DOI: https://doi.org/10.46632/eae/1/1/9

Electrical and Automation Engineering
Vol: 1(1), 2022
REST Publisher; ISBN: 978-81-956353-5-1
Website: http://restpublisher.com/book-series/electrical-and-automation-engineering/

A Review on Embedded System, Design and Simulation

[1*]K. Kawyanjali, [1]V. Vanitha, [1]I. Arun Pandiyan, [2] M. Ramachandran, [2]Chinnasami Sivaji
[1]PSN Institute of Technology and science, Tirunelveli, Tamil Nadu, India.
[2]REST Labs, Kaveripattinam, Krishnagiri, Tamil Nadu, India.
[*]Corresponding author Email: kawya29072002@gmail.com.

Abstract. A microprocessor-based pc hardware system is referred to as embedded gadget that is either an independent system containing software or part of a large system designed to perform a particular function. In the center is an integrated circuits designed to perform sum for actual time operation. The complexity ranges from a single microcontroller to a set of processors with connected devices and networks; From non-user interfaces to complex graphical user interfaces. The complexity of the embedded system will vary considerably depending on the task for which it is design. Embedded computer applications range from digital watches and microwaves to hybrid vehicles, and 98% of all manufactured microprocessors are used in avionics embedded systems. Embedded systems are managed by microcontrollers or digital signal processors (DSPs), application-based integrated circuits (ASICs), Field Programmable Gate Arrays (FPGA), GPU technology, and GAT arrays. These processing systems are integrated with components dedicated to manipulating power and / or the engine interface. Embedded computer programming algorithms, also referred to as firmware, are stored on read-only memory or flash memory chips running on limited computer hardware resources. Embedded systems connect to the outside world through devices that connect input and output devices.

Key Words: Embedded systems, Simulation, Embedded system design, Real time Embedded system, Embedded System Co-synthesis.

1. Introduction

An Embedded System integrates mechanical, electrical and chemical components into one system and hides them inside for a specific purpose. There are many computers on this world, and most of the computers are single chip microcontrollers, they are most important in the embedded system. Embedded systems are an integral part of our daily lives everywhere. We daily interact with homes, cars, bridges, toys and hundreds of small computers embedded in our work. As our world becomes more difficulty, the capacity of microcontrollers is embedded in the devices. Therefore, the world wants a well-trained staff to create and manage products based on embedded microcontrollers. An embedded system is a aggregate of laptop processor and computer reminiscence that perform unique features on a huge mechanical or electronic device. It may be embedded as part of an entire tool, covered electric or electronic hardware and device components. The embedded system usually controls the physical capabilities of most actual-time laptop machines. Embedded systems control the maximum number of devices in normal use in the world today. 98 percent of all microprocessors produced in 2009.

