Curriculum Vitae

***Koshy Varghese, Ph.D.***

Professor,

Department of Civil Engineering

I.I.T. Madras

Email: [koshy@iitm.ac.in](mailto:koshy@iitm.ac.in)

Phone +91-44-22574257

<http://www.civil.iitm.ac.in/people/faculty/koshy/>

# EDUCATION

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| --- | --- | --- | --- |
| **Degree** | **Year** | **Specialization** | **University** |
| Bachelor of Engineering with Distinction (B.E.) | 1986 | Civil Engineering | College of Engineering Guindy, Anna University |
| Master of Science in Engineering (M.S.) | 1987 | Structural Engineering | University of Texas at Austin, USA |
| Doctor of Philosophy (Ph.D.) | 1992 | Construction Engineering and Project Management | University of Texas at Austin, USA |

**EMPLOYMENT DETAILS**

2004 to present Professor, I.I.T Madras

Summer 2004, Visiting Faculty, University of Texas at Austin 2005

2002 to 2003 Visiting Eminent Scholar, Arizona State University, USA (On Sabbatical) 2000 to 2004 Associate Professor, I.I.T Madras

Summer 1996, Visiting Faculty, University of Texas at Austin 1999,2000

1995 to 2000 Assistant Professor, I.I.T Madras 1993 to 1995 Lecturer, IIT Madras

1992 to 1993 Post-Doctoral Fellow, Univ. of Texas at Austin, USA

# ACADEMIC HONORS

* **Project Management Institute (PMI) Distinguished Scholar Award 2012** for scholarly contributions to area of Project Management
* **International Association for Automation & Robotics in Construction (IAARC)‐ Tucker‐Hasagawa Award** 2012 for contributions in area of Automation in Construction.
* **American Society of Civil Engineering (ASCE) Best paper Award** for paper published in 2011 in Journal of Computing in Civil Engineering. *Paper title: Accelerometer Based Activity Recognition in Construction*
* **Indian Society of Remote Sensing Best Paper Award** 2011 for paper published in Journal of Indian Society of Remote Sensing. Paper title*: An integrated multi‐stage framework for automatic road extraction from high resolution satellite imagery.*
* **World Construction Symposium (WCS) Best Paper Award 2017** for the paper titled *“Design Process standardization for building projects in India”*
* **President,** International Association of Automation and Robotics in Construction (2013‐2018)
* **Member, Board of Directors**, International Association of Automation and Robotics in Construction (Since 2005)
* **Member, Editorial Board**, International Journal of Automation in Construction (Since 2007)
* **Member, Editorial Board**, International Journal of Information Technology in Construction (since 2009)

### Regional Editor, International Journal of Built Environment and Project Management (2009‐2012)

* **Member, Editorial Board, Journal of National Institute of Construction Management & Research**

(NICMAR) (since 2012)

* **Guest Editor**, Special Issue on Computer Aided Civil & Infrastructural Engineering (2010)
* **Invited Speaker**, For numerous national and international conferences (1999‐Current)
* **Core member,** Construction Engineering and Management Curriculum‐ responsible for developing and offering national level post‐graduate curriculum in Construction Engineering and Management in Indian Universities (1996‐Current)
* **Core Member**, Design Innovation and Learning Taskforce responsible for re‐orienting curriculum and teaching of design in India (2010‐2011)
* **Certificate of Appreciation** from Del E. Web School of Construction, Arizona State University for Academic Excellence (2002)
* **Certificate of Appreciation** from US Corps of Engineers, USA for utility of joint research project (1992)

# TEACHING

As a pioneer in construction engineering management education in India, I have designed and developed program curriculum for several Construction Engineering and Management programs at a national level. At IIT Madras, I have been involved in developing a unique post-graduate program in partnership with the largest construction company in India Larsen & Toubro. This program has been operational for 16 years and widely recognised as model for university-industry interaction.

As a teacher I have consistently received an excellent feedback for all the courses taught at IIT Madras, University of Texas at Austin and Arizona State University.

