Himan K.G. Punchihewa

Senior Lecturer
Department of Mechanical Engineering
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Education

PhD - Design and Ergonomics [Loughborough University, United Kingdom] – 2010

M.Sc. - Industrial Engineering and Engineering Management [Hong Kong University of Science and Technology, Hong Kong] -2003

B.Sc. Engineering (Honours) - Mechanical Engineering [University of Moratuwa, Sri Lanka] - 2001

Continuously trained as a facilitator/teacher for undergraduate education

Certificate - British Computer Society (BCS) - 2000

COSHH trained for the control of substances hazardous to health [UK] - 2007, 2008

Work experience

Teaching:

Lecturer- University of Moratuwa, Sri Lanka (Since Jan 2004)

Undergraduate teaching: 'Industrial engineering', 'industrial project management' and 'industrial ergonomics' for BSc Eng. final year students, 'production and operations management', sections of 'introduction to mechanical engineering systems', 'social and community project', 'technical communication', 'technical report writing' and 'machine design project' for BSc Eng. second and third year Mechanical Engineering students and 'engineering in context' for BSc Eng. first year students.

Postgraduate teaching: 'Production and operations management', 'industrial management', 'quality management', 'human factors engineering (ergonomics)' for students of MEng/PG Diploma in manufacturing systems engineering and 'industrial energy conservation and management' for students of MEng/PG Diploma in Energy Technology.

Visiting Lecturer- Kotelawala Defence University, Sri Lanka (Jul 2004 - Nov 2013)

Module: Industrial engineering for BSc defence studies final year students.

Visiting Lecturer- University of Ruhuna, Sri Lanka (Oct 2004 - Nov 2006)

Module: Production and operations management for BSc Eng. final year students.

Visiting Lecturer- University of Colombo, Sri Lanka (Oct 2005 - Dec 2005)

Module: Production and operations management for MBA students.

Visiting Lecturer- Institute of Lean Management (Pvt) Ltd, Sri Lanka (Apr 2011)

Modules: Industrial and production management.

Course coordinator- MEng/PG Diploma in Energy Technology, Department of Mechanical Engineering, University of Moratuwa (Since March 2011): Programme organisation and delivery, and handling student matters.

Research interests:

Industrial engineering, engineering management, industrial ergonomics, transport ergonomics and driver behaviour, industrial design, product and process development and methodologies, lifecycle cost of engineering applications, people with disabilities.

Consultancy:

Productivity improvement projects in various industries, logistics operations and transport sector improvement, training of personnel for quality enhancement and continuous improvement, ergonomics studies, product development, project development.

Professional contributions:

International level:

Chairman: Organising committee for the '5th Japan-SAARC Energy symposium-JSES 2012', a regional event held at Mount Lavinia Hotel, Colombo, Sri Lanka. Project budget- USD 40,000. (March 2012)

Event management, ensuring airfare, accommodation for participants following Sri Lanka national procurement guidelines. Co-editor of the symposium proceedings. Organising study tour.

National level:

Committee member – Department of Motor Traffic (DMT)

New vehicle registration policy development (April 2018 onwards).

Area Expert – National Education Commission (NEC)

Study on skills requirement and report on the pathways for higher education in Sri Lanka (March 2018 – November 2018).

Consultant – Sri Lanka Land Reclamation and Development Corporation (SLRRDC)

Feasibility study on the canal boat transportation system under the Greater Colombo Megalopolis project. (October 2016 to February 2017)

Consultant - Sri Lanka Police

Work organisation and redesign of the central workshops, Narahenpita (2016-2017)

Consultant - Resources Development Consultants (RDC).

Logistics operations for aviation fuel bridging project for the Bandaranaike International Airport. (May 2016 to August 2016)

Advanced Level programme developer: Engineering Technology stream. Ministry of Education, Sri Lanka.

Programme development, training, preparation of study material, examinations. (January 2013 – November 2017)

National evaluator: Sri Lanka national energy efficiency award (SLNEEA) organised by the Sri Lanka Sustainable Energy Authority. (2012 to date)

Evaluation of energy efficiency improvement initiatives of various applicant organisations (both government and private sector) using a set guideline by conducting walkthroughs in the respective organisations and observing relevant documents to check their eligibility for the award.