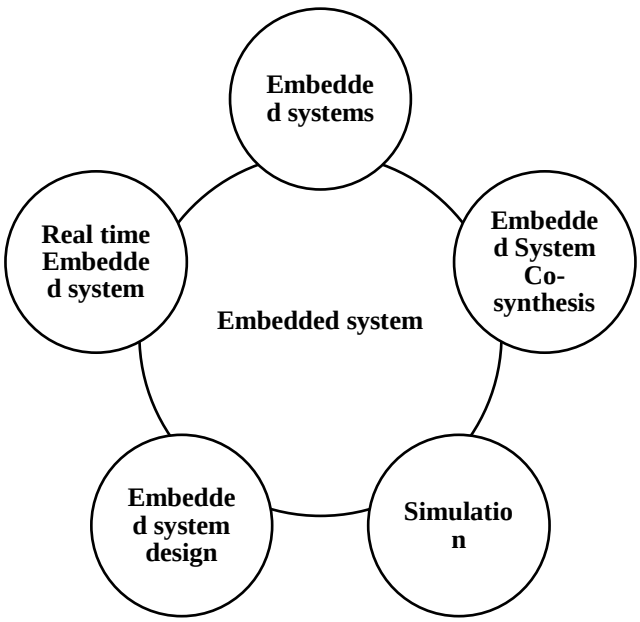

FIGURE 1. Embedded system

2. Embedded systems

Embedded systems play a position in a whole tool. The decrease the value of the embedded gadget the lower the energy consumption, the smaller the quantity of computer tool embedded in different mechanical and electrical systems. Typically, they encompass the processor, power supply, and reminiscence and verbal exchange ports. Embedded systems frequently use verbal exchange ports to transmit information between the processor and the device, while other embedded systems use the communication protocol. The processor interprets this data with the assist of minimal software stored in reminiscence. The software is normally very precise to the characteristic of the embedded machine. The processor may be a microprocessor or a microcontroller. Microcontrollers are microprocessors with external interfaces and incorporated memory. Microprocessors use separate incorporated circuits for memory and devices instead of being introduced to the microchip. [1] Embedded systems are typically defined as hardware-enabled software that find particular real-time procedure used Microcontrollers, microprocessors, FPGAs, Digital Signal Processors (DSPs) and Application based incorporated circuits (ASICs) are included within the tender-core processing hardware. [2] This article provides a summary of the guidelines we have followed in our academic endeavours and the subjects that are directly relevant to the field of embedded system design. An example of a Pico Radio [Pico Radio] program embedded system. [3COSYN takes input-time non cyclic task graphs and creates a multi-distributed in embedded system framework at low cost that meets real-time controls. It is suitable for minimum and maximum scale real-time embedded systems. For embedded system specifications, architectural specifications are checked before granting permission for each task, as some important tasks may not be performed in advance regardless of their priority status [4] Modify the design of the embedded device to meet all price controls. A ratio has found a framework for applying the limits of processing rates Our charge evaluation framework is implemented in a tool known as RATAN We show the use of RATAN the use of an example. Usually, an operating environment of an embedded system, Imposes proportional controls over the various processes of the system. Rates at which certain events occur in the surrounding, embedded to activate those events Impose implementation rate controls on components of the system [5] The small amount of memory resources of low-end embedded systems cannot be depleted each time they are executed. Instead of storing entire program in RAM, you can use a customized summary for each base code. Unlike the factory world, JVMs for embedded systems have privacy and rules specifically written and manually created for each system. [6] The embedded system is installed at home. The system that stores and displays data every 1 minute will be displayed by the Think Speak operating system. This result was only tested by one load on or off, while the other remained unchanged. [7] For production efficiency and safety the challenge is to ensure that the encryption is fully integrated with the embedded processor in addition, "quality" secure communication Adequate protection using techniques Does not guarantee functionality

3. Simulation

A simulation is a process that follows real world process or system over time. Simulations require the use of models. The model is the primary traits of the selected machine or process or refers to behaviors, even as simulating Reflects the evolution of the model greater time Often, computer systems are used to run simulations. Simulation is used in lots of contexts which include overall performance adjustment or upgrade, security testing, training, education, engineering and simulation of technology for video games, simulation with the scientific model of natural systems. Or gain insights into the functioning of human systems, such as economics. Simulation can be used to show the actual effects of alternative conditions and actions. Simulation is used whilst the actual gadget can't be engaged because it is able to be inaccessible, or the involvement can be risky or unacceptable, or it may be designed, but not yet configured or without it. [8] This simulation allows for the architectural analysis of the abstract at various stages (i.e., the gradual improvement of the architectural performance models), while managing the contextual, high-level and non-architectural application specifications. Although such layout-level modelling and simulation allow for the effective evaluation of various application / configuration combinations, large areas of design space - let alone full spacing - fail to explore. [9] Hardware / software program components of embedded systems and their connections Hardware and software parallel simulation is used to verify both Parallel simulations can be used to obtain data About an embedded gadget in advance than a prototype is in reality created. [10] Different hardware software configurations, Accurate performance and power consumption ratings Simulation to easily explore. The based method should be used. Recently, numerous commercial enterprise gear has been announced on this location Integrating computer components into one simulation machine Focuses and creates a communication interface between components. [11] Extensive parallel simulation is the best way to verify a design and evaluate some of its interesting features. For example, comprehensive co-simulation allows a designer to gain better insights into resource utilization and the frequency of resource conflicts shared within an organization. Fixed hybrid-level parallel simulation eliminates some of these problems, but it also forces the designer to select a combination of details at the beginning of the simulation. Once the mixer is selected, the designer can stop the simulation and change it without restarting. [12] Perfect for work and functional energy Accounting of our simulation framework Is one of the hardest parts of the design. Simulated program 0x00000000 Energy for a system embedded with a strong ARM Triggers the give up of the simulation by means of facing this system to the simulation structure Microprocessor and necessary equipment. Energy simulation system Checked for both its functionality and modelling accuracy. [13] Maximum previous studies sample prognosis Simulation programs to facilitate control have used Model with Energy Plus Parallel to Predictive Control (MPC) The authors used simulation. However, these studies are not real-world HVAC MPC models are not implemented in systems and were limited to

simulations. [14] In hardware simulation, notwithstanding the large computational effort, with preparation simulation due to difficult laptop specification Can get very accurate results in comparison Some jobs are about hardware and instruction simulation but only a minimal number accept the basic models for simulation.

