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Member of IEEE, Elsevier, Springer  
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M.E. (CSE), B.E. (Instrumentation & Control Engineering)  
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Professor and Head, Department of Electronics and Communication Engineering, Sri Sairam College of Engineering, Bengaluru (Karnataka), India. 
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Specialization: Image processing, Human Computer Interaction, Multimedia Processing

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Ph.D. (CSE), M.Tech. (CSE), B.Tech (CSE)  
Member of Springer  
Associate Professor, Department of Computer Science and Engineering, Malla Reddy College of Engineering and Technology, Hyderabad (Telangana), India. 
Specialization: Computer Networks IoT Security

Pro. Farah Naz  
M.Tech. (VLSI Design), B.Tech. (ECE)  
Assistant Professor, Department of Electronics & Communication Engineering, AICTE/ Raj Kumar Goel Institute of Technology, Ghaziabad (U.P.), India. 
Specialization: VLSI Design, Analog and Digital Circuits, Electronic Semiconductor Devices

Dr. Joseph V. Thanikal  
PDF, PhD. (Civil Engineering), M.Tech. (Civil Engineering), B.Tech. (Civil Engineering)  
Member of Elsevier  
Associate Dean and Director, Department of School of Construction, RICS School of Built Environment, Amity University, Noida (U.P.), India. 
Specialization: Wastewater Treatment, Waste Management Project, Management Civil Engineering, Risk Management and Change Management

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Ph.D.(CS), M.Sc.(CS), B.Sc.(EE)
Professor and Head, Department of Computer, Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt.
Specialization: Artificial Intelligence, Optimization, Modeling & Simulation, Smart Ports, Algorithms

Dr. T. Sathish
Ph.D.(ME), M.Tech. (MT), B.E.(ME)
Associate Professor, Department of Mechanical Engineering, Saveetha School of Engineering, Kuthambakkam (Tamil Nadu), India.
Specialization: Manufacturing Processes, Supply Chain Management, Composite Materials

Prof. Ansari Aaquib Rasheed
M.Tech. (Structure), B.E (Civil Engineering)
Assistant Professor, Department of Civil Engineering, Rajiv Gandhi College of Engineering & Research, Nagpur (Maharashtra), India.
Specialization: Environmental Engineering, Material (Concrete and Mortar), Geotechnical Engineering

Prof. Vishal Shridhar Wadkar
M.Tech.(Electrical), M.Tech.(Electrical)
Assistant Professor, Department of Electrical Engineering, Sharad Institute of Technology College of Engineering, Ichalkaranji, Kolhapur (Maharashtra), India.
Specialization: Power Electronics, Power System, Renewable Energy
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**Title of the Article:** A Robust Irrigation System with a Flow Sensor

**Abstract:** An autonomous precision irrigation is drawing its attraction as it can reduce labor and water, and improve productivity in agriculture. This paper presents the design of a robust pump control system that can irrigate to a designated area with a fixed amount of water or run times. The system is able to turn off the pump in exceptional situations such as the absence of water. We experiment the implemented system with a drip-irrigated plant pot, showing the designed pump control algorithm works correctly.

**Keywords:** Autonomous Irrigation, Flow Sensor, Solenoid Valve, Things Board, Water Pump.

**References:**

**Title of the Article:** Design Inset Fed Microstrip Patch Antenna for L-Band Applications

**Abstract:** Present paper focuses on design and simulation of an inset fed rectangular microstrip patch antenna for GPS applications. The proposed antenna is designed at frequency 1.9 GHz which comes in L-Band region and simulated using Electromagnetic Simulator such as HFSS simulation software with three different dielectric substrates and comparing their performance characteristics such as gain, bandwidth, beam width, VSWR and return loss. The simulation results shows that the maximum bandwidth is obtained with FR4 substrate and the minimum bandwidth is found with Arlon AD320 substrate, where as the maximum gain obtained with air (vacuum) substrate. The proposed antenna has been designed for the range of 1.9 GHz and which is highly suitable for GPS applications.

**Keywords:** Dielectric constant, return loss, Inset Fed and VSWR etc.

**References:**
1. IJ Bhal and P Bhartia, “Microstrip antennas”, Artech house, 1980
Title of the Article: Development of Scale Invariant lens Opacity Estimation System using Hough Circle Detection Transform, Normalization and Entropy.

