

## Chaminda Karunasena (Ph.D.)

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### Full Professor

Department of Mechanical & Manufacturing Engineering,

Faculty of Engineering, University of Ruhuna, Hapugala, Galle, Sri Lanka.

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Google Scholar: <https://scholar.google.com/citations?user=bMSVNccAAAAJ&hl=en>

Publon: <https://publons.com/a/1335443/>

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ResearchGate: [https://www.researchgate.net/profile/Chaminda\\_Karunasena](https://www.researchgate.net/profile/Chaminda_Karunasena)

LinkedIn: <https://www.linkedin.com/in/chamindakarunasena>

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### CAREER OBJECTIVE

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Be a pioneer in research and development in the field of Mechanical and Manufacturing Engineering, and to share the gained knowledge and experience through teaching.

### SUMMARY

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Experienced progressively in Mechanical and Manufacturing Engineering through industrial exposure, research, and university teaching, towards functioning successfully as an individual or a team player.

### PERSONAL INFORMATION

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Full Name	: Helambage Chaminda Prasad Karunasena
Name with Initials	: H. C. P. Karunasena
Date of Birth	: 26 <sup>th</sup> December, 1982
Sex	: Male
Marital Status	: Married
Nationality	: Sri Lankan

### ACADEMIC QUALIFICATIONS

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#### **PhD** in *Numerical Modelling and Simulation using Meshfree Methods*

School of Chemistry, Physics and Mechanical Engineering, Faculty of Science and Engineering, Queensland University of Technology (QUT), Australia. (2014)

#### **MSc** in *Industrial Automation*

Department of Electrical Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka. (2011)

**BScEng(Hons)** in *Mechanical Engineering (First Class pass with class rank 001)*  
Department of Mechanical Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka. (2006)

**G.C.E. (A/L)** in *Physical Science stream 2A s and 1 B (Island rank: 103; z-score:2.2377)*  
Mahinda College, Galle, Sri Lanka. (2001)

**G.C.E. (O/L)** *8 Distinctions*  
Mahinda College, Galle, Sri Lanka. (1998)

## HONORS and AWARDS

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- **Vice chancellor's Award for the Most Outstanding Staff Inventor/Innovator of the University**, 18<sup>th</sup> Vice Chancellor's Awards, University of Ruhuna, Sri Lanka. (2022)
- **NRC Merit Award for Scientific Research** in year 2017, NRC, Sri Lanka. (2019)
- **Award for the Best Oral Presentation** (Technical Session: Engineering and Technology) of the 16<sup>th</sup> Academic Sessions, University of Ruhuna (2019)
- **Vice chancellor's Award for the Most Outstanding Young Researcher of the University**, 14<sup>th</sup> Vice Chancellor's Awards, University of Ruhuna, Sri Lanka. (2018)
- **President's Award** for scientific publication in year 2015, NRC, Sri Lanka. (2017)
- **Award for the Best Poster Presentation** (Technical Session: Science and Technology) 12<sup>th</sup> Academic Sessions, University of Ruhuna, Sri Lanka. (2015)
- **President's Award** for scientific publication in year 2014, NRC, Sri Lanka. (2016)
- **Award for the Best Poster Presentation** (Technical Session: Engineering) 12<sup>th</sup> Vice Chancellor's Awards, University of Ruhuna, Sri Lanka. (2015)
- **Outstanding Doctoral Thesis Award** for the outstanding contribution made to the research discipline with the highest standard of excellence demonstrated in higher degree research practice and placing at the top 5% of successful doctoral candidates in the particular academic year at the Queensland University of Technology (QUT), Brisbane, Australia. (2014)
- **Outstanding Higher Degree Research Student Award** for the outstanding performance in doctoral studies at the Queensland University of Technology (QUT), Brisbane, Australia. (2014)
- **Australian Postgraduate Award (APA) Scholarship, Deputy Vice Chancellor Top Up Scholarship and Faculty of Built Environment and Engineering Top Up Scholarship** for Doctoral studies in Queensland University of Technology (QUT), Brisbane, Australia. (2011-2014)
- Awarded as a **Change Leader** for the outstanding performance and contribution to the organizational development of Loadstar (Pvt.) Ltd., Sri Lanka. (2009)
- **National Science and Technology Award** for the innovation of "Industrial Type Coconut De-husking Machine" conducted as the final year design project in Engineering studies at University of Moratuwa, Sri Lanka. (2007)
- **Gold Medal** for the Mechanical Engineering Granddaughter who has obtained the highest overall Grade Point Average of 3.8 or above at the B.Sc. Engineering Degree Examinations for Engineering studies at the University of Moratuwa, Sri Lanka. (2005)

- **National Development Bank Award** for the Best Mechanical Engineering Grandaunt who has obtained the highest cumulative Grade Point Average for Mechanical Engineering Subjects at University of Moratuwa, Sri Lanka. (2005)
- Placement on the Faculty of Engineering **Dean's List** for 6 semesters based on the outstanding academic performance at University of Moratuwa, Sri Lanka. (2002 - 2006)

## RESEARCH GRANTS

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- **National Research Council Grants, Sri Lanka (Investigator Driven Research Grants - Grant ID: NRC 15-116)** for a research on: "*Meshfree based multiscale numerical modelling of cellular level deformations of plant food materials during drying*". The grant funded for a MPhil research covering the stipend, travel and the capital investment for a high-performance computing node. Total grant value is LKR 1.56 million, spanning for 2 years. (2015-2017)
- **Research and Development Funding from MAS Active Trading (PVT) Ltd, Sri Lanka** on: "*Automated Bottom Hem Piping Attaching machine*". The grant funded to develop a working prototype to be used in the sports wear production process in MAS Active garment factories to improve productivity. Total grant value is LKR 0.25 million. (2015)
- **Research and Development Funding from Department of Provincial Industrial Development, Southern Province, Sri Lanka** on: "*High-speed Bobbin and pirn Winding Machine*". The grant funded to develop a working prototype to be used for the fabric weaving industry in the Southern Province of Sri Lanka. Total grant value is LKR 0.65 million. (2017-2020)
- **Research and Development Funding from Department of Industrial Development, Southern Province, Sri Lanka** on: "*Semi-automated Warp Beam Winding Machine*". The grant funded to develop a working prototype to be used for the fabric weaving industry in the Southern Province of Sri Lanka. Total grant value is LKR 0.8 million. (2017-2020)
- **Research and Development Funding from Department of Industrial Development, Southern Province, Sri Lanka** on: "*Semi-automated 10' Fabric Weaving Machine*". The grant funded to develop a working prototype to be used for the fabric weaving industry in the Southern Province of Sri Lanka. Total grant value is LKR 1.0 million. (2018-2020)
- **Research and Development Funding from Department of Industrial Development, Southern Province, Sri Lanka** on: "*Design and Fabrication of a Mechanised Coir Weaving machine to Produce 10 ft Cricket Mats*". The grant funded to develop a working prototype to be used for the coir industry in the Southern Province of Sri Lanka. Total grant value is LKR 1.85 million. (2018-2019)
- **Research and Development Funding from Department of Industrial Development, Southern Province, Sri Lanka** on: "*Motorised Winding Machine for Coir Yarn Bobbins in Cricket Mat Production*". The grant funded to develop a working prototype to be used for the coir industry in the Southern Province of Sri Lanka. Total grant value is LKR 0.2 million. (2019-2020)