4. Embedded system design

An embedded system is an automated, microprocessor dependent system that typically operates as part of a larger electrical or mechanical system. At the center of the embedded system is an integrated circuit that performs computational tasks. Hardware and software are also included, both designed to implement a specific, dedicated function. Embedded systems can be more complex or relatively simple depending on the task at hand. They can have a single microcontroller or a set of processors with connected devices and networks. They may have no interface or very complex GUIs. Embedded computer programming algorithms are stored on read-only memory or flash memory chips. The embedded device is a separate unit Can be tested and it is a separate unit May be capable of action but embedded design in general Tied to the concept of integration. Designers of embedded systems Power Supply Familiarize yourself with communication interfaces and interaction techniques Because these are tools, we use it to successfully integrate a device into a larger system. [15] Embedded design is depending on capturing the design high level of compression that can express maximum synchronization. This representation is transferred to a specific architecture and is estimated based on cost, quantity, power consumption and performance. This system provides continuous trade-offs between possible processes, at least a complete software and full hardware realization. [16] Installed embedded system layout Procedures Show that the hardware results are first of all decided on and, based totally on that Software infrastructure might be evolved. This is the complete product design Great risk of delaying the chain as well Contains Special Remote Laboratory RELDES (Remote Laboratory for Embedded Systems Design). Hardware prepared for developers and Fixed design outcomes based on software sites Focuses on deciding on fast and efficiently. [17] On electronic and computing structures Various assaults, hackers well of cryptographic algorithms designed Show a seizure of theoretical strength Rather, they're safety inside the software and hardware additives of the procedure Rely on vulnerabilities. In this segment, protection isn't always considered in the course of the design cycle Embedded system activation vulnerabilities may be without difficulty exploited or purposeful safety features weakened. Best practices in software security utilize good software engineering practice and include understanding of software threats life cycle (SDLC), Not unusual threats (including language-based totally vulnerabilities and risks), layout for security, and all software artefacts. [18] Using these examples to illustrate the points The following sections are embedded Describes different areas of computer design: Computer design Computer-level design, life-cycle support, Business model adaptation and design cultural adaptation Poor level design with statistical performance characteristics Analyses the face of the hardware without unnecessary interference.

5. Real time Embedded system

Real-time systems monitor the external environment. Responsive or controlling systems. Through these environment sensors, actuators and other input-output interfaces Connected to the computer system It is the body or biology of any form and structure May contain objects. Often humans are part of a connected external world There are, but a wide range of other natural and synthetic products as well as animals are possible. Due to the real-time behavior of the outside world at different times and interfaces of the computer system Must meet the various restrictions imposed. Hence the name real-time Another name for many of these systems is reaction systems Is because their primary purpose is theirs Is to respond or react to signals coming from the environment. A real-time computer system is a big one embedded in it May be part of the system; Reasonably, such a computer component is called an embedded system. [19] In real-time setting, there are some delays because the processor utility is often less than one because all tasks run at their worst performance times (WCET). Also, there are idler breaks when some work events are completed faster than their WCETs. To get the most power savings from DPM, we refer to devices as bad-state sluggish time and workload-variable sluggish time, respectively. [20] However, one default of software-stage simplex architecture is that Errors within the microprocessor, actual-time running system (RDOS) A Books in the Middleware as their Upgrades Villa Be Hunt allow Supply. [21] The most important reason of this thesis is to develop a new lossless image encryption algorithm using reversible lightweight features. Also, complicated keys may be accomplished the use of a microcontroller with single precision floating factor aid to acquire the required degree of safety. A comprehensive evaluation of the performance and safety capabilities of the proposed light-weight confusing photo encryption set of rules turned into also accomplished to make sure compatibility with actual-time embedded applications within the 32-bit microcontroller. [22] The main purpose of this study was data-integration Low with the ability to calculate the stabilization solution Price real-time embedded navigation Realize the system and follow the algorithm development The idea is to reduce the implementation gap. [23] The solution is at the rate of 1 Hz, the wheel of the robot Encoders or in the vehicle's auto meter Depending on the arrival of the PPS signal from, 1 Hz by speed measurements obtained in proportion Calculated by the real-time system created. GPS receiver. This ratio is the RISS / GPS algorithm or real-time system is not the limit of implementation [24] Super Capacitor SoC Maintenance in conjunction with DVFS Effective real-time task planning and sensor Through selected job events at the terminal Is achieved. In specific, RTES-EH is a power saver PV panel with, super capacitor power Storage element and real-time DVFS-enabled Sensor terminal load between device and contains connected power converters. [25] Approximate plan for the new Conservative Standalone Distributed multiprocessor real-time using Advance of embedded systems You can use the domain to verify the planning. Reusable