Abstract: Clear eye lens is responsible for correct vision. Ageing effect acquires opacity at lens structure causing foggy or blurred vision. It is termed as cataract. This may become cause of permanent blindness if remain unidentified and untreated. Due to hazards change in environment and adoption of sluggish lifestyle many diseases like cataract are becoming universal challenge for health organization over the world. Lack of medication and diagnosis facility in developing countries makes cataract as savior vision problem. Proposed methodology suggests image processing based, low cost solution for lens opacity or cataract detection. In this system eye lens image from input image is acquired using Iterative Hough circle detection transform. It is normalized using Daugman’s rubber sheet normalization algorithm which makes system scale invariant. Structural variation in normalized lens image is estimated in terms of entropy or mean value. Comparison of right and left half entropies of normalized image is basis for estimation of lens opacity. It is used to detect and categorize lens opacity or cataract. This system easily categorize lens opacity based on structural features of opacity in one of three grades such as “No cataract”, “Cortical cataract” or “Nuclear cataract”.

Keywords: Cataract, Hough circle detection transform, Daugman normalization, Entropy, structural features.

References:
2. Linglin Zhang, Jianqiang li, I Zhang, Qing Wang, Automatic cataract detection and grading using deep convolution neural network, IEEE,2017 14th International Conference on Networking, Sensing and Control (ICNSC) INSPEC Accession Number: 17082440
Abstract: The objective of the research work is to propose a software based security requirement engineering model using categorical and morphisms theory. The earlier security requirement engineering models focus different viewpoints on parallel processing and develop rewrite based knowledge centred models but does not include different functional mappings between the security objects to select the best strategy. The security models have not considered the needed security functions that are to be implemented in different environments with different levels of executions. The proposed requirement engineering model is based on the formal theory of category of objects and the morphisms between them in addition to n categories and multiple morphisms that were used to organize the security requirement functional objects of different categories. The on demand security requirement objects, morphisms and the uncertain events in any one of the subsystems are considered to manage this security requirement category as an algebraic data types. The collection of security requirement objects using classification and clustering techniques are implicitly applied by the formation of category and morphism. The risk and compliances both in the form of direct and indirect categories are mapped so as to provide a security assurance functors with minimum risk on the requirements to the next design state. An ‘n’ category and ‘n’ morphic model for software security requirement model is proposed towards for minimum security risks through efficient compliance management techniques.

Keywords: Categorical Theory, Security Objects, Requirement Morphisms, Functions and Functors, Compliance Management.

References:
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Author(s): Vikram Narayandas, Maruthavanathan Archanaa, D. Raman

Title of the Article: Concerns of Modern IoT: Exploration over Attainments of Past Observational Challenges in IoT

Abstract: In the previous past times internet of things (IoT) constructed up the different parts of life to improve usefulness by reducing human work including only a pair of sensors. In the previous there were frequently the absolute greatest obstacles which IoT as of now prompts achievement are not automatic. Just a few percent of organizations were fruitful with their IoT activities be that as it can, given a considerable number of which are simply operational or authoritative. Albeit numerous issues related with IoT arrangements are not mechanical, they are similarly agonizing and hard to survive. Furthermore, if each association needs to beat these difficulties in a void, a 74 percent 3 dissatisfaction rate is probably going to proceed. Be that as it may, by transparently sharing the information and bits of knowledge increased through broad experience encouraged IoT to push ahead all in all intensifying our human potential. The achievement of IoT over the past impediments puts more prominence on its capacity to conquer the future difficulties. IoT is an innovation that should be known as an aid. In any case, since it interfaces all the things to 4 the Internet, the things become defenseless against a type of security dangers. Huge organizations and cyber security analysts are giving their best to make things ideal for the purchasers, yet there is still a ton to be finished.

