domestic and international market. Scheduling consists of planning and prioritizing activities that need to be performed in an orderly sequence of operation. It is a tool that optimizes the use of available resources. Scheduling leads to increased efficiency and capacity utilization, reducing time required to complete the jobs and consequently increasing the profitability of an organization. In most cases, scheduling problem is taken up only after solving the fundamental planning problem. So, it is of secondary importance when compared to the planning problem. Scheduling is considered only after answering these planning questions and knowing the availability of resources. Scheduling theory is concerned primarily with mathematical models that relate to the scheduling function and the development of useful models and techniques.

Automated Planning and Scheduling

Formulation, Modelling and Simulation techniques

Multi objective optimization

Optimization algorithms for Scheduling

Genetic algorithm (GA)

Search algorithm

Scatter Search algorithm (SS)

Particle Swarm Optimization (PSO)

Simulated Annealing algorithm (SA) and

Other topics related to planning & scheduling.

# Dr. K. BALASUBRAMANIAN

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## Professional Summary

**Experience** : **Fourteen years** (Teaching)  
**Publications** : International Journals : 05 (Published) ,  
02 (Communicated)  
International Conferences : 20  
National conferences : 04

### EDUCATIONAL QUALIFICATIONS:

**Ph.D** Anna University, Chennai, Tamilnadu, India.  
April'08.

**M.E.** Thiyagarajar College of Engineering, Madurai.  
**(Production Engineering)** Madurai Kamaraj University, Tamilnadu, India.  
1997-1998. ( 1<sup>st</sup> class)

**B.E.** Arulmigu Kalasalingam College of Engg,  
**(Mechanical Engg.)** Krishnankoil.  
1992-1996. (1<sup>st</sup> class) Madurai Kamaraj University, Tamilnadu, India.

**M.B.A.** Manomaniam Sundaranar University  
DE. 2010 Tamilnadu, India.

**PGDAL&LL** Madurai Kamaraj University  
DE. 2010 Tamilnadu, India.

# **PUBLICATIONS**

## **International Journals**

1) A.Noorul Haq, K.Balasubramanian (2005), 'Parallel Job scheduling using genetic algorithm', International Journal of Advanced Manufacturing Technology, DOI 10.1007/s00170-005-2618-9.

2) A.Noorul Haq, K.Balasubramanian (2005), 'Search heuristics for multiple parallel flow line scheduling', International Journal of Applied Management and Technology, vol. 3, No.1, pp.109 – 119.

3) A.Noorul Haq, K.Balasubramanian (2006), 'Parallel flow scheduling to minimize maximum tardiness', International Journal of Applied Management and Technology, vol. 4, No.2, pp.140 – 148.

4) A.Noorul Haq, K.Balasubramanian (2008) 'Performance comparison of New heuristic with Genetic algorithm In Parallel Flow Line Set Up', International Journal of Applied Management and Technology, vol.6, No.3, pp.143– 157.

5) K.Balasubramanian. N.Rajeswari (2009), 'Parallel Flow Line Machine Scheduling With Setup Times Using Local Search Heuristics', International Journal of on Mechanical & Automobile Engineering, Vol. 1, No.1, pp.37-48.

## **National Conferences**

- a. "Supplier Selection Through AHP – A Case Study" Second National Conference on Computer Integrated Design and Manufacturing at Amirta Institute of Technology, Coimbatore on 28-29, November 2003, Page 250 - 257.
- b. "Location Selection Through AHP " National Conference on Modeling and Analysis of Production Systems at National Institute of Technology, Tiruchirapalli on 22-23, January 2004, Page 271 – 276.
- c. "Supplier Performance Measurement Using Fuzzy Logic Approach – Case Study presented at the National Conference on "Modern Trends in Management" in Gogte Institute of Technology, Belgaum on 21 – 22 May 2004.
- d. "Supply chain Entity Optimization by Lotfi Approach" presented at the First National Conference on "Development and Challenges in Manufacturing Engineering – 2004"(NCDCM – 2004), in Manipal Institute of Technology, Manipal on 18 – 20 march 2004.