- **Research and Development Funding** from **Department of Industrial Development, Southern Province, Sri Lanka** on: “*Design and fabrication of a motorised coir cops winding machine in Cricket matting production*”. The grant funded to develop a working prototype to be used for the coir industry in the Southern Province of Sri Lanka. Total grant value is LKR 0.2 million. (2019-2020)
- **Research and Development Funding** from **Department of Industrial Development, Southern Province, Sri Lanka** on: “*Design and Fabrication of a Motorised Shuttle Loom Machine*”. The grant funded to develop a working prototype to be used for the fabric weaving industry in the Southern Province of Sri Lanka. Total grant value is LKR 0.9 million. (2020-2021)
- **Research and Development Funding** from **Department of Industrial Development, Southern Province, Sri Lanka** on: “*Upgrading the Cricket mat weaving machine to produce Geo Textiles*”. The grant funded to develop a working prototype to be used for the coir mat production industry in the Southern Province of Sri Lanka. Total grant value is LKR 0.1 million. (2021)

## PROFESSIONAL EXPERIENCE

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### Professor

*Department of Mechanical & Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. (March 2021 to date)*

#### Teaching:

- Actively engaged in teaching of undergraduate engineering subjects: Maintenance Management; Engineering Drawing; Energy Technology, Energy Management; Technical Report Writing; Technical Presentation Skills; Research Methodology and Ethics; Final Year Design Project; Comprehensive Design Project/ Capstone Project.
- Lecture material development
- Module coordination

#### Research activities:

- Sea wave energy extraction and biomass combustion for renewable power generation
- Undergraduate research supervision

### Senior Lecturer (Grade II)

*Department of Mechanical & Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. (7<sup>th</sup> October 2015 to March 2021)*

### **Adjunct Professor**

*School of Mechanical, Medical and Process Engineering, Faculty of Engineering, Queensland University of Technology (QUT), Australia. (24<sup>th</sup> October 2022 – 31<sup>st</sup> December 2024)*

This appointment facilitates undertaking mutually interested research activities and supervision assignments, while opening opportunities to access support facilities such as online research data bases and High-Performance Computing facilities (HPC).

### **Visiting Fellow**

*School of Chemistry, Physics and Mechanical Engineering, Science and Engineering Faculty, Queensland University of Technology (QUT), Australia. (1<sup>st</sup> November 2014 – 1<sup>st</sup> November 2015)*

Fellowship aims to facilitate collaborative research works and sharing of technical resources to conduct advanced research works of interest to both parties. The fellowship mainly provides the access to QUT's online research data bases and High-Performance Computing facilities (HPC).

### **PhD Research Scholar**

*School of Chemistry, Physics and Mechanical Engineering, Science and Engineering Faculty, Queensland University of Technology, Australia. (25<sup>th</sup> July 2011 – 3<sup>rd</sup> October 2014)*

Doctoral research studies, leading to the development of a meshfree-based novel numerical method to study the microscale morphological changes of plant food materials during drying.

- Publication of the findings in referred journals and international conferences
- Worked as a member of the “Laboratory for Advanced Modelling and Simulation in Engineering and Science (LAMSES)” - (<http://www.lamses.org>)

### **Sessional Academic Staff Member**

*School of Chemistry, Physics and Mechanical Engineering, Science and Engineering Faculty, Queensland University of Technology (QUT), Australia. (2011 - 2014)*

Worked as a tutor and a lab demonstrator in several undergraduate engineering subjects: Design of Machine Elements, Fundamentals of Mechanical Design, Design and Maintenance of Machinery, Heat Transfer, Thermodynamics, Industrial Noise and Vibration, Dynamics of Machinery, Automatic Control, and Aerodynamics.

**Lecturer (Probationary)**

*Department of Mechanical & Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. (5<sup>th</sup> October 2010 - 7<sup>th</sup> October 2015)*

**Lecturer (on contract basis)**

*Department of Mechanical & Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. (5<sup>th</sup> October 2009 - 5<sup>th</sup> October 2010)*

**Engineer**

*Loadstar (Pvt.) Ltd., Sri Lanka. (1<sup>st</sup> August 2007 – 31<sup>st</sup> July 2009)*

Mainly involved in re-engineering of existing systems and machines in order to improve productivity and maintenance aspects (Loadstar is one of the world's leading solid tyre and track manufacturers for construction machinery and is a leading company in Sri Lanka).

Main duties:

- Use of latest CAD software tools for design and analysis of Engineering systems (e.g. SolidWorks and Pro/Engineer)
- Management of Engineering projects involving fabrication, assembly, installation and commissioning of production machinery
- Supervision of machine retrofitting activities
- Maintenance management (trained under the McKinsey & Company for about 18 months, and later worked as a Change Agent for productivity improvement projects and strategic restructuring)
- Workforce management, including training and skill evaluations
- Productivity improvement through the Kaizen concept

**Management Trainee**

*Loadstar (Pvt.) Ltd., Sri Lanka. (1<sup>st</sup> November 2006 – 1<sup>st</sup> August 2007)*

**APPOINTMENTS**

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**Chairman**

- Technology Transfer Cell - Faculty of Engineering, University of Ruhuna, Sri Lanka (2022)
- Entertainment Committee – Sri Lanka University Games (SLUG-2019), University of Ruhuna, Sri Lanka. (2019)

- Organising Committee - Annual Research Symposium (ARS) of the Faculty of Engineering, University of Ruhuna, Sri Lanka. (2016)
- Organizing Committee – *DMME Product Showcase 2016*, Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. (2016)
- Committee for High Performance Computing (HPC), Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. (2016, 2018)
- Chairman of the Technical Evaluation Committee for supply, delivery, installation, commissioning and testing of laboratory equipment for the Department of Electrical and Information Engineering, Faculty of Engineering, University of Ruhuna (2021)
- Member of the Technical Evaluation Committee for supply of drawing tables, computer tables and chairs for the Faculty of Engineering, University of Ruhuna (2021)
- Technical Evaluation Committees (TECs) of the Department of Industrial Development, Southern Province, Sri Lanka (2020) for the procumbent of:
  - Supply and Installation of a semi-automated coir cricket matting manufacturing system at the Dodanduwa, Galle coir centre (2017)
  - Supply and installation of a boiler, a drying cabinet, a yarn dyeing machine, a hydro extractor and a water purification system at the Matara dye centre (2019)
  - Supply and installation of a boiler at the Kurunduwatte, Galle dye centre (2019)
  - Servicing of the boiler at the Ranna, Hambantota dye centre (2020)
  - Upgrading of existing water treatment plants at Kurunduwatte, Galle and Ranna, Hambantota dye centres (2020)
  - Supply and installation of a drying cabinet, a yarn dyeing machine, a yarn boiling machine and a hydro extractor at the Matara dye centre (2020)
  - Supply, installation and commissioning of looms with electronic jacquard and other auxiliary machines/ equipment for Department of Industrial Development, Southern Province (2021)
  - Supply, installation and commissioning of electrical heaters and thermal insulation for yarn colouring and boiling tanks of Matara, Wellamadama dye centre of the Department of Industrial Development, Southern Province (2021)
  - Repairing/ modifying the clarifier tanks and sludge drying beds for wastewater treatment plant at Ranna, Hambantota fabric yarn dye centre of the Department of Industrial Development, Southern Province (2021)

- Annual boiler overhaul and preventive maintenance/inspection of the steam boiler at Ranna, Hambanthota dye centre of Department of Industrial Development, Southern Province (2021)
- Annual boiler overhaul and preventive maintenance/inspection of the steam boiler at Kurunduwatta, Galle dye centre of Department of Industrial Development, Southern Province (2021)

**PhD/ MPhil/ MSc Final Examination/ Viva Examination /Progress Review/ Proposal Review/ Transfer Evaluation Panel Member/ Examiner**