embedded Settings Automatic Integration (AIRES) Tool additional system-wide information from application models It performs real-time analysis using RAT monotonic analysis techniques. [26] In this paper, embedded ADAS the design of the system is provided. This system Different light in complex weather conditions Detect Road signs even on levels Can be identified. The proposed system Allows high-resolution images to be detected in real time The algorithm starts with color displacement. Embedded systems have limited processing resources Have. In fact, for video processing Requires intensive processing, which is real-time Control may be compromised.

6. Embedded System Co-synthesis

Multi-task embedded systems with real-time controls, co-package system for integrating multi-processors with diversity. Processors can be traditional CPUs or hardware modules. Hardware / software sharing is best done by a genetic algorithm. The proposed co-synthesis method explores target architecture solutions. Each of these solutions is an optimal embedded framework for the system. Our co-package system is capable of creating potential solutions for large-scale real-time embedded systems. To plan processes, a new advance planning technique or a new condition advance planning method is used. The planning system can deal with work and process level deadlines. Our proposed system supports communication resource allocation and communication event planning. The parallel-package system provides economical real-time embedded structures that require less processors and communication resources, while satisfying trigger conditions. This results in better processing element utilization compared to current co-compilation methods for real-time systems. [27] A co-package approach is particular to the input description of a computer process and the target structure for the system implementation. For computer analysis and hardware compilation purposes, a language model that allows explicit bias analysis, important data storage and time attributes is required. Most current hardware descriptive languages (HDLs) meet these requirements, so we choose the input for the system attachment. Design controls include time controls and controls over parameters used during the co-compilation process. [28] In Co-Synthesis' Inner Loop, at the lowest possible dollar cost, we select the dollar we visited, mark what we visited, and perform Following are the planning and solution evaluation steps Described. All PES and reserved Schedule tasks and margins in attachments We use a priority-level plan. Start and end times of the remaining copies The club row previously discussed will be updated. In general, this is enough to get efficient architecture However, sometimes the rest We will have to plan the copies. This The following is according to the performance appraisal. [29] Co-compilation algorithm from target library Number and type of processing elements Selecting, creates tasks within the target framework and creates a standard global work schedule within specific processing elements, completing the timeline at minimal computer cost.

7. Conclusion

Embedded systems are always one Act as part of the complete device this is the meaning of the word embedded. They are Low cost, low power consumption, other mechanical or small computers embedded in electrical systems in general, they are the processor, power supply and memory and includes communication boards. Stimulation is a process that follows a real-world p over time or a system that requires Use of models; The sample is selected Key characteristics of the system or process or refers to behaviours, at the same time Simulation of the sample over time Reflects evolution. An embedded system is an automated, microprocessor-based system that typically operates as part of a larger electrical or mechanical system. At the center of the embedded system is an integrated circuit that performs computational tasks Real-time systems are the external environment Monitoring, responding or controlling Settings. These are environmental sensors, actuators and through other input-output interfaces Connected to the computer system. None of this Physical or biological form and structure May contain materials. Multi-functional embedded systems with real-time controls, a co-package structure that integrates multifunctional multi-processors. Processors can be traditional CPUs or hardware modules. Hardware / software sharing is best done by a genetic algorithm. The proposed co-synthesis method explores target architectural solutions.

Reference

[1] Malinowski, Aleksander, and Hao Yu. "Comparison of embedded system design for industrial applications." IEEE transactions on industrial informatics 7, no. 2 (2011): 244-254.