**UNDERGRADUATE COURSES**

* + **Introduction to Civil Engineering Profession:** *Redesigned the course and pedagogic approach to educate and inspire first-year Civil Engineering students to understand the various areas and professional options in Civil Engineering.*
  + **Computer Methods in Civil Engineering:** *Redesigned the course to cover object-oriented programming concepts and design, brought about pedagogical change by including group projects and laboratory sessions to enhance learning.*
  + **Project Management:** *Taught course to senior level students from all engineering disciples graduating with a minor in Project Management*
  + **Introduction to Computing Science and Engineering:** *Taught engineering modelling module of the course to all first year students at IIT Madras*

**GRADUATE COURSES**

* + **Lean Construction Concepts and Applications:** *Designed course and developed courseware to introduce lean framework, concepts and its application to construction projects.*
  + **Computer Integrated Project Delivery:** *Designed course and developed courseware to introduce and appreciate the role of virtual modelling in the entire project lifecycle.*
  + **Construction Quality & Safety Management:** *Designed course and developed courseware to cover concepts and impart skills in implementing Quality and OHS standards in construction.*
  + **Construction Planning and Control:** *Developed course at IIT Madras to address concepts and practices in the area from an application perspective.*
  + **Construction Project Modelling:** *Designed course and developed courseware to address quantitative and computation based decision support in construction engineering and management.*
  + **Computer Aided Design in Civil Engineering:** *Redesigned course to include software design module and multi-disciplinary projects from different streams of Civil Engineering.*
  + **GIS Applications in Civil Engineering:** *Developed course at IIT Madras to teach GIS concepts and usage to graduate students from all streams of Civil Engineering.*
  + **Advanced Information Tools for Project Management:** *Developed course and curriculum at University of Texas at Austin and Arizona State University to cover the emerging ICT concepts and tools and their applications to construction.*
  + **Computer Integrated Construction Laboratory:** *Coordinating computer laboratory course for graduate level students covering the latest ICT trends and tools relevant to construction practice. Contents are continuously updated and currently cover tools for parametric modelling and integrated construction practice.*

# Continuing Education

* **Lean Champions Training Program:** *A custom program for leading Indian owners and construction companies on lean construction concepts and implementing and spreading lean thinking and practices in the Indian Construction industry. (2013 Onwards)*
* **Mentoring and Augmenting Planning Skills in Construction:** *A custom program for leading Indian Construction companies on core scheduling concepts and software usage to support scheduling on building construction projects. (2011 Onwards)*
* **Building Information Modelling:** *Designed and conducted several programs for developers, designers, architects and contractors on concepts and adoption of Building Information Modelling for the Indian construction industry*
* **Technology & Sustainable Development:** [*http://tsd.epfl.ch/*](http://tsd.epfl.ch/) *This is an international 4 month course conducted jointly with EPFL Switzerland. This joint program was organised in 2002, 2005 & 2008. I was responsible for designing and coordinating the Project Management Module for all the years.*
* **Construction Executive Development Program:** *Designer, Coordinator & Instructor for numerous executive development courses focused on improving engineering and management practices in the construction industry.*
* **Open Source GIS for Developing Countries:** *Designer, Coordinator & Instructor for organising grass roots level courses for public participatory GIS usage as well course on higher level Open Source GIS customisation. These courses are being duplicated across India to spread the usage of Open Source GIS in is basic and customised forms.* <http://www.civil.iitm.ac.in/people/faculty/koshy/gram>‐panchayat/index.php

# RESEARCH

My research interests are primarily in the area of modelling and automating engineering processes using appropriate computational methods and tools. I have primarily focused on processes in three domains- construction design, construction planning and urban sustainability assessment. Most of my research guidance and sponsored projects I have coordinated have been in these areas. I have been the principal investigator several sponsored research projects. Many of these projects have been awarded based on submitting competitive proposals evaluated by the sponsoring organizations. Based on the capabilities of our research group Autodesk funded the establishment of the first Building Information Modelling laboratory in India at IIT Madras.

### Research Guidance

**Doctoral :** 9 Completed, 6 Ongoing

**Masters:** Masters by Research Thesis : 4 Completed, 2 Ongoing Masters By Project: 75 Completed, 5 Ongoing

### **Doctoral Students & Topics**

***Monto Mani – 2003***

Assessing and Forecasting Sustainability of Human Settlements

***M. S. Ajmal Deen Ali - 2005***

Automated Motion Planning of Cooperative Manipulators Using Genetic Algorithm Co-Guide: Dr. N. R. Ramesh Babu

## J. Uma Maheswari - 2006

Modelling Activity Sequencing for Construction Projects using Dependency Structure Matrix

## P. P. Anil Kumar - 2008

Land Use Planning Models to Assess Impacts on Coastal Zone Management Co-guide: Dr. L. S. Ganesh