- MEng final examination of Mr. S.M.C.P. Senanayake (188767T), Department of Mechanical Engineering, University of Moratuwa, Sri Lanka (2022)
- MEng final examination of Ms. G. H. S. Wickramathilake (158295P), Department of Mechanical Engineering, University of Moratuwa, Sri Lanka (2021)
- MPhil proposal evaluation of Mr. K.M.C.Tharupath, Faculty of Agriculture, University of Ruhuna, Sri Lanka (2021)
- PhD final examination of Ms. K.U.C. Perera (148022U), Department of Chemical and Process Engineering, University of Moratuwa, Sri Lanka (2019)
- PhD transfer evaluation of Mr. P.H.V. Nimarshana, Department of Mechanical Engineering, University of Moratuwa, Sri Lanka (2019)
- MPhil final examination of Mr. T. Kankeyan (168067E), Department of Mechanical Engineering, University of Moratuwa, Sri Lanka (2019)
- MPhil progress review of Mr. R.K.A. Rathnayake (168069N), Department of Mechanical Engineering, University of Moratuwa, Sri Lanka (2019)
- MSc final examination of Ms. W.A.M.K.P. Wickramaarachchi (178055B), Department of Chemical and Process Engineering, University of Moratuwa, Sri Lanka (2018)
- MSc final examination of Mr. J. K. L. Eranga (168039V), Department of Mechanical Engineering, University of Moratuwa, Sri Lanka (2018)
- MSc final examination, Department of Agricultural Engineering, Faculty of Agriculture, University of Ruhuna, Sri Lanka (2017)

**Visiting Senior Lecturer**

- B.Ed. in Engineering Technology Education, Department of Technology Education offered by Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka. Module taught: BETA619 Energy and waste management (2019 - 2020)



## Resource Person

- Motivational seminar for A/L students who were newly admitted to Grade 12 in G/ Ginthota National School, Ginthota, Galle (December 2021)
- Stakeholder Meeting on Curriculum Revision of Materials Science and Technology degree course of the Faculty of Applied Sciences, Uva Wellassa University, Sri Lanka. (2020)
- Workshop for Teachers Guide Preparation-Engineering Technology – Grade 12, Department of Technological Education, National Institute of Education (NIE) (February 2017)
- Grant Proposal Development and Course Content Development: Erasmus+ Program Europe Sri Lanka Capacity Building in Energy Circular Economy (EUSL) Capacity Building in Higher Education – Joint Projects (610173-EPP-1-2019-1-LK-EPPKA2-CBHE-JP). (2019)
- CPD course on “Mechanical Engineering Design” organized by The Institution of Engineers Sri Lanka (IESL) held at IESL Head office Colombo. Subjects taught: Engineering Drawing; Report Writing; Oral Presentation; Mechanical Systems; Hydraulics and Pneumatics; Control and Instrumentation; Robotics and Automation. (2015)
- CPD course on “Mechanical Engineering Design” organized by The Institution of Engineers Sri Lanka (IESL) held at IESL Head office Colombo. Subjects taught: Controls and Instrumentation; Fluid Flow and System Accessories; Design Report; Structures under Mechanical Loading; Engineering Drawing. (2016)
- CPD course on “Mechanical Engineering Design” organized by The Institution of Engineers Sri Lanka (IESL) held at IESL Head office Colombo. Subjects taught: Controls and Instrumentation; Fluid Flow and System Accessories. (2018)
- For the session: “*Time and Stress Management*” in the module 2 of Certificate Course for Professional Development in Higher Education (CCPDHE), Staff Development Centre, University of Ruhuna (2019, 2020, 2021)
- For the session: “*What Do Engineers Really Do*” in the Development Programme for the 1<sup>st</sup> year undergraduates of the Faculty of Engineering, University of Ruhuna organised by the Engineering Education Centre, Faculty of Engineering, University of Ruhuna (2019-2020)
- For the motivational lecture: “*How to Plan Your Works to be Successful in the G.C.E. (O/L) Examination*” for grade 11 students at the re-starting of the school after the Covid 19 pandemic, Mahinda College, Galle (July 2020)
- For the session: “*Potential of Technological Collaborations between University and Governmental Departments for National Development*”, workshop for Provincial Directors of Departments of Industrial Development (DID) from all provinces of Sri Lanka held at the Institute of Management Development & Training, Wackwella, Galle (12<sup>th</sup> March 2020)

- For the session: “*Emission Control Technologies Applicable for Biomass Combustion*”, workshop for Engineers and Boiler Operators from the Katunayake Export Processing Zone Providing Knowledge on Efficient use of Firewood and Operating and Maintenance of Boilers and Thermic Heaters, Sri Lanka Energy Managers Association (SLEMA), Jetwing Blue, Negombo (12<sup>th</sup> June 2018)
- For the session: “*Emission Control Technologies Applicable for Biomass Combustion*”, workshop for Engineers and Boiler Operators from the Biyagama Export Processing Zone Providing Knowledge on Efficient use of Firewood and Operating and Maintenance of Boilers and Thermic Heaters, Sri Lanka Energy Managers Association (SLEMA), Hotel PT Gardens, Biyagama (19<sup>th</sup> June 2018)
- For the session: “*Emission Control Technologies Applicable for Biomass Combustion*”, workshop for Engineers and Boiler Operators from the Seethawaka Export Processing Zone Providing Knowledge on Efficient use of Firewood and Operating and Maintenance of Boilers and Thermic Heaters, Sri Lanka Energy Managers Association (SLEMA), BOI Auditorium, Avissawella (21<sup>st</sup> June 2018)
- For the session: “*Emission Control Technologies*”, Program of Workshops to Support Sustainable Biomass Supply to The Industry, Sri Lanka Energy Managers Association (SLEMA), Hotel Tamarind Tree, Minwangoda (15<sup>th</sup> December 2017)
- For the session: “*Environmental aspects of biomass energy use: local and global perspectives*”, Training Workshop Awareness on biomass technologies and modern concepts of sustainable use of biomass for Government sector’, Sri Lanka Energy Managers Association (SLEMA), Samoda Reception Hall, Galle (18<sup>th</sup> August 2016)

#### **Session Co-Chair**

- “Personal Robotics” session of International Conference on Information and Automation for Sustainability (ICIAFS-2016) held at University of Ruhuna, Galle on 16-19 December 2016.
- Mechanical and Manufacturing Engineering Session, Annual Research Symposium (ARS) of the Faculty of Engineering, University of Ruhuna. (2015, 2019)

#### **Team member (Grant Proposal Writing and Course Content Development)**

- Europe Sri Lanka Capacity Building in Energy Circular Economy (EUSL) funded by the Erasmus+ program of EU under the action CBHE-JP (Capacity Building in higher education – Joint Projects; REF No. 610173-EPP-1-2019-1-LK-EPPKA2-CBHE-JP) (2019)

#### **Warden- Male hostels**

- Faculty of Engineering, University of Ruhuna. (2019, 2020, 2021)

**Student Counsellor**

- Faculty of Engineering, University of Ruhuna. (2010, 2016, 2017)

**Faculty Coordinator**

- Inter faculty Dancing and Literature Competition, University of Ruhuna. (2017)

**Board Member**

- Faculty Board, Faculty of Engineering, University of Ruhuna. (2010; 2014 - to date)
- Study board, Faculty of Engineering, University of Ruhuna (2017, 2018, 2019)

**Executive Committee Member**

- Ruhuna Engineering Faculty Scholarship Foundation, Faculty of Engineering, University of Ruhuna. (2017 to date)
- Southern Chapter, Institution of Engineers Sri Lanka (IESL). (2019)

**Committee Member**

- ICT Management Committee, Faculty of Engineering, University of Ruhuna. (2017 to date)

**Assistant Secretary**

- Southern Chapter, Institution of Engineers Sri Lanka (IESL). (2018)

**Lecturer**

- Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna. (2014- present)
  - Subjects: ME 1201-Engineering Drawing; ME 7301-Maintenance Management; ME 5113-Technical Report Writing; ME 6114- Technical Presentation Skills; ME 8312- Energy Management;