Consultant: Feasibility study of the aviation fuel bridging project - Magampura international harbour to Mattala international airport, Sri Lanka. (May 2013 to December 2013)

Comparison of train, road and pipeline-based transportation of aviation fuel through a sensitivity analysis and analysing safety risks/issues with respect to the three modes of transport. Sizing and cost estimation of the pipeline and other modes of transport options.

Chairman: Four-member technical committee appointed by the 'Ministry of State Resources and Enterprise Development of Sri Lanka' to study on operational issues of the USD 0.56 Mn mill facility commissioned at Eppawala Phosphate Limited to grind rock phosphate and provide recommendations for sustained functionality. (June – July 2013)

Observe the operation, carryout measurements and provide recommendations in relation to civil, mechanical, operational and maintenance engineering issues for effective and efficient operation of the facility to maximise production while reducing errors and plant downtime.

Member: Programme development and evaluation committee for Sri Lanka Institute for Advanced Technological Education. (2012 to date)

Evaluation and improvement of the current program for Higher National Diploma programme for Engineering Technologists. Selection of new equipment for the laboratories and nation-wide study programme expansion project.

Member: Programme development and evaluation committee for Engineering Technology undergraduate programme at Uva Wellassa University. (2017 to date)

Evaluation and improvement of the current curriculum for the special degree programme for Engineering Technologists to fall in line with the Sydney Accord accreditation.

Consultant: Engineering study programme development for the South Eastern University of Sri Lanka-Oluwil Campus. (2012/2013)

Curriculum development. Developer of modules 'production and operations management' and 'human factors engineering'.

Consultant to the Sri Lanka Police: Develop instructional material for drivers: Safe and efficient driving on highways for the Sri Lankan drivers. (October and November 2011)

Development of a leaflet to be given to the users of the southern expressway (First expressway in Sri Lanka). Consultant to the Sri Lanka Police: Develop instructional material for drivers: Safe and efficient driving on highways for the Sri Lankan drivers.

Institutional level:

Consultant - Renuka Products Private Limited

Work organisation and industrial engineering (Feb 2017 to-date)

Consultant - Cargill's Foods Ceylon PLC

Work organisation and industrial engineering (Feb 2017 to-date)

Consultant – Aqua packaging Private Limited

Work organisation and industrial engineering (Dec 2016 to-date)

Consultant - Latex Green (Pvt) Ltd.

Work organisation and industrial engineering (Jul 2016 to-date)

Consultant - Aqua Packaging Private Limited

Work organisation and industrial engineering (Dec 2016 to-date)

Coordinator: 'Atlas-UOM product and systems development research laboratory'- A project between the Ceylon Pencil Company and University of Moratuwa. (February 2013 to February 2018)

Consultant: Ceylon Pencil Company (January 2014 to January 2015)

Value stream mapping of the finished goods logistics process.

Consultant: Ceylon Cold Stores PLC, a food products manufacturing company.

Project team leader: Productivity improvement of ice cream plant of Ceylon Cold Stores by conducting work sampling. (December 2013 to July 2014)

Project team leader: Productivity improvement of logistics operations of soft drink plant of Ceylon Cold Stores by conducting a method study and work sampling. Saving is over Rs. 1 Mn per month. (July 2012 to March 2013)

Consultant: USD 2 Mn DIMO-TATA Advanced Driver Training Centre development project. (2012 to date)

Advising on design of the training tracks and other facilities such as classrooms and workshops for a five day resident programme. Development of teaching material such as notes, videos and quizzes, training of trainers, and conducting the first few programmes.

Projects:

PhD researcher: Development of a tool to help ergonomists and design practitioners to address issues of work-related musculoskeletal disorders in industry. (Nov 2006-Oct 2010)

Project team member: **USD 1 Million project** to enhance the relevance and quality of undergraduate education (IRQUE) of the Department of Mechanical Engineering (Project development, coordination and implementation team member and person-in-charge of one major activity, enhancing social and intercultural harmony within and outside the University). (2004-2009)

Project team leader: Developing protocols, systems and assistive devices for the disabled, a collaborative project with the Intermediate Technology Development Group (ITDG, now known as Practical Action), a UK-based INGO. (2004-2006)