## **International Conferences**

- a. "Supplier Performance Measurement Using AHP" International Conference on Responsive Supply Chain Management at Coimbatore Institute of Technology, Coimbatore during 5-7 Jan 2004
- b. "Heuristics Development for Multi Parallel Line Scheduling" 9<sup>th</sup> International Symposium on Logistics and Global Outsourcing at IIM Bangalore during 11 – 14 July 2004.
- c. "Heuristics Development for Hybrid Parallel Line Scheduling "The International Conference on Manufacturing and Management (GCMM – 2004) at Vellore Institute of Technology, Vellore during 8-10 December 2004.
- d. "Parallel Flow Line Scheduling with setup times using simulated annealing" VIII Annual International Conference of the Society of Operation Management at National Institute of Industrial Engineering (NITIE) Mumbai during 17 – 20, December 2004.

- e. "Multiple Parallel Flow Line Scheduling With Sequence Setup Time Using Metaheuristics" 37<sup>th</sup> Annual Convention on Operation Research Society of India at Indian Institute of Management, Ahmedabad during 8 – 10, January 2005.
- f. "Minimization of makespan in Multiple Parallel Flow Line Scheduling" ecomNET -JSB International Conference at Jansons School of Business, Coimbatore, 20-21 May 2005.
- G. "Multiple Parallel Line Machine Scheduling Using Meta Heuristics" International Conference on Information and Communication Technology in Management – ICTM 2005 at Multimedia University, Melaka, MALAYSIA 23 – 25 May 2005.
- h. "Parallel Flow Line Scheduling With Setup Times Using Simulated Annealing" International Symposium on Intelligence based Materials and Manufacturing to be held at Birla Institute of Technology, Ranchi, during 7-9, August 2005.
- i. "Local Search Heuristics for Minimizing Makespan in Parallel Flow Line Scheduling", 11th International Conference on Productivity and Quality Research, Indian Institute of Technology, Delhi, during December 2005.
- j. "A Genetic Algorithm for Minimizing the Tardiness in the case of Scheduling Parallel Flow Machines" ICORAID – 2005 – ORSI, Indian Institute of Science, Bangalore during December 27- 29, 2005.
- k. "Minimization of Makespan on Parallel Flow Line Scheduling" presented in IX Annual Conference of the Society of Operations, at Management School of Management, Pondicherry University, Pondicherry, India during December 16-18, 2005.
- l. "Parallel Flow Line Machine Scheduling to Minimize Makespan and Tardiness" Paper Accepted for presentation at the International Conference on Multidisciplinary Information Sciences and Technologies, Inscit2006, Spain.
- m. "Supplier Performance Measurement Using Fuzzy Logic Approach – Case Study presented at the National Conference on Modern Trends in Management in Gogte Institute of Technology, Belgaum on 21 – 22 May 2004.

- n. "Supplier Optimization Using Fuzzy Logic" presented at the Second International Conference on Logistics and Supply Chain Management in PSG College of Technology, Coimbatore during 3 – 5 August 2004.
- o. "Multiple parallel flow line scheduling with sequence setup time using Meta-heuristics" presented at the 37th Annual convention ORSI, IIM, Ahmadabad during January 8<sup>th</sup> -11<sup>th</sup> 2005.
- p. "Minimization of Makespan on Parallel Flow Line Scheduling" International Conference on Advanced Manufacturing and Automation – INCAMA2009 at Arulmigu Kalasalingam College of Engineering during March 26 – 28, 2009.
- q. "New Heuristic Approach to Find Optimal / Near Optimal Sequences to Minimize Tardiness / Earliness of Jobs in Parallel Flow Line Set Up" International Conference on Industrial Engineering and Business Management (ICIEBM 2010) at Yogyakarta, **Indonesia** during October 12- 13, 2010.
- r. "Pareto Optimal to find sequences of jobs in parallel flow line set up with the objective of minimizing tardiness and earliness" Int. Conference on Recent advances in Mechanical Engineering (INCROME 2011) at Dr.MGR University, Chennai, April 2011.
- s. "Optimization of process parameters in groove turning using Taguchi method for better surface finish and productivity – A practical investigation" Int. Conference on Recent advances in Mechanical Engineering (INCROME 2011) at Dr.MGR University, Chennai, April 2011.