**Module Coordinator**

- Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna. (2014- present)
  - Subjects: ME 1201- Engineering Drawing; ME 7301- Maintenance Management; ME 5113-Technical Report Writing; ME 6114-Technical Presentation Skills; ME 8312-Energy Management; ME 6304-Maintenance Management (new curriculum); ME 6215-Technical Report Writing and Presentation (new curriculum);

**Moderator**

- Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna. (2014- present)

- Subjects: ME 4310 Analog and Digital Electronics; ME 6302 Automatic Control Engineering; ME 8302 Industrial Fluid Dynamics; ME 3301 Fluid Mechanics;
- Department of Mechanical Engineering, Faculty of Engineering, South-Eastern University, Sri Lanka. (2017)
- Department of Engineering Technology, Faculty of Technology, University of Ruhuna. (2018, 2019, 2020)
  - Subjects: ENT4142 Machine Design (2020); ENT 3122 - Mechanical/Electrical Equipment Maintenance (2019,2020); ENT 2132 - Renewable and Alternate Energy Technology (2018)

### **Second Examiner**

- Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna. (2014 to date)
  - Subjects: ME 4310: Analog and Digital Electronics; ME 6302: Automatic Control Engineering; ME 8302: Industrial Fluid Dynamics; ME 3302: Fluid Mechanics
- Department of Engineering Technology, Faculty of Technology, University of Ruhuna. (2018, 2019, 2020)
  - Subjects: ENT4142 Machine Design (2020); ENT 3122 - Mechanical/Electrical Equipment Maintenance (2019,2020); ENT 2132 - Renewable and Alternate Energy Technology (2018)
- Department of Interdisciplinary Studies, Faculty of Engineering, University of Ruhuna. (2019, 2020)
  - Subject: IS4106 Mindfulness

### **Reviewer of Research Articles for Reputed Journals and Conferences (Publon: <https://publons.com/a/1335443/>)**

- The Engineer Journal, IESL (2020)
- Advances in Mechanical Engineering (2019)
- Drying Technology (2018)
- Journal of Food Science (2017)
- Chemical Engineering Science Journal (2018)
- Australian Journal of Mechanical Engineering (2014 - 2015)
- Journal of Agricultural Science and Technology (2021)
- Computers and Electronics in Agriculture (2020)
- Journal of Agriculture and Food Research (2020)
- Journal of Mountain Science (2020)

- IEEE Access (2019)
- Journal of Cleaner Production (2019)
- International Journal for Numerical Methods in Biomedical Engineering (2019)
- Computational and Mathematical Methods in Medicine (2019)
- Biomass Conversion and Biorefinery (2019)
- Scientia Iranica Journal (2015)
- Academic Sessions, University of Ruhuna, Sri Lanka (2017, 2018)
- 5th International Symposium - South Eastern University, Sri Lanka. (2015)
- Peradeniya University International Research Sessions (iPURSE) - University of Peradeniya, Sri Lanka. (2015)
- Annual Sessions - Institution of Engineers, Sri Lanka (2015/2016)
- Moratuwa Engineering Research Conference (MERCon) - University of Moratuwa, Sri Lanka. (2015,2020, 2022)
- Annual Research Symposium (ARS) - Faculty of Engineering, University of Ruhuna, Sri Lanka (2015, 2016, 2017, 2018, 2019)
- Engineering Research Unit (ERU) Symposium - University of Moratuwa, Sri Lanka. (2009)

#### **Reviewer of Research Grant Applications**

- National Fund for Scientific and Technological Development (FONDECYT) of the Chilean National Commission for Scientific and Technological Research (CONICYT), Chile. (2016)
- National Science Foundation, Sri Lanka (2020/2021)
- National Research Council, Sri Lanka (2019)
- Senate Research Committee (SRC) capital grant, University of Moratuwa (2021)

#### **General Secretary**

- Ruhuna Alumni Association of Mechanical and Manufacturing Engineering (RAMEE), Faculty of Engineering, University of Ruhuna. (2017-2018)

#### **Secretary**

- Departmental Quality Assurance Unit (DQAU), Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, University of Ruhuna. (2019 -2020)
- Inventors and Innovators Society, University of Moratuwa, Sri Lanka. (2005 -2006)

#### **Treasurer**

- Ruhuna Engineering Faculty Teachers Association (REFTA) (2016-2017)

#### **Technical Manager**

- “INNOVATIONS 2005 UOM” Exhibition, BMICH, Sri Lanka. (2006)

## Vice-president

- Buddhist Society, Faculty of Engineering, University of Ruhuna (2016 to date)

## POSTGRADUATE RESEARCH SUPERVISION

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- W. D. C. C. Wijerathne, *Meshfree based multiscale modelling of plant tissues during drying*. **Ph. D.** School of Chemistry, Physics and Mechanical Engineering, Science and Engineering Faculty, Queensland University of Technology (QUT), Australia. (**External supervisor**; 2015-2018; Student No.: n9346155) (Completed)
- K.G.P. Hansani, *Meshfree based multi-scale numerical modelling of cellular level deformation of plant food material during drying*, **M. Phil.** Faculty of Engineering, University of Ruhuna, Sri Lanka. (**Principal supervisor**; 2015-2020; Student No.: RU/PG/ENG/31) (Completed)
- A.K.C.I. Kodithuwakku, *Use of GPGPU for Computational Performance Improvement of Meshfree based Plant Cell and Tissue model to simulate Cellular Morphological changes during Drying*, **M. Phil.** Faculty of Engineering, University of Ruhuna, Sri Lanka. (**Principal supervisor**; 2018-2021; Student No.: PG/ENG/02/2017/40) (Ongoing)
- N.H.D.S Manawadu, *Development of a Numerical Model for the Optimization of Fluid Dynamic Performance of Sea Wave Energy Convertors for Power Generation Applications*, **M. Phil.** Faculty of Engineering, University of Ruhuna, Sri Lanka. (**Principal supervisor**; 2019 – 2021; Student No.: PG/EG/02/2019/43) (Ongoing)

## UNDERGRADUATE RESEARCH SUPERVISION (Faculty of Engineering, University of Ruhuna)

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- *Development of a small-scale sea wave-based power generation unit.* (2018)
- *Development of a semi-automated weaving machine for the production of 9' fabric.* (2018)
- *Development of a semi-automated cricket mat weaving machine.* (2018)
- *Development of an adaptive controlled sea wave-based power generation system.* (2017)
- *Development of a semi-automated high-speed bobbin and fern winding machine for handloom industry.* (2017)
- *Development of an evaporative cooling-based condenser cooling system for improvement of energy efficiency of small-scale air-conditioning units.* (2016)
- *Development of a hybrid regenerative braking system for passenger busses.* (2016)
- *Development of an image processing-based controller for a sorting conveyor system.* (2016)

- *Development of a steam heated convective-evaporative combined densifier for liquid Palm oil effluent densification of the palm oil mill of Watawala Plantation Pvt. (Ltd.), Sri Lanka. (2016)*
- *Development of a mechanised composting system for accelerated composting of fibrous waste generated by the palm oil fruit bunches produced by the palm oil mill of Watawala Plantation Pvt. (Ltd.), Sri Lanka. (2016)*
- *Development of a feedback control system for automated controlling of a prototype rotary oven heating system. (2016)*
- *Development of an automated book packing machine for Atlas Pvt. (Ltd.), Sri Lanka. (2016)*
- *Development of an adaptive controlling system for the improvement of the energy extraction efficiency of a point absorber-based sea wave energy convertor. (2016)*
- *Development of a mechanised high-speed bobbin winding machine for the hand loom industry. (2016)*
- *Development of an automated controller for combustion optimisation of small-scale batch-fed biomass boilers. (2015-2016)*
- *Design of a semi-automated machine for Hayleys Fibre PLC, Galle, Sri Lanka, in order to replace the existing manual labour driven machine to produce coir based stitched blankets. (2015)*
- *Design of a high-speed coir rope based net knitting machine for Hayleys Fibre PLC, Galle, Sri Lanka. (2015)*
- *Development of a small-scale absorption cycle-based air conditioning (AC) unit for small businesses and households. (2015)*
- *Development of a small-scale sea wave-based power generation system using a pressurised sea water accumulator. (2015)*
- *Optimisation of pellet making process by resolving the existing technical and process related difficulties faced by Lalan Rubber (Pvt.) Ltd., Sri Lanka. (2015)*
- *Sea wave-based power generation system using a sea water up-pumping technique. (2009-2010)*
- *Six degrees of freedom light weight robot manipulator arm. (2009-2010)*
- *Semi-automated reel wrapping machine suitable for Sri Lankan packaging industry. (2009-2010)*