Project team member: Development of an area strategic plan for Ruhunu Wellassa Area Federation (RWAF) - consultancy for the Christian Children's Fund (CCF), a US-based INGO. (2006)

Team member: Bidding document preparation and tender evaluation for Ministry of Education, Ministry of Higher Education, University of Moratuwa and Industrial Development Authority, Western province, Sri Lanka. (Since 2005)

Technical Consultant: For Intermediate Technology Development Group (ITDG, now known as Practical Action) and various other organisations. (2006)

Project team member: Long term collaborative research project on improving the light engineering sector in Sri Lanka funded by the Industrial Development Authority (IDA), Western Province. (2005-2006)

Project team member: Long term collaborative research project on leather industry in Sri Lanka funded by the Industrial Development Authority (IDA), Western Province. (2005-2006)

Final Year Project Member: Design, construction and testing of an air conditioner condenser with capillary induced cooling and testing its performance: A novel concept. (2001) [project highly commended by the IMechE (UK) representatives that included the President of IMechE that visited the Department of Mechanical Engineering, University of Moratuwa, Sri Lanka]

Director (Engineering) - Nature Strip pristine, Sri Lanka (Jun 2003 to Jan 2009): Project liaison, project development and implementing for the non-governmental organisation that is engaged in conservation of biodiversity through planned social development.

Director/consultant - Right Clik (Pvt) Ltd, Sri Lanka (Jun 2006 to Jan 2008): Project development and implementing.

Research assistant/teaching assistant - The Hong Kong University of Science and Technology, Hong Kong (Sep 2002 - Dec 2003): Literature survey, designing and fabrication of mechanical components, designing experiments, data collection and analysis, preparing user manuals for equipment made in the laboratory; conducting lab sessions and correcting assignments of undergraduates.

Research assistant - University of Moratuwa, Sri Lanka (Sep 2001 - Sept 2002): Research activities on "biomass energy technologies" (ARRPEC II) and "vehicle emissions reduction", "energy auditing"; conducting practical and tutorial sessions in applied mechanics, automobile engineering, mechanics of materials and fluid dynamics for BSc Eng. undergraduates.

Trainee engineer - Sri Lanka Ports Authority (Feb 2000 - Aug 2000): Studying and inspecting foundry activities, HVAC installation and maintenance, introduction to stock control and purchasing, familiarise in machine shop activities and machine tools, studying container handling equipment and maintenance, learning about A.C and D.C machines and maintenance.

Publications

Wijewardane, M.A., Sudasinghe, S.A.N.C., **Punchihewa, H.K.G.**, Wickramasinghe, W.K.D.L., Philip, S.A., and Kumara, M.R.S.U. (2018). Experimental Investigation of Visual Comfort Requirement in Garment Factories and Identify the Cost Saving Opportunities. *International Journal of Urban and Civil Engineering*. Vol:12, No:6, 2018. DAI: urn:dai:10.1999/1307-6892/84362

Sudasinghe, S.A.N.C., Wickramathilake, W.K.D.L., Philip, S.A., **Punchihewa, H.K.G.**, Wijewardane, M.A., and Kumara, M.R.S.U. (2018) "Experimental Investigation of Visual Comfort Requirement in Garment Factories and Identify the Cost Saving Opportunities'. ICEB 2018 – International Conference on Energy and Buildings, Vienna, Austria, 2018

Sudasinghe, S.A.N.C., Wickramathilake, W.K.D.L., Philip, S.A., **Punchihewa, H.K.G.**, Wijewardane, M.A., and Kumara, M.R.S.U. (2018) "Investigation on Illuminance Requirements and Associated Cost

Saving Opportunities in Garment Factories". SEB-18 – International Conference on Sustainability in Energy and Buildings, Gold Coast, Australia, 2018

Muthukumarana, T.T., Karunathilake, H.P., **Punchihewa, H.K.G.**, Manthilake M.M.I.D., and Hewage, K.N. (2018). Life cycle environmental impacts of the apparel industry in Sri Lanka: Analysis of the energy sources. *International Journal of Cleaner Production*. Oct 2017. 172, 1346-1357.