## **RESEARCH PROJECT**

**A Proposal on "INSTALLATION OF SOLAR ENERGY SYSTEM IN COLLEGE CAMPUS - A REPORT"** Submitted to **Department of Science &Technology, New Delhi on 15<sup>th</sup> May 2010.**

## **RESEARCH GUIDANCE**

Ph. D – 5 Scholars (Doing)

## **ACADEMIC PROJECTS**

### **B.E. (Mechanical Engg.)**

Design a Duct System using C - language in Bharath Heavy Electricals Limited, Trichy.

### **M.E. (Production Engg.)**

Expert System for Gear boxes in Heavy Earthmoving Equipments – A Case Study at Hindustan Motors, Chennai.

### **Ph. D.**

Multi Parallel Flow Line Scheduling Using Metaheuristics.

## **TEACHING EXPERIENCE**

**1996 – 1997** Lecturer in J.J.College of Engineering & Technology, Trichy, Tamilnadu, India.

**1998 – 1999** Lecturer in Arulmigu Kalasalingam College of Engineering, Krishnan koil, Virudhunagar Dist, Tamilnadu, India. (Now Kalasalingam University)

**1999 – 2005** Asst.Professor in Sethu Institute of Technology, Kariapatti, Virudhunagar Dist Tamilnadu, India.

**2005 to 2009** Professor cum Vice Principal

**2009 to 2010** Principal in Raja Rajeswari Engineering College, Adayalampattu, Chennai, Tamilnadu, India.

**2010 to till now** Professor cum Dean, Dr.MGR Educational and Research Institute University, Adayalampattu, Chennai, Tamilnadu, India.

## **COURSES CONDUCTED**

- ✓ In the panel of reviewer for International Journal of Advanced Manufacturing Technology (**IJAMT**), Springer Verlag Publication, UK.

- ✓ In the panel of reviewer for IJ of Science and Tech. Education Research(**IJSTER**).
  - ✓ In the panel of reviewer for Journal of Economics and International Finance(**JEIF**).
  - ✓ In the panel of reviewer for Journal of Mechanical Engineering Research (**JMER**).
  - ✓ Session handled a topic on **"Introduction of Meta heuristics"** in one day Seminar on Advanced Optimization Techniques organized by Department of Mechanical Engineering during April 2010 at RajaRajeswari Engineering College, Chennai.
  - ✓ Session Chair in International Conference on Advances in Mechanical Engineering INCRAME 2011 at Dr.MGR University, Chennai.
  - ✓ Program Committee Members of First International Workshop on Network Security & Applications (WNSA-2008) [Co-located with ICCIT08] during November 11-13 held at Busan, South Korea.
  - ✓ Program Committee Members of First International Workshop on Computer Networks & Communications (CoNeCo-2009) In conjunction with ACIIDS'09 during April 1~3, Dong Hoi City, Vietnam.
- Program Committee Member of First International Workshop on Web & Semantic Technology (WeST-2009) (In conjunction with ITA 09) during September 08-11, 2009 at Wrexham, North East Wales, UK.
- ✓ Program Committee Member of The First International Workshop on Wireless & Mobile Networks (WiMo-2009) (In conjunction with UIC 2009) during July 7 -10, 2009 at Brisbane, Australia.
  - ✓ Program Committee Member of The First International Workshop on Ubiquitous Computing (In conjunction with NCM 2009) during August 25-27, 2009 at Seoul, Korea.
  - ✓ Program Committee Member of The First International workshop on Grid Computing (GridCom-2009) during May 10-13, 2009 at Rabat, Morocco.
  - ✓ General chair of The First International workshop on Mobile & Wireless Networks (MoWiN 2009)(MoWiN 2009), during June 25-27,2009, at Seoul, South Korea.