## V. Senthil Kumar - 2010

Design Interface Management in Fast Track Construction Design

## R. Venkatesan - 2010

Influence of Motivation on the Performance of Construction Engineers in Public Organizations- An Experimental Study Co-guide: Dr. K. Ananthanarayanan

## T.T. Mirnalinee – 2011

A Multi-Stage Framework Based on Salient Features for Automatic Extraction of Road Network from Satellite Images Co-guide: Dr. S. Das

## Liju Joshua - 2012

Automated Productivity Measurement System using Accelerometers

***Jeevan Jacob – 2018***

Design Management Using Building Information Models

## Thirumalai Rajan - Ongoing

Investigating Role of Information Flow for Design- Construction Interface

## Srinath Purushothaman - Ongoing

Investigating Science and Ontology of Planning Concepts and Practices

***Vijayalaxmi Sahadevan – Ongoing***

Stakeholder Values and their influence in the Design of the Built Facility

***Manna S. Simon – Ongoing***

Developing a framework to sustain and evaluate Lean construction implementation – An organizational culture perspective

***Ramesh Balasubramanian - Ongoing***

Decision-making, digital support framework for conservation of built cultural heritage in assessment, implementation, monitoring and operation phase

***Varun Kumar Reja - Ongoing***

Automated Image Based Progress Monitoring in Construction

### Sponsored Research Projects

**Principle Investigator**

|  |  |  |
| --- | --- | --- |
| **Project Title** | **Sponsor** | **Period / Value** |
| **Design Evaluation and Automation of Segment Launching System for Metrorail Construction** | Larsen & Toubro Limited | 2012-2015  Rs. 5 Million |
| **Development of 3D & 4D Parametric Virtual Models for Electrostatic Precipitators** | Bharath Heavy Electricals Limited | 2013-2014  Rs. 1 Million |
| **Development of Project Management System for Planning & Execution of Electrostatic Precipitator Retrofit Operations** | Bharath Heavy Electricals Limited | 2011-2014  Rs. 6 Million |
| **Field Trials of Open-Source GIS for Rural Watershed Mapping** | Ministry of Rural Development, Government of India | 2012-2015  Rs. 8 Million |
| **Establishment & Projects for Center for Excellence in Integrated Construction Practice** | Autodesk India Pvt. Ltd. | 2007-2012  Rs. 4 Million |
| **Pilot-scale Demonstration, Evaluation and Enhancement of Open Source GIS Tools for Public Participation** | Ministry of Rural Development, Government of India | 2007-2010  Rs. 2 Million |
| **Strategic Modelling of Design Iteration in Construction Projects using Dependency Structure Matrix(DSM)** | Department of Science and Technology, Government of India | 2007-2009  0.75 million |
| **Investigation of Genetic Algorithm Based Off-Line Path-Planning for Cooperative Cranes in a Construction Work-Cell Environment** | Department of Science and Technology, Government of India | 2000-2003  Rs.1.7 Million |
| **Off-Line Planning & Simulation of Multiple Crane Lifts** | Department of Science and Technology, Government of India | 1998-2000  Rs. 1.2 Million |
| **Development of Software for Decision Support System Required in the Preparation of ICMAM plans for Goa and Gulf of Kachhch** | World Bank, & Department of Ocean Development, Government of India | 1997-1999  Rs. 1.4 Million |
| **GIS Laboratory for Engineering Applications** | All India Council for Technical Education, Government of India | 1995-1998  Rs. 1.o Million |

**Co‐Investigator**

|  |  |  |
| --- | --- | --- |
| **Project Title** | **Sponsor** | **Period** |
| **Investigation of Lightweight Materials and Constructability Techniques for Cost-Effective Housing in India and USA** | Indo-USA Joint Project by Department of Science and Technology, India & National Science Foundation, USA | 2003-2006  Rs. 0.75 Million |
| **Comparative study of Occupational Health of Older Workers in South-Africa and India** | Indo-South Africa Joint Project by Department of Science and Technology, India & National Research Foundation, South Africa | 2004-2007  Rs. 0.5 Million |
| **Development of Techniques for Classification of Urban Features from Remote Sensed Data for Use in GIS Applications** | Indian Space Research Organization | 1996-1999  Rs. 0.8 Million |
| **Infrastructure for GIS based Decision Support System for Cyclone Hazards Mitigation** | Ministry of Human Resource Development, Government of India | 1998-2001  Rs. 1.5 Million |
| **Recovery project - Rain Fall, Wind, Storm surge Modelling in GIS including coastal zone management project** | Andhra Pradesh Cyclone Hazard Mitigation Project (APCHMP) | 1997-2000  Rs. 1.8 Million |