Senevirathne, S.W.M.A.I. and **Punchihewa H.K.G.** (2018). Reducing surface roughness by varying aerosol temperature with minimum quantity lubrication in machining AISI P20 and D2 steels. *International Journal of Advanced Manufacturing Technology*. 94(1), 1009-1019. DOI 10.1007/s00170-017-0951-4

Fernando, B.S.R., Ranasinghe, R.A.C.P. and Punchihewa, H.K.G. (2017). Organic Rankine Cycle (ORC): Performance of Working Fluids and Energy Recovery Potential in Sri Lankan Thermal Power Plants. IESLAS2017. Colombo, Sri Lanka. Number: 33.

Senevirathne, S.W.M.A.I. and **Punchihewa H.K.G.** (2017). Comparison of tool life and surface roughness with MQL, flood cooling, and dry cutting conditions with P20 and D2 steel. International Conference on Material and Intelligent Manufacturing, Singapore.

Wisidagama, R.C., **Punchihewa, H.K.G.**, Ranasinghe, R.A.C.P., and Perera, M.S.M. (2017). Suspension Hydro bushings – Purpose, Design and Modelling. 6th National Conference on Technology and Management. Malabe, Sri Lanka.

Wijayasundara, A.V., Ranaweera, R.K.P.S. and **Punchihewa, H.K.G.** (2017). Development of a temperature prediction model for rubber caster wheels using finite element analysis. MIES 2017 and IEEE Xplore.

Abeykoon, K.M.W., Nanayakkara, L.D.J.F., **Punchihewa, H.K.G.** and Munidasa, J.D. (2017). Categorisation of people with physical disabilities to help work in industry. World Disability and Rehabilitation Conference. Mar 2017. Colombo, Sri Lanka.

Hettigama, I.S., **Punchihewa**, **H.K.G.** and Heenkenda, N.K. (2016). Ergonomic footwear for Sri Lankan primary schoolchildren: A review of the literature. *Work*, Vol. 55. No. 2. pp. 285-295.

Senevirathne, S.W.M.A.I., **Punchihewa, H.K.G.**, Kosgahakumbura, K.N.M.D.S.K., Dissanayake, D.M.P.P. and Sahathevan, T. (2016). Tool Wear in Machining AISI D2 Steel with Minimum Quantity Lubrication using Alternative Cutting Fluids. MIES 2016 and IEEE Xplore.

Ranaweera, R.K.P.S., **Punchihewa, H.K.G.** Wijayasingha, L.N.S. Sanjeeva, K.P.P. and Samarakoon, C.M. (2016) Selection of Harvestable Tea Shoots based on Height and Stiffness. MIES 2016 and IEEE Xplore.

Chathura, B.A.Y. and Punchihewa, H.K.G. (2016). A Novel Method to Measure Abrasion of Solid Tires. MerCON 2016 University of Moratuwa, Sri Lanka and IEEE Xplore.

Senevirathne, S.W.M.A.I. and **Punchihewa, H.K.G.** (2016). Effect of minimum quantity lubrication aerosol temperature on tool life in machining AISI P20 and D2 steels using coated tungsten carbide tool inserts. MerCON 2016, University of Moratuwa, Sri Lanka and IEEE Xplore.

Wanniarachchi, W.N.C., Gopura, R.A.R.C. and **Punchihewa, H.K.G.** (2016) Development of a Layout Model Suitable for the Food Processing Industry. *Journal of Industrial Engineering*. Volume 2016, Article ID 2796806, 8 pages, http://dx.doi.org/10.1155/2016/2796806

Punchihewa, H.K.G. and Gyi, D.E. (2016). Reducing work-related Musculoskeletal Disorders (MSDs) through design: Views of ergonomics and design practitioners. *Work.* Vol. 53. pp. 127-142.

Waniganetthi W.G.S., Perera K.M.D., Siriwardhane K.D.T.G., **Punchihewa H.K.G.** and Ranaweera R.K.P.S. (2015). Improved traction mechanism for broken femur healing process. Transactions 2015-1 (Part B), pp. 209-218.

Abeykoon, K.M.W., Nanayakkara, L.D.J.F., **Punchihewa, H.K.G.** and Munidasa, J.D. (2015). 8th International Research Conference (IRC-8): Inculcating Professionalism for National Development. GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY (KDU). pp. 216.