- ✓ Patron of the Student Technical Symposium TechnoTunder – 06 during 2006 - 2007, 2007 – 2008, 2008 - 2009 at Rajarajeswari Engineering College, Chennai.
- ✓ Patron of the National Conference on Emerging trends in Engineering and Technologies during 2007-2008, 2008-2009 at Rajarajeswari Engineering College, Chennai.
- ✓ Organizing Secretary - National Conference "GTMTS 2004" during July 10<sup>th</sup>-11<sup>th</sup>, 2004 at Sethu Institute of Technology, Kariapatti, Virudhunagar Dist., Tamilnadu, India.
- ✓ Organizing Coordinator – Three day Workshop on "optimization Technology on operation Management" during November – 2004 at Sethu Institute of Technology, Kariapatti, Virudhunagar Dist., Tamilnadu, India.
- ✓ Course Coordinator for IDEAS Software Course, which was conducted for students at Sethu Institute of Technology, Kariapatti, Virudhunagar Dist., Tamilnadu, India.
- ✓ AICTE Inspection report preparation Committee member from 2006 to 2010 at Rajarajeswari Engineering College, Chennai.
- ✓ UGC/ NAAC Inspection reports preparation Committee member during 2008- 2010 at Rajarajeswari Engineering College, Chennai.
- ✓ Staff Selection Committee member from 2006 to 2010 at Rajarajeswari Engineering College, Chennai.
- ✓ ISO Internal Auditor from 2003 to 2005 at Sethu Institute of Technology, Madurai.
- ✓ Reception Committee convener from 2000 to 2005 at Sethu Institute of Technology, Madurai.
- ✓ CAD/ CAM Laboratory In - Charge from 2001 to 2005 at Sethu Institute of Technology, Madurai.
- ✓ Metrology Laboratory In - Charge from 1998 to 1999 at Kalasalingam College of Engineering, Krishnan Koil.

- ✓ Editorial board member in Sethu Journal of Technology from 2000 – 2004.

## **COURSES ATTENDED**

- ❖ **AICTE – ISTE** Short term training programme on **AUTOMOTIVE EMISSION CONTROL STRATEGIES** Conducted by the Department of Mechanical Engineering, Annamalai University during 20 – 31 May 2000.
- ❖ **AICTE – ISTE** Summer School on **RECENT DEVELOPMENTS IN MATERIAL JOINING** Conducted by the Department of Production Engineering, Annamalai University during 28 May to 8 June 2001.
- ❖ **Three Day Short Term Course** on **ELECTRICAL DISCHARGE MACHINING** held at Bannari Amman Institute of Technology during 24 – 26 April 2002.
- ❖ **AICTE – ISTE** Short term training programme on **MODELING AND ANALYSIS OF PRODUCTION SYSTEMS** Conducted by the Department of Production Engineering, National Institute of Technology during 20 – 31 May 2003.
- ❖ **Two Day Seminar** on **ADVANCES IN AUTOMOTIVE TECHNOLOGY** Conducted by SAE Collegiate Branch, PSG College of Technology on 10 & 11<sup>th</sup> October 2003.
- ❖ **CNC MILLING** Training course using MTAB & DENFORD Equipment at the **MTAB – DENFORD TECHNOLOGY CENTRE** during 21 – 26 March 2005.

## **AWARDS**

Received Dexterous Faculty award

## **MEMBERSHIP**

- Life member in Indian Society for Technical Education.
- Member in International Association of Engineers (IAENG)

# **Subjects Taught**

## **Under Graduated Courses**

- Process Planning & Cost Estimation
- Modern Manufacturing Systems
- Design of Machine Elements
- Foundry Technology
- Industrial Engineering and Management
- Robotics
- Computer Integrated Manufacturing
- Process Planning Control
- Engineering Graphics
- Production Technology
- CAD/ CAM

## **Post Graduated Courses**

- Computer Aided Process Planning
- Management Systems
- Robotics

## **Areas of Interest**

- Operation Management
- Scheduling
- Remanufacturing
- Supply Chain Management
- Optimization Techniques

## **PERSONAL DETAILS**

Date of birth : 17.02.1974  
Marital Status : Married  
Nationality : Indian  
Community : B.C.  
Address for Correspondence : Dr. K.BALASUBRAMANIAN  
C-9, Gokulam Phase III  
Mogappair West, Nolambur,  
Chennai -95.  
**E -Mail** : [bala\\_manu2002@yahoo.co.in](mailto:bala_manu2002@yahoo.co.in)

## **DECLARATION**

I hereby place a declaration that the above-mentioned details are true and correct to the best of my knowledge and belief.