**Professional Associations**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of the association** | **Role/ Designation** | **From** | **To** |
| **The International Association for Automation and Robotics in Construction (IAARC)** | President BOG Member | 2014 2005 | 2016 Current |
| **Institute for Lean Construction Excellence (ILCE)** | Member - Board of Directors | 2016 | Current |
| **Association for the Advancement of** [**Cost Engineering**](https://en.wikipedia.org/wiki/Cost_engineering) **(AACE) India Section** | Advisory Member | 2018 | Current |
| **Global Leadership form for Construction Engineering and Management (GLF-CEM)** | Advisory Member | 2014 | Current |

**Research Publications**

# 2019

Sahadevan, Vijayalaxmi; Varghese, Koshy **“AHP and CBA Application to Layout Design: A Case of Classroom Layout Assessment”** 27th Annual Conference of the International Group for Lean Construction (IGLC) July 2019

Reja, V. K.; Varghese, K. **“Impact of 5G technology on IoT applications in construction project management”** Proceedings of the 36th International Symposium on Automation and Robotics in Construction, ISARC 2019, Year 2019, Pages 209-217

# 2018

Jacob, Jeevan; Varghese, Koshy **“A framework for ad hoc information management for the building design process”** Engineering, Construction and Architectural Management, Volume 25, Year 2018, Pages 1034-1052

Simon, S. Manna; Varghese, Koshy **“Assessment of organizational culture in construction – A case study approach”** IGLC 2018 - Proceedings of the 26th Annual Conference of the International Group for Lean Construction: Evolving Lean Construction Towards Mature Production Management Across Cultures and Frontiers, Volume 1, Year 2018, Pages 348-357

Sahadevan, Vijayalaxmi; Varghese, Koshy **“Stakeholder value evolution, capture and assessment in AEC project design”** IGLC 2018 - Proceedings of the 26th Annual Conference of the International Group for Lean Construction: Evolving Lean Construction Towards Mature Production Management Across Cultures and Frontiers, Volume 1, Year 2018, Pages 549-559

Sainath, Yeshwant; Varghese, Koshy; Raghavan, N. **“Framework for progressive evaluation of lean construction maturity using multi-dimensional matrix”** IGLC 2018 - Proceedings of the 26th Annual Conference of the International Group for Lean Construction: Evolving Lean Construction Towards Mature Production Management Across Cultures and Frontiers, Volume 1, Year 2018, Pages 370-380

Raghavan, N.; Varghese, Koshy; Mahalingam, Ashwin; Delhi, Venkata S.K. **“Simulation exercise for collaborative planning system / Last planner SystemTM (colplasse)”** IGLC 2018 - Proceedings of the 26th Annual Conference of the International Group for Lean Construction: Evolving Lean Construction Towards Mature Production Management Across Cultures and Frontiers, Volume 2, Year 2018, Pages 1002-1012

Pushkar, Akash; Senthilvel, Madhumitha; Varghese, Koshy **“Automated progress monitoring of masonry activity using photogrammetric point cloud”** ISARC 2018 - 35th International Symposium on Automation and Robotics in Construction and International AEC/FM Hackathon: The Future of Building Things, Year 2018

Harichandran, Aparna; Raphael, Benny; Varghese, Koshy **“Inferring construction activities from structural responses using support vector machines”** ISARC 2018 - 35th International Symposium on Automation and Robotics in Construction and International AEC/FM Hackathon: The Future of Building Things, Year 2018

Sivapriya, V.; Senthilvel, Madhumitha; Varghese, Koshy **“Automatic reassembly of fragments for restoration of heritage site structures”** ISARC 2018 - 35th International Symposium on Automation and Robotics in Construction and International AEC/FM Hackathon: The Future of Building Things, Year 2018

# 2017

R K Soman, B Raphael, K Varghese **“A System Identification Methodology to monitor construction activities using structural responses”** Automation in Construction, Volume 75, Year 2017, Pages 79-90

M Senthilvel, RK Soman, K Varghese **“Comparison of Handheld devices for 3D Reconstruction in Construction”** Proceedings of the 34th International Symposium on Automation and Robotics in Construction (ISARC) 2017