#### **RESEARCH PROJECTS (Conducted by my self)**

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- *Numerical simulation of microscale Morphological changes of Plant food materials during Drying - a meshfree approach, Ph.D. thesis, Queensland University of Technology (QUT), Australia. (2014)*

- *Computer vision-based rubber profile cross section area measuring system*, M.Sc. thesis, University of Moratuwa, Sri Lanka. (2011)
- *Minimum ignition energy measuring apparatus for ignition tests on ignitable dust cloud*, University of Ruhuna, Sri Lanka. (2010)
- *Semi-automated dip painting line with hot air ovens & ducts connected to a steam heated plate heat exchanger including monorail conveyor and dipping baths to facilitate online dip painting and drying of steel metal pieces used in rubber track production*, Loadstar (Pvt.) Ltd, Sri Lanka. (2008-2009)
- *Design and fabrication of a hot air oven system with flame heated plate heat exchanger and duct systems to facilitate online drying of steel wheels coated with powder paint*, Loadstar (Pvt.) Ltd, Sri Lanka. (2008)
- *Industrial-type coconut de-husking machine*, Final Year Project, B.Sc. Eng. (Hons) degree, University of Moratuwa, Sri Lanka. (2006)
- *Mechanised portable tube well drilling machine*, University of Moratuwa, Sri Lanka. (2005)
- *Wheel chair with improved steering and dynamic performances suitable for easy navigation in restricted areas*, University of Moratuwa, Sri Lanka. (2003)

## PROFESSIONAL AFFILIATIONS

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### Associate Member

Institute of Engineers, Sri Lanka (IESL) (Membership No: AM-9053). (2006 to date)

## PUBLICATIONS

Google Scholar (Chaminda Karunasena): *all citations = 408, h-index = 11, i10-index = 12*  
<https://scholar.google.com/citations?user=bMSVNccAAAAJ&hl=en>

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### Book Chapters:

1. **Karunasena, H. C. P.** & Senadeera, W. (2016). Numerical modelling of morphological changes of food plant materials during drying. In M. Zhang, B. Bhandari, & Z. Fang (Eds.), *Hand Book of Vegetables and Vegetable Products* (pp. 387-427). New York: CRC press.. ISBN 9781498753869 <https://www.crcpress.com/Handbook-of-Drying-of-Vegetables-and-Vegetable-Products/Zhang-Bhandari-Fang/p/book/9781498753869>
2. Rathnayaka Mudiyanse, C. M., **Karunasena, H. C. P.**, Gu, Y. T., Guan, L., and Senadeera, W. (2018). Three-dimensional (3-d) numerical modelling of morphogenesis of dehydrated fruits and vegetables. In Chen, Guangnan (Ed.), *Advances in Agricultural Machinery and Technologies* (pp. 431-454). New York: CRC press. ISBN 9781351132381 <https://www.taylorfrancis.com/books/e/9781351132381>
3. Rathnayaka, C. M., Wijerathne, W. D. C. C., **Karunasena, H. C. P.**, Senadeera, W., and Gu, Y. T. (2017). Microscale and Multiscale Computational Modelling of Morphological Changes in Plant Cellular Structure during Drying with a coupled Smoothed Particle Hydrodynamics and Coarse Grained Approach. In M. B. Liu, X. Han, Y. T. Gu, & Z. R. Li (Eds.), *Advances*



### Journal Papers:

1. Jayathunga, B.J.C.L. and **Karunasena, H.C.P.**, (2022). Development and Performance Analysis of a Small-Scale On-shore Wave Energy Converter. *Engineer: Journal of the Institution of Engineers*, Sri Lanka, 55(4), pp.47–60. DOI: <http://doi.org/10.4038/engineer.v55i4.7543>
2. C.P.Batuwatta-Gamage, Rathnayaka, C. M., **Karunasena, H. C. P.**, Wijerathne, W. D. C. C., H.Jeong, Z.G.Welsh, M.A.Karim, and Gu, Y. T. (2022). A physics-informed neural network-based surrogate framework to predict moisture concentration and shrinkage of a plant cell during drying. *Journal of Food Engineering*, 332: 111137. <https://doi.org/10.1016/j.jfoodeng.2022.111137>
3. Rathnayaka, C. M., **Karunasena, H. C. P.**, Wijerathne, W. D. C. C., Senadeera, W., and Gu, Y. T. (2020). A three-dimensional (3-D) meshfree-based computational model to investigate stress-strain-time relationships of plant cells during drying. *PLOS ONE*, 15(7): e0235712. 1-28. <https://doi.org/10.1371/journal.pone.0235712> [5 citation]
4. Wijerathne, W. D. C. C., Rathnayaka, C. M., **Karunasena, H. C. P.**, Senadeera, W., Sauret, E., Turner, I. W., and Gu, Y. T. (2019). A coarse-grained multiscale model to simulate morphological changes of food-plant tissues undergoing drying. *Soft Matter*, 15(5), 901-916. <http://dx.doi.org/10.1039/C8SM01593G> [11 citations]
5. Rathnayaka, C. M., **Karunasena, H. C. P.**, Senadeera, W., and Gu, Y. T. (2019). A 3-D coupled Smoothed Particle Hydrodynamics and Coarse-Grained model to simulate drying mechanisms of small cell aggregates. *Applied Mathematical Modelling*, 67, 219-233 <https://doi.org/10.1016/j.apm.2018.09.037> [9 citations]
6. Rathnayaka, C. M., **Karunasena, H. C. P.**, Senadeera, W., and Gu, Y. T. (2018). Application of a coupled smoothed particle hydrodynamics (SPH) and coarse-grained (CG) numerical modelling approach to study three-dimensional (3-D) deformations of single cells of different food-plant materials during drying. *Soft Matter*, 14(11), 2015-2031 <http://dx.doi.org/10.1039/C7SM01465A> [12 citations]
7. Rathnayaka, C. M., **Karunasena, H. C. P.**, Senadeera, W., & Gu, Y. T. (2017). Application of 3D imaging and analysis techniques for the study of food plant cellular deformations during drying. *Drying Technology*, 36(5) 509-522. <http://dx.doi.org/10.1080/07373937.2017.1341417> [16 citations]
8. Rathnayaka Mudiyansele, C. M., **Karunasena, H. C. P.**, Gu, Y. T., Guan, L., and Senadeera, W. (2017). Novel trends in numerical modelling of plant food tissues and their morphological changes during drying – A review. *Journal of Food Engineering*, 194, 24-39. <http://dx.doi.org/10.1016/j.jfoodeng.2016.09.002> [30 citations]
9. **Karunasena, H. C. P.**, Gu, Y. T., Brown, R. J., & Senadeera, W. (2015). Numerical Investigation of Plant Tissue Porosity and its Influence on Cellular Level Shrinkage during Drying. *Biosystems Engineering*, 132(0), 71-87. doi: <http://dx.doi.org/10.1016/j.biosystemseng.2015.02.002> [31 citations]
10. **Karunasena, H. C. P.**, Brown, R. J., Gu, Y. T., & Senadeera, W. (2015). Application of Meshfree Methods to Numerically Simulate Microscale Deformations of Different Plant Food Materials during Drying. *Journal of Food Engineering*, 146(0), 209 doi: <http://dx.doi.org/10.1016/j.jfoodeng.2014.09.011> [39 citations]
11. **Karunasena, H. C. P.**, Brown, R. J., Gu, Y. T., & Senadeera, W. (2015). Numerical investigation of case hardening of plant tissue during drying and its influence on the cellular

level shrinkage. *Drying Technology*, 33(6), 713-734.  
doi: <http://dx.doi.org/10.1080/07373937.2014.982759> [25 citations]