Wanniarachchi, W.N.C., Gopura, R.A.R.C. and **Punchihewa, H.K.G.** (2014). A Model for Layout Planning in the Food Processing Industry. Annual Sessions of Institution of Engineers, Sri Lanka (IESL), At Colombo, Sri Lanka, Volume: Vol. 1. pp 129-137.

Abeykoon, K.M.W., Nanayakkara, L.D.J.F. and **Punchihewa, H.K.G.** (2013). Mechanisms Currently in Place to Increase the Ability of Physically Disabled Population to Work in Industry. *International Journal of Engineering, Business and Enterprises Applications (IJEBEA)*. Vol. 4. No. 1. pp. 26-30.

Punchihewa, H.K.G. and Manthilake, M.M.I.D. (2012). Our ailing universities. *Annual, United Nations Association of Sri Lanka*. pp. 12-17.

Punchihewa, H.K.G. (2011). Highway to heaven. *Annual, United Nations Association of Sri Lanka*. pp. 12-17.

Punchihewa, H.K.G. (2010). Potential of Quality Function Deployment (QFD) in reducing work-related musculoskeletal disorders (PhD thesis). Design and Ergonomics Research Group, Loughborough Design School. Loughborough University, United Kingdom.

Punchihewa, H.K.G. and Gyi, D.E. (2009). Development of a QFD based approach to collaborative design to reduce work-related musculoskeletal disorders. *Design Principles and Practices: An International Journal*. Vol. 3. No.6. pp. 209-223.

Punchihewa, H.K.G. and Gyi, D.E., (2009). Development of a QFD based approach to collaborative design to reduce work-related MSDs. 3rd International Conference on Design Principles and Practices 2009, UdK University, Berlin, Germany, 15-17 February, 2009.

Muthunayaka, A., Kahangamage, U.P. and **Punchihewa, H.K.G.** (2008). CAD/CAM applications: A developmental strategy for potential SME footwear industries in Sri Lanka. *102nd Annual Sessions of IESL Young Members' Section*, IESL auditorium, Colombo, Sri Lanka, 24th October 2008.

Muthunayaka, A., Kahangamage, U.P. and **Punchihewa, H.K.G.** (2008). The Application of CAD/CAM in the Sri Lankan SME footwear industry: A developmental strategy. *Symposium of the Engineering Research Unit*, Galle Face Hotel, Colombo, Sri Lanka, 15th October, 2008.

Punchihewa, H.K.G. and Gyi, D.E. (2008). A collaborative design approach to preventing work-related musculoskeletal disorders. *In: P.D. Bust, ed. Contemporary Ergonomics 2008*, Nottingham, 1-3 April, 2008. London: Taylor and Francis, pp 411-416.

Manthilake, M.M.I.D., Muthunayaka, A., Ranaweera, R.K.P.S. and **Punchihewa, H.K.G.** (2006). A study on the technological requirement of the footwear industry in Sri Lanka. *Symposium of the Engineering Research Unit*, Trans Asia Hotel, Sri Lanka, 16th November 2006.

Allis, R.L.K.G., Kahandagamage, G.A., Lokuwithana, N.P.H. and **Punchihewa H.K.G.** (2006). Construction and testing of a machine to desalinate sea sand to be used as an aggregate in construction. *Symposium of the Engineering Research Unit*, Trans Asia Hotel, Sri Lanka, 16th November 2006.

Hatharasinghe, H.D.A.L., Karavita, K.V.N.S, **Punchihewa, H.K.G.**, Wijewardane, S.P. and De Silva, P.A. (2005). Construction and testing of an air conditioner condenser with capillary induced cooling. *Proceedings of the ICME (2005)*, Dhaka, Bangladesh, 28-30th December 2005. ICME05-TH-27

Fernando, W.M.T.P.J., Jayathilake, H.P.E.U., Mahindaratne, P.D.P.Y. and **Punchihewa, H.K.G**. (2005). An analysis of the current status of the footwear industry in Sri Lanka. *Symposium of the Engineering Research Unit*, University of Moratuwa, Sri Lanka, 2005.

Himan K.G. Punchihewa, (2005). Real standards required for the legality of bowling instead of triple standards. *Annual, United Nations Association of Sri Lanka*. pp 12-17.