Delhi, Venkata S.K.;Raghavan, N.;Mahalingam, Ashwin;Varghese, Koshy **“Initial euphoria to sustained change - Mainstreaming lean culture”** IGLC 2017 - Proceedings of the 25th Annual Conference of the International Group for Lean Construction, Year 2017, Pages 267-274

Loganathan,Santhosh;Srinath, Purushothaman;Kumaraswamy, Mohan;Kalidindi, Satyanarayana;Varghese, Koshy **“Identifying and addressing critical issues in the Indian construction industry: Perspectives of large building construction clients”** Journal of Construction in Developing Countries, Volume 22, Year 2017, Pages 121-144

Lalitha, K. S.; Das, Sukhendu;Menon, Arun; Varghese, Koshy **“Graph-based clustering for apictorial jigsaw puzzles of hand shredded content-less pages”** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), Volume 10127 LNCS, Year 2017, Pages 135-147

Loganathan, S., Srinath, P., Kumaraswamy, M., Kalidindi, S. and Varghese, K., 2017. Identifying and Addressing Critical Issues in the Indian Construction Industry: Perspectives of Large Building Construction Clients. *Journal of Construction in Developing Countries*, *22*, pp.121-144.

# 2016

Raphael, Benny; Rao, K Sai Chowdeswara; Varghese, Koshy. "**Automation of modular assembly of structural frames for buildings"** Proceedings of the 33rd International Symposium on Automation and Robotics in Construction; Pages 412-420, July 18-21, 2016 Auburn, USA

Sandilya, Srikar Kalidoss; Varghese, Koshy. "**A Study of Delays in Procurement of Engineered Equipment for Engineering, Procurement And Construction (EPC) Projects in India: A Mixed Method Research Approach"** Proceedings ofThe 5th World Construction Symposium, July, 29-31 2016, Colombo, Sri Lanka;

Kodeboyina, Sai Meghasyam; Varghese, Koshy. "**Low Cost Augmented Reality Framework for Construction Applications"** ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction; Pages 659-668 July 18-21, 2016 Auburn, USA

Anantharaman, Sivaraman; Varghese, Koshy; "**Pull Planning Systerm to Coordinate the Engineering Procurement and Construction on Process Plant Projects**" Proceedings Of The 2016 Construction Research Congress, pp 2250-2259, May 31–June 2, 2016 San Juan, Puerto Rico

N, R. , Delhi, V.S.K. , Mahalingam, A. & Varghese, K., "**Introducing Lean Construction Philosophy in E-P-C Phases of a Large Industrial Project**" In:, 24th Annual Conference of the International Group for Lean Construction. Boston, USA, 20-22 Jul 2016.

KS Lalitha, Sukhendu Das, Arun Menon, Koshy Varghese. **“Simultaneous Reconstruction of Multiple Hand Shredded Content-Less Pages Using Graph-Based Global Reassembly”** International Conference on Computer Vision, Graphics, and Image processing. December 2016, 75-87

# 2015

Doloi, Hemanta; Varghese, Koshy and Raphael, Benny. " **Drivers And Impediments Of Building Information Modelling From A Social Network Perspective**" ISARC Proceedings of the 32nd International Symposium on Automation and Robotics in Construction; June 15-18 2015 Oulu, Finland

Soman, Ranjith K; Raphael, Benny; Varghese, Koshy. "**Sensor Placement to Monitor Launching Girder Operations in Segmental Construction**" ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction; 15-18 June (2015) Pages 1-7 (2015 Proceedings of the 32st ISARC, Oulu, Finland)

Sahay, Rahul; Agarwal, Ritesh Kumar; Varghese, Koshy**. "Framework to Improve Labour Productivity for Indian Building Projects"** The 4th World Construction Symposium 2015: Sustainable Development in the Built Environment:Green Growth and Innovative Directions pages 282-291, June 12-14, 2015, Colombo, Sri Lanka

Kolagani, Nagesh; Palaniappan, Ramu;Varghese, Koshy. **"Participatory Model Calibration for Improving Resource Management Systems: Case Study of Rainwater Harvesting in an Indian Village.** Journal of American Water Resources Association (JAWRA) 2015 51(6): 1708-1720.