Keywords: IoT, IWOT, Security.
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Author(s): Mayank, Rachana Arya

Title of the Article: Driving Economic Growth by Promoting Manufacturing in India

Abstract: For driving economic growth at the time of COVID-19 pandemic our Prime Minister has given a policy “Make in India: zero defect zero effect”. The aim is to alter the country into a worldwide industrialized hub. He encourages the organizations to manufacture their goods in India. Global industries are invited to formulate investment and locate factories in India and develop their merchandizes. But the question arrived why they will setup their industries? By using India’s extremely capable and skilled workforce, they generate zero defect output. What are the sectors where India can do better? Research for all the parameters are done in this paper. What are the different policies for lower and middle class people and how they will boost up their growth and help to develop the economy? Prime Mistier also focus on “3D” outlook policy: Democracy, demography and demand. Skill expansion programs are especially launched for people of rural cities..

Keywords: Make In India, Indian Economy, Challenges, Vocal For Local.

References:
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Author(s): Jyothirmai S, S. Amsamani

Title of the Article: Influence of Fabric Type on Seam Performance – A Review

Abstract: The present-day consumer is looking for durability, and comfort in apparel. Sewing is the most used technique to convert two-dimensional fabric into 3-dimensional apparel. Seam performance is an important factor to achieve the durability and comfort of the apparel. Seam efficiency depends not only on sewing parameters but also on fabric type. Ideal combinations of both are important to achieve perfect seam performance and efficiency. How different fabrics perform to specific sewing parameters were reviewed.

Keywords: Seam Performance, Seam Efficiency, Seam Strength.

References:


**Author(s):** Ana Laura Sánchez Corona, Carlos Raúl Navarro González, Samantha Eugenia Cruz Sotelo, Sara Ojeda Benítez

**Title of the Article:** Importance of the Application of Lean Manufacturing and Sustainable Manufacturing and Its Impact on Productivity and Quality in the Electronics Industry of Mexicali

**Abstract:** An evaluation of use of lean and sustainable manufacturing tools was made, correlating them with the productivity and quality indices in an industry of the electronic sector located in the city of Mexicali. In this evaluated company, it was observed that some improper manufacturing methods was used and for this reason, generated a large amount of waste from electronic devices and electronic boards. This caused the productivity and quality indices to decrease, originating the need for extra time and with it unnecessary costs that devalued the prices of manufactured products, due to the competitiveness in the electronic industry sector evaluated. With the application of tools of lean manufacturing and sustainable manufacturing, the productivity and quality levels were increased and both overtime and unnecessary costs were reduced, achieving competitive prices in the evaluated industry. The installation method of electronic components with polarity in electronic boards was evaluated, due to the fact that a great diversity of products emerged from the automatic insertion area with defects, indicating reversed polarity, which should be solved, otherwise, short circuits could be generated or lack of electrical conductivity, in the manufactured products in their final process. This caused the manufactured products to not work properly, causing the presence of defective products and with it low levels of productivity and quality and economic losses. and It was detected that this occurred due to the lack of training of the operative personnel and the neglect of the operative workers of the automatic insertion area. In order to control this situation, as a methodological part, schematic models were developed to support the operational personnel in their activities in the automatic insertion area. This proposal with the schematic models developed for use in the electronics industry, where the research was made. The study was developed from 2018 to 2019.

**Keywords:** Lean Manufacturing, Sustainable Manufacturing, Electronics Industry, Productivity and Quality Indices.

**References:**


Author(s): Ali El mezouary, Brahim Hmedna, Omar Baz

Title of the Article: An Unsupervised Method for Discovering How Does Learners' Progress Toward Understanding in MOOCs

Abstract: Massive Open Online Course (MOOC) seems to expand access to education and it present too many advantages as: democratization of learning, openness to all and accessibility on a large scale, etc. However, this new phenomenon of open learning suffers from the lack of personalization; it is not easy to identify learners’ characteristics because their heterogeneous masse. Following the increasing adoption of learning styles as personalization criteria, it is possible to make learning process easier for learners. In this paper, we extracted features from learners' traces when they interact with the MOOC platform in order to identify learning styles in an automatic way. For this purpose, we adopted the Felder-Silverman Learning Style Model (FSLSM) and used an unsupervised clustering method. Finally, this solution was implemented to clustered learners based on their level of preference for the sequential/global dimension of FSLSM. Results indicated that, first: k-means is the best performing algorithm when it comes to the identification of learning styles; second: the majority of learners show strong and moderate sequential learning style preferences.