[2] Anandaram, Harishchander, and Daniel Alex Anand. "Computational analysis of micro RNAs compatibility in pharmacogenomic based regulatory networks of psoriatic arthritis: an initiation towards identifying a potential miRNA to treat psoriatic arthritis." *Biocatalysis and agricultural biotechnology* 16 (2018): 545-547.

[3] Sangiovanni-Vincentelli, Alberto L., and Alessandro Pinto. "An overview of embedded system design education at Berkeley." ACM Transactions on Embedded Computing Systems (TECS) 4, no. 3 (2005): 472-499.

[4] Anandaram, H. "A review on application of biomarkers in the field of bioinformatics & nanotechnology for individualized cancer treatment." *MOJ Proteom Bioinform* 5, no. 6 (2017): 179-184.

[5] Shahdad, Syed Yasmeen, Mudassir Khan, Habeeba Sultana, Mohammad Ashfaq Hussain, and Syeda Meraj Bilfaqih. "Routing Protocols for Constraint Devices Internet of Things Network." In 2019 International Conference on Communication and Signal Processing (ICCSP), pp. 0114-0117. IEEE, 2019.

[6] Kim, Minyoung, and Soonhoi Ha. "Hybrid run-time power management technique for real-time embedded system with voltage scalable processor." In Proceedings of the ACM SIGPLAN workshop on Languages, compilers and tools for embedded systems, pp. 11-19. 2001.
[7] Alessa, Nazek, B. Venkateswarlu, K. Loganathan, T. S. Karthik, P. Thirupathi Reddy, and G. Sujatha. "Certain Class of Analytic Functions Connected with-Analogue of the Bessel Function." Journal of Mathematics 2021 (2021).
[8] Kocher, Paul, Ruby Lee, Gary McGraw, and Anand Raghunathan. "Security as a new dimension in embedded system design." In Proceedings of the 41st annual Design Automation Conference, pp. 753-760. 2004.
[9] Kiruthiga, G., and M. Mohanapriya. "An adaptive signal strength based localization approach for wireless sensor networks." Cluster Computing 22, no. 5 (2019): 10439-10448.
[10] Xie, Yuan, Lin Li, MahmutKandemir, Narayanan Vijaykrishnan, and Mary Jane Irwin. "Reliability-aware co-synthesis for embedded systems." The Journal of VLSI Signal Processing Systems for Signal, Image, and Video Technology 49, no. 1 (2007): 87-99.
[11] Malinowski, Aleksander, and Hao Yu. "Comparison of embedded system design for industrial applications." IEEE transactions on industrial informatics 7, no. 2 (2011): 244-254.
[12] Koopman, Philip. "Embedded system design issues (the rest of the story)." In Proceedings International Conference on Computer Design. VLSI in Computers and Processors, pp. 310-317. IEEE, 1996.
[13] Manikandan, G., and S. Srinivasan. "Traffic control by bluetooth enabled mobile phone." International Journal of Computer and Communication Engineering 1, no. 1 (2012): 66.
[14] Dave, Bharat P., Ganesh Lakshminarayana, and Niraj K. Jha. "COSYN: Hardware-software co-synthesis of heterogeneous distributed embedded systems." IEEE Transactions on Very Large Scale Integration (VLSI) Systems 7, no. 1 (1999): 92-104.
[15] Kumar, Amit, Kamal Sharma, and Amit Rai Dixit. "A review on the mechanical and thermal properties of graphene and graphene-based polymer nanocomposites: understanding of modelling and MD simulation." Molecular Simulation 46, no. 2 (2020): 136-154.