# 2014

Kolagani, Nagesh;Ramu, Palaniappan;Van Elzakker, Corne;Naniwadekar, Vishram;Varghese, Koshy **“Requirement analysis and metric development for public participatory GIS”** Proceedings - 7th International Congress on Environmental Modelling and Software: Bold Visions for Environmental Modeling, iEMSs 2014, Volume 2, Year 2014, Pages 1176-1183

Joshua, Liju;Varghese, Koshy **“Automated recognition of construction labour activity using accelerometers in field situations”** International Journal of Productivity and Performance Management, Volume 63, Year 2014, Pages 841-862

Arumugam, Thirumalai Rajan;Varghese, Koshy **“Characterization of flow in multi storied residential building construction”** 22nd Annual Conference of the International Group for Lean Construction: Understanding and Improving Project Based Production, IGLC 2014, Year 2014, Pages 559-569

Mathews, Vinay;Varghese, Koshy;Mahalingam, **Ashwin “A study on significance of system dynamics approach in understanding adoption of information technology in building construction projects”** 31st International Symposium on Automation and Robotics in Construction and Mining, ISARC 2014 - Proceedings, Year 2014, Pages 418-425

Ummer, Naseef;Maheswari, Uma;Matsagar, Vasant A.;Varghese, Koshy “**Factors influencing design iteration with a focus on project duration”** Journal of Management in Engineering, Volume 30, Year 2014, Pages 127-130

Raghavan, N.;Kalidindi, Satyanarayana;Mahalingam, Ashwin;Varghese, Koshy;Ayesha, A. **“Implementing lean concepts on indian construction sites: Organisational aspects and lessons learned”** 22nd Annual Conference of the International Group for Lean Construction: Understanding and Improving Project Based Production, IGLC 2014, Year 2014, Pages 1181-1190

# 2013

Shankar, Abiram & Varghese, Koshy. " **Evaluation of Location Based Management System for Construction of Power Transmission And Distribution Projects,** Proceedings of the 30th International Symposium on Automation and Robotics in Construction, ISARC 2013, 2013

Senthilkumar, Venkatachalam, and Koshy Varghese. **Case Study–Based Testing of Design Interface Management System,** Journal of Management in Engineering 29, no. 3 (2012): 279‐288.

Joshua, Liju, and Koshy Varghese. **Selection of Accelerometer Location on Bricklayers Using Decision Trees,** Computer-Aided Civil and Infrastructure Engineering, Volume 28, Year 2013, Pages 372-388

Ummer, Naseef, Uma Maheswari, Vasant A. Matsagar, and Koshy Varghese. **Factors Influencing Design Iteration with a Focus on Project Duration,** Journal of Management in Engineering (2013).

Sivaprakasam, M.;Gettu, Ravindra;Varghese, Koshy;Vijaykumar, T. **“Study of possible productivity improvement in the fabrication of tunnel lining segments for a hydropower project”** Indian Concrete Journal, Volume 87, Year 2013, Pages 27-38

# 2012

Oka, Shriram, Garg, Akash, Varghese, Koshy **“Vectorization of contour lines from scanned topographic maps”** Automation in Construction, v 22, p 192‐202, March 2012

Jacob, Jeevan, and Koshy Varghese. **Analysing Process-Oriented BIM Execution Plans Using MDM** Proceedings of the 14th International DSM Conference, p 329‐342, 2012

Jacob, Jeevan, and Koshy Varghese. **A model for product-process integration in building industry using Industry Foundation Classes and Design Structure Matrix** Construction Research Congress 2012 Construction Challenges in a Flat World. ASCE, 2012.

Joshua, Liju, and Koshy Varghese. **Classification of bricklaying activities in work sampling categories using accelerometers,** In Construction Research Congress 2012 Construction Challenges in a Flat World, pp. 919‐928. ASCE, 2012.

Raj, Mithun, and Koshy Varghese. **Positioning of human resources in a construction environment using Zigbee.** Gerontechnology 11, no. 2 (2012): 418.

# 2011

Joshua, Liju; Varghese, Koshy; **Video Annotation Framework for Accelerometer Placement in Worker Activity Recognition Studies** Proceedings of the 28th International Symposium on Automation and Robotics in Construction, ISARC 2011, p 317‐322, 2011

Joshua, Liju, Varghese, Koshy; **Accelerometer-Based Activity Recognition in Construction** ASCE Journal of Computing in Civil Engineering, v 25, n 5, p 370‐379, September‐October 2011

Das, Sukhendu; Mirnalinee, T.T.; Varghese, Koshy **Use of salient features for the design of a multistage framework to extract roads from high-resolution multispectral satellite images** IEEE Transactions on Geoscience and Remote Sensing, v 49, n 10 PART 2, p 3906‐3931, October 2011