Keywords: MOOC; Learning Styles; Fslsm; Sequential/Global Learning Styles Automatic Detection; Clustering.

References:


Abstract: Since deep learning applications in object recognition, object detection, segmentation, and image generation are needed increasingly, related research has been actively conducted. In this paper, using segmentation and style transfer together, a method of producing desired images in the desired area in real-time video is proposed. Two deep neural networks were used to enable as possible as in real-time with the trade-off relationship between speed and accuracy. Modified BiSeNet for segmentation and CycleGAN for style transfer were processed on a desktop PC equipped with two RTX-2080-Ti GPU boards. This enables real-time processing over SD video in decent level. We obtained good results in subjective quality to segment Road area in city street video and change into the Grass style at no less than 6(fps).

Keywords: Deep Learning, GAN, Semantic Segmentation, Style Transfer.

References:
compared to moving frame decomposition framework method. The size and the blurring variable of the guiding filter is optimized to obtain a better Structural Similarity Index Measurement (SSIM).

**Keywords:** Multimodal Image Fusion, Computer Tomography, Guide Filtering, Magnetic Resonance Imaging, Spatial domain image fusion.

**References:**


**Author(s):** Parmanand Prabhat, Syed Umar

**Title of the Article:** Network Functions Virtualization: Challenges and Opportunities for Innovations

**Abstract:** Network Functions Virtualization (NFV) was at the latest introduced to reform the suppleness of mechanism handling provisional and extenuate stress the time to bazaar of new handling. By leveraged virtualization processing and mercantile off-the recess schedule hardware, such as obscure motivation handling, store and button, NFV the software execution of mechanism festival and features from the basic hardware. As an supervene processing, NFV fetch diverse defiance to mechanism manipulator, such as the warranty of mechanism execution for factual appliance, their movable appliance and dwelling abroad, and their verseed placing. In this document, we bestow a concise inspection supervision of NFV, decode its Importance analysis and architectonic structure, current handling use location and debate the defiance and pending quarter for use in this investigation domain.

**Keywords:** Mechanism, Festival , Defiance, Instrumentation, Architectonic.
Author(s): Suhaira V P, Sita S, Joby George

Title of the Article: Alzheimer’s Disease: Classification and Detection using MRI Dataset

Abstract: Alzheimer's disease (AD) is a hereditary brain condition that is incurable and progresses over time. Patients with Alzheimer's disease experience memory loss, uncertainty, and difficulty speaking, reading, and writing as a result of this condition. Alzheimer's disease eventually affects the portion of the brain that controls breathing and heart function, leading to death. This framework proposes the OASIS (Open Access Series of Imaging Studies) dataset, which contains the existing MRI data set, which is comprised of a longitudinal sample of 150 subjects aged 60 to 96 who were all acquired on the same scanner using similar sequences. This paper uses a combination of brain MRI scans and psychological parameters to predict disease with high accuracy using various classifier algorithms, and the results can be compared to improve performance.

Keywords: Alzheimer's Disease, Support Vector Machine, Dementia, OASIS.

References:
4. Bijen Khagi, Goo-Rak Kwon “CNN Models Performance Analysis on MRI images of OASIS dataset for distinction between Healthy and Alzheimer’s patient ”. ICEIC, 2019
Author(s): Hüseyin GÖKÇEKUŞ, Youssef KASSEM, Ahmed Mohammed Ahmed

Title of the Article: Management of Duhok Governorate Environment by Generating Sustainable Solutions (Rooftop Photovoltaic Systems) In Buildings Instead of Regular Electricity: Environment, Management and Techno-Economic Evaluations

Abstract: Population growth and increasing demand for energy have been causing severe environmental problems all over the world. This research is done to find a suitable management way to improve the environmental condition, develop sustainable and economical solutions. This study focused on using Rooftop Photovoltaic Systems for the first time in Duhok governorate, Iraq, due to the rapid growth in the governorate and the great demand for energy, and the high energy production costs. Four regions were chosen in Duhok governorate to install photovoltaic systems. The NASA database as a source for assessing solar energy potential were used. The results show that these areas have enormous potential and annual solar radiation to produce solar energy. The RETScreen expert evaluated the electricity production potential of PV systems. In addition, an economic study of 5kW capacity for grid-Connected rooftop PV projects was carried out in all selected regions. Depending on the financial results and indicators, Rooftop Photovoltaic Systems can be a sustainable and efficient solution to improve the environment and economically installable in the Duhok governorate.