[16] Maheswari, K., T. Baranidharan, S. Karthik, and T. Sumathi. "Modelling of F3I based feature selection approach for PCOS classification and prediction." Journal of Ambient Intelligence and Humanized Computing 12, no. 1 (2021): 1349-1362.
[17] Parkhomenko, Anzhelika, Olga Gladkova, Eugene Ivanov, Aleksandr Sokolyanskii, and Sergey Kurson. "Development and Application of Remote Laboratory for Embedded Systems Design." International Journal of Online Engineering 11, no. 3 (2015).
[18] Prakash, B., S. Jayashri, and T. S. Karthik. "A hybrid genetic artificial neural network (G-ANN) algorithm for optimization of energy component in a wireless mesh network toward green computing." Soft Computing 23, no. 8 (2019): 2789-2798.
[19] Mathur, Anmol, Ali Dasdan, and Rajesh K. Gupta. "Rate analysis for embedded systems." ACM Transactions on Design Automation of Electronic Systems (TODAES) 3, no. 3 (1998): 408-436.
[20] Khan, Mudassir, Aadarsh Malviya, and Mahtab Alam. "Map Reduce clustering in Incremental Big Data processing." International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN (2019): 2278-3075.
[21] Singh, Pradeep Kumar, Kamal Sharma, Amit Kumar, and Mukul Shukla. "Effects of functionalization on the mechanical properties of multiwalled carbon nanotubes: A molecular dynamics approach." Journal of composite materials 51, no. 5 (2017): 671-680.
[22] Kumar, B. Senthil, R. Ravi, P. Dhanalakshmi, S. Kirubakaran, and K. Maheswari. "Classification of Mobile Applications with rich information." In 2015 International Conference on Soft-Computing and Networks Security (ICSNS), pp. 1-7. IEEE, 2015.
[23] Abdelfatah, Walid Farid, Jacques Georgy, Umar Iqbal, and AboelmagdNoureldin. "FPGA-based real-time embedded system for RISS/GPS integrated navigation." Sensors 12, no. 1 (2011): 115-147.
[24] Bhuvaneswari, G., and G. Manikandan. "An intelligent intrusion detection system for secure wireless communication using IPSO and negative selection classifier." Cluster Computing 22, no. 5 (2019): 12429-12441.
[25] Sangeetha, S. Brilly, R. Sabitha, B. Dhiyanesh, G. Kiruthiga, N. Yuvaraj, and R. Arshath Raja. "Resource Management Framework Using Deep Neural Networks in Multi-Cloud Environment." In Operationalizing Multi-Cloud Environments, pp. 89-104. Springer, Cham, 2022.
[26] Loganathan, K., Nazek Alessa, Ngawang Namgyel, and T. S. Karthik. "MHD flow of thermally radiative Maxwell fluid past a heated stretching sheet with Cattaneo–Christov dual diffusion." Journal of Mathematics 2021 (2021).
[27] Singh, Pradeep K., and Kamal Sharma. "Mechanical and viscoelastic properties of in-situ amine functionalized multiple layer grpahene/epoxy nanocomposites." Current Nanoscience 14, no. 3 (2018): 252-262.
[28] Rashid, Ekbal, Mohd Dilshad Ansari, Vinit Kumar Gunjan, and Mudassir Khan. "Enhancement in teaching quality methodology by predicting attendance using machine learning technique." In Modern approaches in machine learning and cognitive science: a walkthrough, pp. 227-235. Springer, Cham, 2020.
[29] Rinesh, S., K. Maheswari, B. Arthi, P. Sherubha, A. Vijay, S. Sridhar, T. Rajendran, and Yosef Asrat Waji. "Investigations on Brain Tumor Classification Using Hybrid Machine Learning Algorithms." Journal of Healthcare Engineering 2022 (2022).