Jacob, Jeevan, Varghese, Koshy; **Integration of BIM and DSM to improve design process in building construction projects** Proceedings of the 13th International DSM Conference, p 363‐376,

Arai, Tatsuo; Bock, Thomas; Varghese, Koshy, **Editorial** Computer‐Aided Civil and Infrastructure Engineering, v 26, n 5, p 335‐335, July 2011

# 2010

Anil Kumar,P.P., Varghese, K. & Ganesh,L.S, **Formulating a coastal zone health metric for landuse impact management in urban coastal zones** Journal of Environmental Management, Volume 91, Issue 11, November 2010, Pages 2172-2185

Mirnalinee, T. T., Sukhendu Das & Varghese, K., **An Integrated Multistage Framework For Automatic Road Extraction From High Resolution Satellite Imagery** Journal of the Indian Society of Remote Sensing (Springer).

Varghese K. & Mazumdhar, Mehuli , **Visualization and Communication Platform For Remote Monitoring of Infrastructure Projects,** Presented at the 27th International Conference on Automation and Robotics in Construction, June 2010, Bratislava, Slovakia

Joshua, Liju & Varghese, K., **Construction Activity Classification Using Accelerometers,**

Presented at ASCE Construction Research Congress May 2010, Alberta, Canada

Senthilkumar V. & Varghese, K., **Development of an Automated Tool ‘DIMS’ for Design Interface Management in Construction Projects,** Journal of Automation in Construction, Volume No 19 Issue 2 January 2010. Pages 197-212 Elsevier Publications

# 2009

Senthilkumar V. & Varghese, K., **Structured Methodology to Formulate Drawing Dependency Structure Matrix (DDSM) for Construction Projects** International Journal of Architectural and Design Management Volume 5, Number 4, 2009, pp. 225-248(24) Earth Scan Publishers.

Senthilkumar V. & Varghese, K., **Drawing DSM (DDSM) Implementation in Construction Design**

**– Discussions on Applicability** Proceedings of The 11th International DSM Conference in Greenville, SC (USA) 12th – 13th October, 2009.

Senthilkumar V., & Varghese, K.,and Shivaji, C Y. **Achieving Lean Design Using Design Interface Management Tool**, Proceedings of IGLC 17, Taipei Taiwan 13th – 15th July, 2009.

Venkateshwar Rao Surati , Varghese, K. & K. Senthilnathan **Computational Models for Reduction of Quarry Waste for Breakwater Construction Projects** Proceedings of 26th International Symposium on Automation & Robotics in Construction (ISARC 2009), Austin, Texas, USA, June 24th-27th, 2009.

Mirnalinee, T. T., Sukhendu Das& Varghese, K., **Integration of Region and Edge-based information for efficient Road Extraction from High Resolution Satellite Imagery**, IEEE ICAPR 2009, Kolkata, India, February 4-6, 2009, pp 373-376.

# 2008

Senthilkumar V. & Varghese, K., **Organizational Structuring and Workflow of Design Projects – Analysis of Two Case Studies in India**, Proceedings of presentation in Joint Conference & Workshop Design Management in the Architectural Engineering and Construction Sector, University of São Paulo, Brazil, 4-8 November 2008.

Senthilkumar V. & Varghese, K. **Design Interface Management System (DIMS) for Construction Projects** , Proceedings of The 10th International DSM Conference held in Stockholm, Sweden, between 11th – 12th November, 2008.

Kavin Kumar, K.Senthilnathan, Varghese, K. & K.Ananthanarayanan **Automated Geometry Control of Precast Segmental Bridges** Proceedings of 25th International Symposium on Automation & Robotics in Construction (ISARC 2008), Vilnius, Lithuania, June 26th-29th, 2008.

Koshy Varghese, Ganesh. L.S., Monto Mani, P.P. Anilkumar, Ramana Murthy and B.R. Subramaniam; **Identifying Critical Variables for Coastal Profiling in ICZM Planning – A Systems Approach,** Journal of Ocean and Coastal Management, 51(1), pp 73-94, March, 2008.

Mirnalinee, T. T., Sukhendu Das& Varghese, K., **Automatic Curvilinear Structure detection from Satellite Images using Multi-resolution GMM**, International Journal of Imaging Science and Engineering (IJISE),Vol.2, No.1, pp. 154-157, January, 2008.

Mirnalinee, T. T., Sukhendu Das& Varghese, K., **Road extraction from Satellite Images using Dominant Singular and Arc-length Measures** NCVPRIPG'08 , Gandhinagar, Gujarat, India, 11- 13 January, 2008.