Keywords: Solar Energy, Rooftop Photovoltaic Systems, Renewable Energy, NASA Database.

References:
Title of the Article: Design a Low Power and High Speed 130nm Fulladder using Exclusive-OR and Exclusive-NOR Gates.

Abstract: This literature illustrates the high speed and low power Full Adder (FADD) designs. This study relates to the composited structure of FADD design composed in one unit. In this the EXCL-OR/EXCL-NOR designs are used to design the FADD. Mostly concentrates on high speed standard FADD structure by combining the EXCL-OR/EXCL-NOR design in single unit. We implemented two composite structures of FADD through the full swing EXCL-OR/EXCL-NOR designs. And the EXCL-OR/EXCL-NOR design is done through pass transistor logic (PTL) and the same design projected on the composited FADD design. Such that the delay, area of the design, power requirement for the circuit gets optimized. The two composited FADD designs are compared and reduced the constraints of power requirement, area, delay and the power delay product (PDP). The simulated outcomes are verified through 130nm CMOS mentor graphics tool.

Keywords: Full Adder (FADD), EXCL-OR/EXCL-NOR, Pass Transistor Logic (PTL), Mentor Graphics Tool.

References:
Abstract: In this presented work we designed the 4-bit Arithmetic & Logical Unit (ALU) by using the different modules. The Various modules are AND gate & OR gate designed with six transistors, While the XOR modules is designed with both eight transistors & six transistors. The six transistor XOR module gives optimized results. Another one is the four by one multiplexer designed with eight transistors implemented using Pass transistor logic (PTL) style. The full adder module is designed by using 18 transistors implemented through PTL style. Here because of PTL style the number of transistor count optimized such that the constraints get optimized results. By using the AND, OR, XOR, 4x1 MUX and full adder modules with reduced transistor count we designed the one bit ALU. With one bit ALU we designed 4 bit ALU and compared the outcomes with conventional 4 bit ALU design so that the proposed 4 bit ALU design has optimized transistor count, area, power, delay and power delay product (PDP). Simulations are verified through 130nm mentor graphics tool.

Keywords: Pass Transistor Logic (PTL) style, power delay product (PDP), Arithmetic and logic unit (ALU), mentor graphics tool.

References:

Author(s): Sandeep Suresh Patil, Harichandra K. Chavhan, Umesh U Patil, Nilesh Damodar Patel

Title of the Article: Improvisation of Machining Parameters for Better Surface Finish of MMC Material using Taguchi Method

Abstract: Metal matrix composite is used in engineering applications due to its superior mechanical properties. MMC’s are reinforced with particle fiber, whisker, and particulate. The size of particulates used is classified as micro, nano, and macro. The particulate reinforced MMC’s have excellent formability compared to fiber and whisker composite. Metal matrix composite has outstanding wear, heat resistance, and excellent mechanical properties. Many authors have been stated the property as its ability of workpiece material to be machined or it refers to workpiece response to machining or it is normally applied to the machining properties of work material or it indicates how easily and fast a material can be machined. MMC materials are difficult to machine with a superior surface finish. In this study MMC with silicon
Carbide and Graphite are fabricated with 5 weight % using squeeze casting route. Tensile strength and hardness are tested according to ASTM standards and as a result, there was an increase in tensile strength and hardness of MMC. Machining process parameters plays a vital role in defining surface roughness. This machining parameters are to be optimized to get the better surface finish results. Taguchi techniques is used. To optimized the machining parameters affecting machining of MMC for surface roughness are identified. Orthogonal array L9 was selected based on three parameters with three levels. There is a vital role played by the feed rate in increasing the surface roughness of the material. Relevant process parameters considered for a better roughness of the surface are, cutting speed 300RPM, the rate of feed 0.13 mm/rev, and the depth of cut 0.4mm.