[30] Lin, Xue, Yanzhi Wang, Naehyuck Chang, and MassoudPedram. "Concurrent task scheduling and dynamic voltage and frequency scaling in a real-time embedded system with energy harvesting." IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems 35, no. 11 (2016): 1890-1902.
[31] Geethamani, R., T. S. Karthik, M. Deivakani, Vishal Jain, Anand Mohan, Meenu Chopra, Cosmena Mahapatra, and T. C. Manjunath. "Implementation of wireless home-based automation and safety arrangement using power electronic switches." Materials Today: Proceedings (2021).
[32] Clausen, Lars Ræder, UlrikPagh Schultz, Charles Consel, and Gilles Muller. "Java bytecode compression for low-end embedded systems." ACM Transactions on Programming Languages and Systems (TOPLAS) 22, no. 3 (2000): 471-489.
[33] Khan, Mudassir, and Mohd Dilshad Ansari. "Multi-criteria software quality model selection based on divergence measure and score function." Journal of Intelligent & Fuzzy Systems 38, no. 3 (2020): 3179-3188.
[34] Bak, Stanley, Deepti K. Chivukula, Olugbemiga Adekunle, Mu Sun, Marco Caccamo, and Lui Sha. "The system-level simplex architecture for improved real-time embedded system safety." In 2009 15th IEEE Real-Time and Embedded Technology and Applications Symposium, pp. 99-107. IEEE, 2009.
[35] Janakiraman, Siva, KaruppusamyThenmozhi, John Bosco BalaguruRayappan, and RengarajanAmirtharajan. "Lightweight chaotic image encryption algorithm for real-time embedded system: Implementation and analysis on 32-bit microcontroller." Microprocessors and Microsystems 56 (2018): 1-12.
[36] Maheswari, K., and S. Kirubakaran. "Enhancing Social Personalized Search Based on Semantic Search Log using Ontology."
[37] Amir, Arnon, LiorZimet, Alberto Sangiovanni-Vincentelli, and Sean Kao. "An embedded system for an eye-detection sensor." Computer Vision and Image Understanding 98, no. 1 (2005): 104-123.
[38] Kumar, Amit, Kamal Sharma, and Amit Rai Dixit. "Carbon nanotube-and graphene-reinforced multiphase polymeric composites: review on their properties and applications." Journal of Materials Science 55, no. 7 (2020): 2682-2724.
[39] Anandaram, H. "Computational Analysis of Pharmacogenomic Based Regulatory Network in Psoriasis: An Approach of Systems Biology to Initiate the Discovery of Systemic Biomarkers to Treat Psoriasis." *Syst Comput Biol J* 1, no. 1 (2018): 101-101.
[40] Alessa, Nazek, K. Tamilvanan, K. Loganathan, T. S. Karthik, and John Michael Rassias. "Orthogonal stability and nonstability of a generalized quartic functional equation in quasi--normed spaces." Journal of Function Spaces 2021 (2021).
[41] Amol Lokhande, C. Venkateswaran, M. Ramachandran, C. Vidhya, R. Kurinjimalar. " A Study on Various Implications on Reusing in Manufacturing", REST Journal on Emerging trends in Modelling and Manufacturing, 7(2), (2021): 63-69.
[42] Dave, Bharat P., Ganesh Lakshminarayana, and Niraj K. Jha. "COSYN: Hardware-software co-synthesis of embedded systems." In Proceedings of the 34th annual Design Automation Conference, pp. 703-708. 1997.
[43] Bhuvaneswari, G., and G. Manikandan. "An intelligent intrusion detection system for secure wireless communication using IPSO and negative selection classifier." Cluster Computing 22, no. 5 (2019): 12429-12441.
[44] Gup, Rajesh K., and Giovanni De Micheli. "A co-synthesis approach to embedded system design automation." Design Automation for Embedded Systems 1, no. 1 (1996): 69-120.
[45] Geetha, D., V. Kavitha, G. Manikandan, and D. Karunkuzhali. "Enhancement and Development of Next Generation Data Mining Photolithographic Mechanism." In Journal of Physics: Conference Series, vol. 1964, no. 4, p. 042092. IOP Publishing, 2021.
[46] Kumar, Amit, Kamal Sharma, and Amit Rai Dixit. "A review of the mechanical and thermal properties of graphene and its hybrid polymer nanocomposites for structural applications." Journal of materials science 54, no. 8 (2019): 5992-6026.
[47] Sathiyaraj Chinnasamy, M. Ramachandran, Kurinjimalar Ramu, P. Anusuya "Study on Fuzzy ELECTRE Method with Various Methodologies" REST Journal on Emerging trends in Modelling and Manufacturing, 7(4), (2022):108-115.
[48] Madl, Gabor, and SherifAbdelwahed. "Model-based analysis of distributed real-time embedded system composition." In Proceedings of the 5th ACM international conference on Embedded software, pp. 371-374. 2005.
[49] Kirubakaran, S., and K. Maheswari. "An Improved SIP Protocol in Heterogeneous Mobile Network for Efficient Communication." Asian Journal of Research in Social Sciences and Humanities 6, no. 9 (2016): 513-528.
[50] Li, Qing, and Caroline Yao. Real-time concepts for embedded systems. CRC press, 2003.
[51] Suhasini, S., J. M. SheelaLavanya, M. Parameswari, G. Manikandan, and S. Gracia Nissi. "Input Based Resource Allocation in Motion Estimation using Re-configurable Architecture." In 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)(I-SMAC), pp. 1091-1095. IEEE, 2021.
[52] Anandaram, H. "Computational Analysis of Pharmacogenomic Based Regulatory Network in Psoriasis: An Approach of Systems Biology to Initiate the Discovery of Systemic Biomarkers to Treat Psoriasis." *Syst Comput Biol J* 1, no. 1 (2018): 101-101.
[53] Biansoongnern, Somchai, and BoonyangPlangklang. "Nonintrusive load monitoring (NILM) using an Artificial Neural Network in embedded system with low sampling rate." In 2016 13th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), pp. 1-4. IEEE, 2016.