# 2007

AnilKumar,P.P., Varghese, K. ,& Ganesh,L.S.**Evolution of Coastal zone Health Index (CHI) as a metric to evaluate ICZM implementation efficiency**, Proceedings of International Conference on Coastal zone Management at Cardidff (Wales,UK) organized by Institution of Civil Engineers, UK, 31-02 Nov, 2007.

Senthilkumar V. & Varghese, K. **Hierarchical Modeling of Design Information using Dependency Structure Matrix (DSM)**, Proceedings of 2007 ASCE Construction Research Congress. Grand Bahamas Island, 06-08 May, 2007.

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# KEY ADMINSTRATIVE RESPONSIBILITIES

* **Management Representative, ISO 9000**, **(2003‐2006)** Responsible for implementing and maintaining QMS system for twelve administrative units at IIT Madras.
* **Coordinator of Workflow Automation at IIT Madras (2007‐2012)** Currently responsible for coordinating activities to automate academic and non‐academic processes at IIT Madras using work‐ flow software.
* **Coordinator of User‐Oriented Program in Construction Technology & Management, (2009‐2012)** Responsible for interacting with construction industry to continuously refine curriculum, identify research areas for collaborative industry‐university education and research.
* **Chairman, Computer Center, I.I.T Madras (2012‐2014)** Currently responsible for university level computing services, planning and procurement of information technology infrastructure and developing policies at university level for central computing facility services.

### Head, Building Technology & Construction Management Division, Department of Civil Engineering

**I.I.T. Madras (2012‐2014)** Currently responsible for section level planning of curriculum, faculty & other resources for undergraduate, postgraduate & doctoral programs.

# Memberships in governing body/Board of Public/ Private companies

|  |  |
| --- | --- |
| **Name of the company** | **Current role** |
| **Institute for Construction Materials and Technologies Private Limited** | Independent Board member |
| **Transportation Infrastructure Limited** | Independent Board member |
| **Kudgi Transmission Limited** | Independent Board member |
| **Deccan Tollways Limited** | Independent Board member |
| **Devihallihassan Tollway Limited** | Independent Board member |
| **Krishnagiri Walajahpet Tollway Limited** | Independent Board member |

# TECHNOLOGY INCUBATION & START‐UP MENTORING ACTIVITIES

IIT Madras has recently formulated policies for faculty to be part of Technology Incubation & Mentoring Activities in the Institute's research park. I have been associated with three initiatives by Alumni from our department, all the start‐up's are now established and operating independently.

**Nadhi Technologies** [**http://www.nadhi.in/**](http://www.nadhi.in/)

*Nadhi is an enterprise software and solutions company developing analytics and decision support solutions for construction supply chains. Nadhi's software platform nPulse™ streamlines construction project related communications and provides the right information to the right people at the right time that allows them to simultaneously take into account all the major factors (schedule, drawings and documents, meeting agenda items, bill of quantities, materials, resources) impacting project execution, and thus enables them to take more effective business decisions that help in reducing project delays and preventing cost escalation.*

**Engineering & Project Management and Research (EPMCR)** [**http://www.epmcr.co.in/index.html**](http://www.epmcr.co.in/index.html)

*EPMCR transfers knowledge on project management tools and practices from academic research to the construction industry. The focus of this firm is to offer end-to-end services in construction project engineering and management using advanced technologies and latest concepts.*

**Institute for Concrete and Materials Testing (ICOMAT)** [**http://www.icomat.in/**](http://www.icomat.in/)

*There is a pressing need in the Indian Construction industry for competent and knowledge based material testing services. ICOMAT was incubated with the intent of providing such services with a view to improve the quality of concrete construction. In addition, consultancy services and field training to enhance the practice of concrete construction is also provided by the firm.*

# **Consultancy and professional services and activities**

|  |
| --- |
| **Consultancy/ Miscellaneous services** |
| Development of 3D printing system for Concrete construction |
| Advisory services to CMDA for an electronic single window clearance system for building approval processes |
| Advisory services to several Indian construction companies to improving productivity through Lean construction principles |
| Third Party Review for Setting Up Strand Arrangement for lowering of blocks S4 at SBC |
| Evaluation of Design and Drawings for Twin Box Launching Girders for Bridge Construction |
| Proof checking the design and drawings of erection of Steel Girder and Formwork for multiple road projects. |