12. **Karunasena, H. C. P.**, Senadeera, W., Brown, R. J., & Gu, Y. T. (2014). A Particle Based Model to Simulate Microscale Morphological Changes of Plant Tissues during Drying. *Soft Matter*, 10(29), 5249-5268. doi: <http://dx.doi.org/10.1039/C4SM00526K> [54 citations] (*this article was also selected for the cover page art work of the particular issue of this journal in which this paper was published*)
13. **Karunasena, H. C. P.**, Senadeera, W., Gu, Y. T., & Brown, R. J. (2014). A Meshfree Model for Plant Tissue Deformations during Drying. *ANZIAM Journal*, 55 (EMAC2013), C110-C137. url:<http://journal.austms.org.au/ojs/index.php/ANZIAMJ/article/view/7857> [16 citations]
14. **Karunasena, H. C. P.**, Senadeera, W., Brown, R. J., & Gu, Y. T. (2014). Simulation of Plant Cell Shrinkage during Drying - A SPH-DEM Approach. *Engineering Analysis with Boundary Elements*, 44(0), 1-18. doi:<http://dx.doi.org/10.1016/j.enganabound.2014.04.004> [30 citations]
15. **Karunasena, H. C. P.**, Senadeera, W., Gu, Y. T., & Brown, R. J. (2014). A Coupled SPH-DEM Model for Micro-scale Structural Deformations of Plant Cells during Drying. *Applied Mathematical Modelling*, 38(15-16), 3781-3801. doi: <http://dx.doi.org/10.1016/j.apm.2013.12.004> [52 citations]
16. **Karunasena, H. C. P.**, Hesami, P., Senadeera, W., Gu, Y. T., Brown, R. J., & Oloyede, A. (2014). Scanning Electron Microscopic Study of Microstructure of Gala Apples During Hot Air Drying. *Drying Technology*, 32(4), 455-468. doi: <http://dx.doi.org/10.1080/07373937.2013.837479> [69 citations]

#### Full Paper Presentations in Conferences:

1. N. H. D. S. Manawadu, I. D. Nissanka and H. C. P. Karunasena, "Numerical Analysis and Performance Optimization of a Flap-type Oscillating Wave Surge Converter in Irregular Waves," 2022 Moratuwa Engineering Research Conference (MERCon), 2022, pp. 1-6, doi: 10.1109/MERCon55799.2022.9906284. <https://ieeexplore.ieee.org/document/9906284>
2. Rathnayaka, C.M., **Karunasena, H.C.P.**, Senadeera, W. & Gu, Y.T. (2020, December 7- 10). *Modelling 3-D cellular microfluidics of different plant cells for the prediction of cellular deformations under external mechanical compression: A SPH-CG-based computational study*. Paper presented at the 22<sup>nd</sup> Australian Fluid Mechanics Conference (AFMC2020), Brisbane, Australia. <https://doi.org/10.14264/1374f47>
3. Hansani, K. G. P., Sumith, B., & **Karunasena, H. C. P.** (2020, July 28-29). *Novel Application of Adaptive Fixed Neighbourhood based SPH (AFN-SPH) Method to Reduce Computational Time in Meshfree based Plant Tissue Drying Models*. Paper Presented at the 2020 Moratuwa Engineering Research Conference (MERCon), Moratuwa, Sri Lanka. <https://doi.org/10.1109/MERCon50084.2020.9185294>
4. Hansani, K. G. P., Sumith, B., & **Karunasena, H. C. P.** (2016, October 22). *Novel use of the cell-linked list algorithm to reduce computational time in meshfree based numerical models for plant cell drying*. Paper presented at the 2016 Manufacturing & Industrial Engineering Symposium (MIES), Colombo, Sri Lanka. <https://doi.org/10.1109/MIES.2016.7779991> [2 citations]
5. Hansani, K. G. P., Kodithuwakku A.K.C.I., Sumith, B & **Karunasena, H.C.P.** (September 2018). *A unit cell approach to reduce computational time of meshfree based plant tissue*

*models*. Paper presented at the 11th International Research Conference-Kotelawala Defence University, Colombo, Sri Lanka. pp. 83-89. <http://ir.kdu.ac.lk/handle/345/2553>

6. Mudiyansele, C. M. R., **Karunasena, H. C. P.**, Gu, Y. T., L.Guan, J.Banks, & Senadeera, W. (2016, August 1-4). *A 3-D Meshfree Numerical Model to Analyze Cellular Scale Shrinkage of Different Categories of Fruits and Vegetables during Drying*. Paper presented at the 7th International Conference on Computational Methods (ICCM-2016), Berkeley, CA, USA. ISSN 2374-3948 (online). pp. 1070-1080. <https://www.sci-en-tech.com/ICCM2016/ICCM2016-Proceedings.pdf> [6 citations]
7. Rathnayaka Mudiyansele, C.M., **Karunasena, H.C.P.**, Gu, Y.T., Guan, L. , Banks, J. & Senadeera, W. (2015, November 30- December 1). *A Meshfree Based Three-Dimensional (3-D) Numerical Model to Simulate a Single Plant Cell during Drying*. Paper presented at the 2<sup>nd</sup> Australasian Conference on Computational Mechanics (ACCM2015), Brisbane, Australia. <https://eprints.qut.edu.au/122746/1/Full%20Paper%20-%20Charith%20Malinga%20RM.pdf>
8. Rasanga, G. V. C., Wickramasinghe, I. P. M., & **Karunasena H. C. P.** (2015, November 20), *An insight into Combustion Optimisation of Batch-fed Biomass Boilers*. Paper presented at the National Energy Symposium 2015, BIMCH, Colombo, Sri Lanka. pp. 299-248. <http://www.energy.gov.lk/images/vidulka-energy-exhibition/symposium-book-2015.pdf>
9. **Karunasena, H. C. P.**, Senadeera, W., Gu, Y. T., & Brown, R. J. (2012, December 3-7). *A Coupled SPH-DEM Model for Fluid and Solid Mechanics of Apple Parenchyma Cells During Drying*. Paper presented at the 18<sup>th</sup> Australian Fluid Mechanics Conference (18AFMC), Launceston, Tasmania. <http://dx.doi.org/10.13140/2.1.2905.6320> [22 citations]
10. **Karunasena, H. C. P.**, Senadeera, W., Gu, Y. T., & Brown, R. J. (2012, November 25-28). *A particle-based micromechanics approach to simulate structural changes of plant cells during drying*. Paper presented at the 4<sup>th</sup> International Conference on Computational Methods (ICCM 2012), Gold Coast, Australia. <http://dx.doi.org/10.13140/2.1.4589.6005> [11 citations]
11. **Karunasena, H. C. P.**, Senadeera, W., Brown, R. J., & Gu, Y. T. (2014, June) *A novel approach for numerical simulation of plant tissue shrinkage during drying*. Paper presented at the International Research Symposium on Postharvest Technology, Research and Development Centre, Institute of Post-Harvest Technology, Anuradapura, Sri-Lanka, pp. 130-135. <http://dx.doi.org/10.13140/2.1.3541.0248> [2 citations]
12. **Karunasena, C.**, & Wickramarachchi, N. (2010, December 17-19). *Vision based cross sectional area estimator for industrial rubber profile extrusion process controlling*. Paper presented at the 5<sup>th</sup> International Conference on Information and Automation for Sustainability (ICIAFs), Colombo, Sri Lanka. <http://dx.doi.org/10.1109/iciafs.2010.5767511>[4 citations]
13. Hansani, K. G. P., **Karunasena, H.C.P.** & Sumith, B. ( 17<sup>th</sup> to 19<sup>th</sup> May 2017). *Application of fixed neighbourhood method for meshfree based plant cell models to reduce computational cost*. Paper presented at the International Conference on Computational Modelling and Simulation (ICCMS-2017), Colombo, Sri Lanka. [2 citations]
14. H.M.A.S. Samarakoon, M.S.M. Safeer, Y.V.LS. Pushpakumara, G. V. C. Rasanga, **Karunasena H.C.P.**(19 Nov. 2017) *Development of a Small Scale Sea Wave Energy Converter System to Generate Electricit*. Paper presented at the of the Vidulka National Energy Symposium, Sri Lanka Sustainable Energy Authority, BMICH, Colombo, Sri Lanka.