Ravindra S. Goonetilleke, Channa P. Witana and **Himan K.G. Punchihewa,** (2003). Utilizing advancements in data acquisition and control in the design of computer workstations. *7th Southeast Asian Ergonomics Society (SEAES) and 4th Malaysian Ergonomics Conference (SEAMEC)*, Universiti Malaysia Sarawak, Kuching, Malaysia, 19-22 May 2003. pp. 40-44.

Supervision of research projects

PhD research Supervisor – A framework developed using ergonomic principles and modified Pre-Determined Motion Time Systems (PMTS) to increase the ability of physically disabled population to work in industry.

PhD research Co-supervisor – Professionals' penetration into entrepreneurship on growth of small and medium enterprises (SMEs) in Sri Lanka.

MPhil project Supervision – A tool to help design and manufacture ergonomic footwear for Sri Lankan primary school children

Supervision of many MEng level and undergraduate level design/research projects

Editor/reviewer for projects, journals and publications

Examiner of various postgraduate degree level research projects/theses

Associate editor/reviewer: Design Principles and Practices: An International Journal

Co-Editor: Proceedings of the 5th Japan-SAARC Energy Symposium (JSES-2012)

Reviewer: Work: A Journal of Prevention, Assessment & Rehabilitation

Reviewer: MIES 2016, Faculty of Engineering, University of Peradeniya

Reviewer: MerCON 2017, Faculty of Engineering, University of Moratuwa

Reviewer: MerCON 2016, Faculty of Engineering, University of Moratuwa

Reviewer: MerCON 2015, Faculty of Engineering, University of Moratuwa

Reviewer: RISTCON 2014, Faculty of Science, University of Ruhuna, Matara

Reviewer: NCTM 2013 - National Conference on Technology and Management

Project reviewer: National Science Foundation of Sri Lanka (2011 to date)

Editor of the first ever Magazine of the Department of Mechanical Engineering "MecMag 2005"

Selected professional development courses participated

Cleaner production: Five day resident programme conducted by the National Cleaner Production Centre-NCPC, Sri Lanka. (2011)

Introduction to Solid Works: Conducted by Dr G Karunaratne (Texas A&M University) at the Department of Mechanical Engineering, University of Moratuwa. (2006)

Microsoft project: Conducted by Prof. AKW Jayawardane (University of Moratuwa) at University of Moratuwa. (2005)

Tender evaluation: Conducted by Eng. Jayantha de Mel of National Procurement Agency, Sri Lanka at SLIDA. (2005)

Advances in design- A systematic approach based on Axiomatic Design: Workshop conducted by Prof. Nam Pyo Suh of Massachusetts Institute of Technology (MIT) at Hong Kong University of Science and Technology, Hong Kong. (2002)

Awards

Graduate studentship award by Common Grounds Publishing, USA - 2008

Scholarship for PhD research at Loughborough University, UK – 2006-2010

Scholarship to cover living expenses for the stay in the UK during the PhD research through IRQUE (World Bank funded project) – 2006-2009

Studentship at Department of Industrial Engineering and Engineering Management at Hong Kong University of Science and Technology, Hong Kong – 2002/3

Government of Sri Lanka Scholarship to study BSc. Engineering at University of Moratuwa, Sri Lanka. 1996 – 2001.

Professional memberships

Student member: Institute of Ergonomics & Human Factors, UK [IEHF]

Student member: Intuition of Mechanical Engineers (IMechE), UK (2000-2002) - Number: 80031162

Student member: British Computer Society, UK (1999/2000) - Number: 010012922

Other memberships

Life member- United Nations Association of Sri Lanka

Member- Design and Manufacturing Resource Group of University of Moratuwa

Member- University of Moratuwa Mechanical Engineering Society

Other relevant information/attributes

Social work: Post tsunami relief activities to clear from the harbour, handle and distribute goods worth over USD 100,000 sent by various foreign organisations.

Blue collar work: Three and half years of experience as a member of the facilities management team (Part-time) at Loughborough Students' Union (the biggest night club in Leicestershire, UK), Loughborough University, UK (lecture halls and utility areas) and at the gymnasium, pool and leisure area of Burleigh Court, UK (a four star hotel).

Blue collar work: Has worked as a sales assistant at a local boutique.

Small-scale tea growing and trading, computer assembly, production of garments.

Enjoy music and travelling to historic sites, remote villages and nature reserves