**Keywords:** Squeeze Casting, Machining, and the Surface Roughness.

**References:**
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**Author(s):** V. Deepa, K. Rajeswari

**Title of the Article:** Analysis on E-Healthcare Monitoring System with Iot and Big Patient Data

**Abstract:** Internet of Things (IoT) technology helped the development of healthcare from face-to-face consulting to the telemedicine. Smart healthcare system in IoT environment monitored the patient basic health signs such as heart rate, body temperature, and hospital room condition in real-time applications. The IoT and big data is an important challenge in many fields including smart healthcare systems due to its significance. Big data is employed to analyse the huge volume of data. Big data are significantly used in healthcare technique to determine the normal and abnormal patient condition. The doctors are easily analysed the patient condition in a short time. This system is very easy to design and use. It is employed to enhance the present healthcare system which preserves the lot of lives from death. Healthcare monitoring system in hospitals has experienced large development and portable healthcare monitoring systems with new technologies. Connected healthcare is an essential solution for hospital to record and analyse the patient data and to save money. The clustering and classification methods are used in existing methods. The clustering method is employed to group the similar data. The classification method is utilized to classify the patient data. A lot of healthcare technique was introduced by many researchers ranging from diagnosis to treatment and prevention on efficient e-health monitoring system. But, the accuracy level was not improved and time consumption was not reduced by existing techniques. In order to address these problems, different methods and techniques were reviewed for performing the e-healthcare monitoring system with big data. The machine learning techniques are used for efficient diseased patient health monitoring through the effective performance of feature selection, clustering and patient classification with increase the accuracy and minimum time consumption. The results are is performed using on different factors such as clustering accuracy, time, classification accuracy, classification time, and error rate with respect to number of patient data.

**Keywords:** Internet Of Things, Telemedicine, E-Health Monitoring System, Prevention, Patient Data.
Title of the Article: Methodology for Effective Daylighting in Courtyard Houses of Composite Climate

Abstract: Studies have shown the relevance of the courtyard houses and passive strategy that plays a significant role in energy reduction, providing thermal comfort and visual comfort. Generally, designing the courtyards was considered suitable for thermal comfort. North India lies in the composite climatic zone, and courtyard houses in this region have a distinctly vernacular style. Many studies all around the world were conducted to analyse courtyard houses and followed different methodologies. The aim of this paper is to uncover and formulate a research methodology to analyse effective daylighting in courtyard houses of composite climate; approximately forty research papers were reviewed to find out the research methodology. The year of publication, climate zone, sky models used, weather file, building type, verifying method, simulation tools, daylight matrices, and methodology adopted were studied in the reviewed literature to formulating the methodology. The study concludes that experimental models were commonly used for daylight analysis, moreover climate-based sky can be used for detailed simulation instead of the Daylight factor with overcast sky conditions.

Keywords: Calibration, Composite climate, Courtyard houses, Effective daylight, Methodology, Modelling, and Simulation.

References:


Author(s): Lalit Akash Verma, Farheen Bano
References:


A Review Article

Title of the Article: Influence of Reinforcement Oxides on Structural and Mechanical Properties of Glass-Ceramics: A Review Article.

Abstract: This review studied the mechanical behaviors of Glass ceramics (GC) based on the Al2O3/SiO2 system. Glass ceramics are great interest due to their wide variety of applications, which have the ability to fulfill the recent demands of advanced mechanical, optical and biomedical applications. Glass-ceramics are typically heat-stable and have greater mechanical features than glasses. In addition, mechanical properties can be customized to provide variable volume fractions of crystalline phases by regulating nucleation and growth of the crystalline phases. The distribution of these crystalline phases in the glass matrix increases the consistency of the material and, in comparison, effectively limits the growth of cracks. The crystallization process resulted in substantial improvements in micro-hardness and density values such as sodium calcium phosphate (Na4Ca(PO3)6 and calcium pyrophosphate (β-Ca2P2O7) had sufficient properties for bone grafts and dental applications. This article outlines recent developments in the field of doping Oxides as reinforced with SiO2-Al2O3-based Glass- ceramics, to enhance the mechanical properties of Glass-
ceramics combination. The research focused on the mechanical and the tribological behaviour of Biomedical, Electronics applications and selection of fabrication methods.

**Keywords:** Glass-ceramics - Synthesis - Reinforcements - Structure - Mechanical behavior.

**References:**
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