#### Abstract Presentations in Conferences:

1. Hansani, K. G. P., Sumith, B. & **Karunasena, H.C.P.** ( 3<sup>rd</sup> March 2021) *Effect of Different Data Structures when Applying CLLA to Accelerate Computational Processing of the State-of-the-art Meshfree based Plant Cellular Models*. In Attanayake A. P. (Eds.). Abstracts of the 18th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412

2. Kodithuwakku, A.K.C.I., Hansani, K. G. P., Sumith, B. & **Karunasena, H.C.P.** ( 3<sup>rd</sup> March 2021) *Study of the Impact of Particle Resolution on the Computational Efficiency of a CPU-GPGPU Hybrid Running of a Single Plant Cell Model.* In Attanayake A. P. (Eds.). Abstracts of the 18th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
3. Manawadu, N.H.D.S., Nissanka I.D. & **Karunasena, H.C.P.** ( 3<sup>rd</sup> March 2021) *Numerical Modelling and Simulation of a Bottom-hinged Flap type Oscillating Wave Surge Converter for Performance Optimisation.* In Attanayake A. P. (Eds.). Abstracts of the 18th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
4. Jayathunga B.J.C.L., Yasarathna H.P.O.N., & **Karunasena, H.C.P.** ( 3<sup>rd</sup> March 2021) *Development of a Small-scale On-shore Sea Wave Energy Extraction Device for Electricity Generation.* In Attanayake A. P. (Eds.). Abstracts of the 18th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
5. Wijerathne, W.D.C.C., **Karunasena, H.C.P.**, Senadeera, W., Turner, I. W., Emilie, S. & Gu, Y.T. (February 2018) *A Coarse grained multiscale model to simulate morphological changes of the apple parenchyma tissues during drying.* In 3rd Australasian Conference on Computational Mechanics, 12-14 February 2018, Deakin University, Wauren Ponds, Victoria., Australia. <https://eprints.qut.edu.au/123895/>
6. Wijerathne, W.D.C.C., Turner, I.W., Sauret, E., **Karunasena, H.C.P.**, Senadeera, W., & Gu, Y.T. (2017) *A multiscale coarse grained model for simulating mechanical responses of plant food tissues.* In 8th International Conference on Computational Methods (ICCM 2017), 25-29 July 2017, Guilin, Guangxi, China. <https://eprints.qut.edu.au/121728/>
7. Aththanayaka A.M.C.P., Dharmapriya S.H.P.M. & **Karunasena, H.C.P.** (6 Mar. 2019) *Small-Scale Wave Energy Convertor System for Effective Extraction and Storage of Energy from Sea Waves for Power Generation Applications.* In Jayatissa L.P. (Eds.) Abstracts of the 16th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
8. Hansani, K. G. P., Kodithuwakku A.K.C.I., **Karunasena, H.C.P.** & Sumith, B. (6 Mar. 2019) *An Adaptive FN-SPH (AFN-SPH) Method to Improve the Computational Efficiency in Simulating Problem Domains with Deforming Boundaries.* In Jayatissa L.P. (Eds.) Abstracts of the 16th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
9. Hansani, K. G. P., Sumith, B. & **Karunasena, H.C.P.** ( 1<sup>st</sup> March 2017) *Application of the Linked List Algorithm to Reduce Computational Time of Meshfree Based Plant Tissue Drying Models.* In Chaminda T.G.G. (Eds.). Abstracts of the 14th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
10. Kodithuwakku A.K.C.I., Hansani, K. G. P., Sumith, B. & **Karunasena, H.C.P.** ( 4<sup>th</sup> March 2020) *Development of a Computationally Efficient Hybrid CPU and GPGPU based Numerical Model to Simulate Morphological Changes of a Fresh Single Plant Cell.* In Bohingamuwa W. (Eds.). Abstracts of the 17th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
11. Hansani, K. G. P., Kodithuwakku A.K.C.I., Sumith, B. & **Karunasena, H.C.P.** ( 4<sup>th</sup> March 2020) *Computationally Efficient Simulation of a Meshfree based Compressed Plant Cell Model undergoing Indentation by External Probes.* In Bohingamuwa W. (Eds.). Abstracts of the 17th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
12. Manawadu, N.H.D.S., Nissanka I.D. & **Karunasena, H.C.P.** ( 4<sup>th</sup> March 2020) *Three-dimensional Numerical Study on Fluid Dynamic Performance of Various Shaped Wave Energy Convertor Flaps in a Wave Tank.* In Bohingamuwa W. (Eds.). Abstracts of the 17th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
13. Hansani, K. G. P., Sumith, B. & **Karunasena, H.C.P.** ( 7<sup>th</sup> March 2018) *A Fixed Neighbourhood based SPH Approach for Faster Numerical Simulation of Fluid Domains*