[54] R. Kurinjimalar, S. Vimala, M. Silambarasan, S. Chinnasami. "A Review on Coir fibre Reinforced Composites with Different Matrix", REST Journal on Emerging trends in Modelling and Manufacturing, 7(2), (2021):25-32.
[55] Mohankumar, Madhan, A. N. Shankar, T. S. Karthik, R. Saravanakumar, Hemakesavulu Oruganti, S. Venkatesa Prabhu, and N. Rakesh. "A Comparative Study on Crack-Healing Ability of Al2O3/SiC Structural Ceramic Composites Synthesized by Microwave Sintering and Conventional Electrical Sintering." Advances in Materials Science and Engineering 2021 (2021).
[56] Chitra, P., T. S. Karthik, S. Nithya, J. Jacinth Poornima, J. Srinivas Rao, Makarand Upadhyaya, K. Jayaram Kumar, R. Geethamani, and T. C. Manjunath. "Sentiment analysis of product feedback using natural language processing." Materials Today: Proceedings (2021).
[57] Vai, Michael, Ben Nahill, Josh Kramer, Michael Geis, Dan Utin, David Whelihan, and Roger Khazan. "Secure architecture for embedded systems." In 2015 IEEE High Performance Extreme Computing Conference (HPEC), pp. 1-5. IEEE, 2015.
[58] Anand, D. A., and H. Anandaram. "A review on global prevalence and recent advancements in the genetics of psoriasis." *MOJ Proteomics Bioinform* 6, no. 2 (2017): 243-248.
[59] Pimentel, Andy D., CagkanErbas, and Simon Polstra. "A systematic approach to exploring embedded system architectures at multiple abstraction levels." IEEE transactions on computers 55, no. 2 (2006): 99-112.
[60] Hines, Ken, and Gaetano Borriello. "Dynamic communication models in embedded system co-simulation." In Proceedings of the 34th annual Design Automation Conference, pp. 395-400. 1997.
[61] Simunic, Tajana, Luca Benini, and Giovanni De Micheli. "Cycle-accurate simulation of energy consumption in embedded systems." In Proceedings 1999 Design Automation Conference (Cat. No. 99CH36361), pp. 867-872. IEEE, 1999.
[62] P. K. Chidambaram, Amol Lokhande, M. Ramachandran, Vimala Saravanan, Vidhya Prasanth, "A Review on Biodiesel Properties and Fatty acid composites", REST Journal on Emerging trends in Modelling and Manufacturing, 7(3), 2021:87-93.
[63] Anandaram, Harishchander. "Modeling of Cascade Regulation in Psoriasis: A Comprehensive Approach." *ECS Transactions* 107, no. 1 (2022): 2627.
[64] Hines, Ken, and Gaetano Borriello. "Optimizing communication in embedded system co-simulation." In Proceedings of 5th International Workshop on Hardware/Software Co-Design. Codes/CASHE'97, pp. 121-125. IEEE, 1997.
[65] Tan, T. K., A. Raghunathan, and Niraj Kumar Jha. "EMSIM: An energy simulation framework for an embedded operating system." In 2002 IEEE International Symposium on Circuits and Systems. Proceedings (Cat. No. 02CH37353), vol. 2, pp. II-II. IEEE, 2002.
[66] Aftab, Muhammad, Chien Chen, Chi-Kin Chau, and Talal Rahwan. "Automatic HVAC control with real-time occupancy recognition and simulation-guided model predictive control in low-cost embedded system." Energy and Buildings 154 (2017): 141-156.
[67] Callou, Gustavo, Paulo Maciel, Eduardo Tavares, Ermeson Andrade, Bruno Nogueira, Carlos Araujo, and Paulo Cunha. "Energy consumption and execution time estimation of embedded system applications." Microprocessors and Microsystems 35, no. 4 (2011): 426-440.