- Having Low Reynolds Number Flow Conditions*. In Cumarathunga P.R.T. (Eds.). Abstracts of the 15th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
14. Samarakoon, H.M.A.S., Safeer, M.S.M., Pushpakumara, Y.V.L.S., Rasanga, G.V.C. & **Karunasena, H.C.P.** (7<sup>th</sup> March 2018) *A Small Scale Wave Energy Converter System for Ocean Wave-based Electrical Power Generation*. In Cumarathunga P.R.T. (Eds.). Abstracts of the 15th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
  15. Sooriyaarachchi, K.D., Ekanayake, M.G.H.P., Gangodaarachchi, G.A.S.P & **Karunasena, H.C.P.** (7<sup>th</sup> March 2018) *Development of a Direct Heating Solar-Electric Hybrid Hot Water System for Domestic Usage*. In Cumarathunga P.R.T. (Eds.). Abstracts of the 15th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
  16. Manawadu, N.H.D.S., Nissanka I.D. & **Karunasena, H.C.P.** (28<sup>th</sup> to 29<sup>th</sup> July 2020). *Three-dimensional Numerical Study on Fluid Dynamic Performance of Various Shaped Wave Energy Converter Flaps in a Wave Tank*. In Bohingamuwa W. (Eds.). Abstracts of the 17th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412
  17. Hansani, K. G. P., Sumith, B & **Karunasena, H.C.P.** (22<sup>nd</sup> January 2020) *Meshfree based Computationally Efficient Simulation of Different Shaped Plant Cells Using the Cell Linked List Algorithm*. In Abstracts of Ruhuna International Science and Technology Conference (RISTCON 2020), University of Ruhuna, Matara, Sri Lanka.  
[https://www.sci.ruh.ac.lk/conference/ristcon2020/proceedings/RISTCON2020\\_proceeding\\_07.02.2020.pdf](https://www.sci.ruh.ac.lk/conference/ristcon2020/proceedings/RISTCON2020_proceeding_07.02.2020.pdf)
  18. Adhikari A.A.S.P., Hewanayake H.M.M.M., Madhushani G.V., De Silva K.T.K.M., & **Karunasena, H.C.P.** (4 Jan. 2018) *Development of a Semi-Automated Warp Beam Winding Machine for The Handloom Industry*. In B.M.L.A. Basnayake (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  19. Sampath H.H.T.A., Kumara P.A.P., Rathnayaka R.M.K.D. & **Karunasena, H.C.P.** (4 Jan. 2018) *Development of a Semi-Automated High-Speed Bobbin and Fern Winding Machine for The Handloom Industry*. In B.M.L.A. Basnayake (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  20. Abhayawardana, N.M.C.S.S., Perera, I.M.V.R.T., Siriwardana, S.S.G.C., Herath, H.M.C.M. & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of a Steam Heated Evaporator for Palm Oil Effluent Densification*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  21. Priyashan, W.D.M., Sampath, N.M.I.P., Irantha, H.D.I., Herath H.M.C.M., & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of an Automated Heating System for a Prototype Rotary Dryer for Drying of Saw Dust for Pellet Production*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  22. Mugilgeethan, V., Madushan, U.R., Ponseka, P.P.S.M.K., Wickramasinghe, I. P. M. & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of an Adaptive-Controlled Sea Wave Energy Converter System*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  23. Lakshitha, M. A. R., Dissanayake, D. M. N. S., Herath, H. M. C. M., Wickramasinghe, I. P. M. & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of a Controller for Intermittently-fed Small Scale Biomass Boilers to Improve Overall Performance*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  24. Karunarathne, R.M.S.P., Aravithan, M., Pussewaththa, P.W.G.S.D. & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of a Regenerative Braking System for Passenger Buses*. In I.



- Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
25. Jayasekara, M.G.T.C., Kumara, H.R.P.S., Gowrithas, N., & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of an Automated Sorting Conveyor Based on Image Processing*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  26. Karandeniya, D.M.W., Narendrakishanth, T, Puviraj, J., & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of a Semi Automated Small Scale Machine for Composting Residues Produced During Palm Oil Production*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  27. Palliyaguru, M.T., Rathnayake, W.M.P.L., Aseem, M.I.M., Ranjan, T.& **Karunasena, H.C.P.** (5 Jan. 2017) *Use of Passive Cooling for the Improvement of Coefficient of Performance of Small Scale Conventional Air Conditioners*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
  28. Maitipe P.C., Rajasinghe R.A.D.P.M., Wimukthi K.A.H. & **Karunasena, H.C.P.** (5 Jan. 2017) *Development of a Computer Integrated Heat Exchanger Test Apparatus*. In I. Perera & V. Vithana (Eds.) Abstracts of the Annual Research Symposium, Faculty of Engineering, University of Ruhuna, Galle, Sri Lanka.
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#### Poster Presentations in Conferences:

1. Kodithuwakku, A.K.C.I., Hansani, K. G. P., **Karunasena, H.C.P.** & Sumith, B. (6 Mar. 2019) *Application of GPGPU for the Reduction of Computational Time of Smoothed Particle Hydrodynamics based Numerical Models to Simulate Morphological Changes of Single Plant Cell during Drying*. In Jayatissa L.P. (Eds.) Abstracts of the 16th Academic Sessions, University of Ruhuna, Matara, Sri Lanka. ISSN 2362-0412.
2. Naresh, R.K.M., Abeywickrama, A.S., Udagedara, U.A.B., Sumith, B., & **Karunasena, H. C. P.**, (2 March 2016), *Development of a Small Scale Air Conditioning Unit based on a Solar Powered Absorption Refrigeration Cycle to be used in Hybrid Air Conditioning Systems*, In *Abstracts of the 13th Academic Sessions, University of Ruhuna*, (ed. by Ranathunge N. P.). 74. Matara, Sri Lanka.
3. Lahiru, A. M., Srimal, L. K. T., **Karunasena, H. C. P.**, & Sumith, B (2 March 2016), *Value Addition for Coir Fibre as an Oil Absorbent Material*, In *Abstracts of the 13th Academic Sessions, University of Ruhuna*, (ed. by Ranathunge N. P.). 74. Matara, Sri Lanka.
4. **Karunasena, H. C. P.**, Rathnayaka A. P., Gu, Y. T., & Senadeera, W. (4 March 2015), *Meshfree-Based Numerical Prediction of Plant Tissue Shrinkage during Drying as Influenced by Porosity*, In *Abstracts of the 12th Academic Sessions, University of Ruhuna*, (ed. by Arachchige J.J. G.). Matara, Sri Lanka.
5. **Karunasena, H. C. P.**, Senadeera, W., Gu, Y. T., & Brown, R. J. (10-16 Nov. 2012). *A Meshfree Particle Based Model for Microscale Shrinkage Mechanisms of Food Materials in Drying Conditions*. Poster session presented at Doctoral Showcase-Early Research Showcase workshop at The International Conference for Higher Performance Computing, Networking, Storage and Analysis (SC12), Salt Palace Convention Centre, Salt Lake City, Utah, USA. <http://dx.doi.org/10.13140/2.1.4065.3126>

#### Invited Public Lectures:

1. **Karunasena, H. C. P.** (24 Feb. 2015). *Introduction to Meshfree Methods and their Applications - A Novel Trend in Numerical Modelling of Engineering Problems*, an invited public lecture organised by the Mechanical Engineering Sectional Committee (MESc), Institute of Engineers, Sri Lanka (IESL).(Event flyer: <http://ioes18.wildapricot.org/event-1867193> ; YouTube video: <https://www.youtube.com/watch?v=HarGBsYzHaM>)

#### Theses:

1. **Karunasena, H. C. P.** (2014). *Numerical Simulation of Microscale Morphological Changes of Plant Food Materials During Drying - A Meshfree Approach*, Ph.D. Thesis, Queensland University of Technology (QUT), Australia.

2. **Karunasena, H. C. P.** (2011). *Vision based Cross Sectional Area Estimator for Industrial Rubber Profile Extrusion Process Controlling*, M.Sc. Thesis, University of Moratuwa, Sri Lanka.
3. **Karunasena, H. C. P.**, Gnanasiri, E. M. J. R., & Madushanka, W.K.T. (2006). *Industrial Type Coconut De-husking Machine*, Final Year Project Report - B.Sc. Eng. (Hons.) degree, University of Moratuwa, Sri Lanka.

#### **Contributed Featured Articles in Local News Papers:**

1. Senika Weerakkodi (2017), *Local attention is less on wave energy extraction technology*, Vidusara news paper, 28<sup>th</sup> June 2017. <http://www.vidusara.com/2017/06/28/viduindex.htm>
2. Nimal Algewatta (2019), *University of Ruhuna Students who generate electricity from wave energy*, Lankadeepa news paper, 7<sup>th</sup> April 2019, pp 26. <http://dailylankadeepa.newspaperdirect.com/epaper/viewer.aspx>
3. Amila Chathuranga (2019), *Generation of electricity from sea waves*, Dinamina news paper, 18<sup>th</sup> January 2019, pp 24. <http://epaper.dinamina.lk/News.aspx?tday=2019/01/18>
4. *Research Collaborations of the Department of Mechanical and Manufacturing Engineering and the Department of Industrial Development of Southern Province to Support Sri Lankan Fabric Production*, UoR Highlights, July-December 2020, 9(2). ISSN 2279-2392, pp 29. [https://www.ruh.ac.lk/index.php?option=com\\_sppagebuilder&view=page&id=44](https://www.ruh.ac.lk/index.php?option=com_sppagebuilder&view=page&id=44)

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