NAME	**Dr. ALLWYN GNANADAS.A**
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Snapshot

- 21st Century Educator
- Biomedical Research faculty
- Associate HoD

Professional Experience

KPR Institute of Engineering and Technology, Coimbatore, India

Associate HoD / Assistant **professor (Selection Grade)**   **(Since June 2017)**

Roles & Responsibilities

- Associate HoD of the department of Biomedical Engineering
- NBA Coordinator
- Industry coordinator

Summary: As a faculty I have developed many prototypes in the department for the students' projects. I am currently involved in a consultancy project for a reputed industry in Coimbatore in developing a patient monitoring unit for a reputed Hospital. Won best teacher award thrice including ideal online teacher award during the year 2019. Demonstrated andragogy and practised many proven teaching learning process to elevate the understanding of the students.

Rajiv Gandhi College of Engineering And Technology, Pondicherry, India

Assistant **professor**   **(February 2016 – May 2017)**

- Class In charge
- Training and Placement in charge

Christian Medical College and Hospital, Vellore, India

Management trainee   **(August 2015 – January 2016)**

- As a management trainee, responsible for maintaining the standards of the NABH accreditation.
- Conduct research, along with doctors, software engineers, and scientists, on the engineering aspects of the systems of improvising the standards of the hospital.
- Analysing and reporting the maintenance of the equipment in the wards and labs of the CMC hospital.
- Conducting Chemical safety audits and establishing the advanced standards of chemical safety in the hospital.

- Organizing a national level conference on Occupational health.

Qualification

Annamalai University, Chidambaram, India

PhD – Biomedical Imaging
Title: identification of epileptic seizure location using Rs-fMRI by enhanced regional clustering
Abstract:
Epilepsy is a condition that affects the neuronal equilibrium that is distributed in the regions of brain. For decades epilepsy is identified based on the occurrence and various other parameters of seizure in epileptic patients. Physicians were able to control these episodes through anticonvulsant drugs however a permanent solution was lacking in many cases, especially with idiopathic epilepsy. Surgical interventions were adapted in most of the cases based on the information from intracranial Electroencephalogram (IEEG). Though the data on location is reliable, the exact location of the region on the grey matter of brain is often compromised leading to improper data. Further IEEG is an invasive procedure, which additionally imparts risks to the already affected patient. To address these issues and to locate the exact anatomy of the damaged region responsible for seizure origination, this research work utilized functional Magnetic Resonance Imaging (fMRI). fMRI unlike other radiological imaging is harmless and completely non-invasive. These images are analysed in 3 Dimensions to provide the location of the infected regions in 3D space. The analysis highlighted the regions that were abnormal when compared against the healthy individuals' data. The spatial and temporal data was simultaneously analysed using Enhanced Regional Clustering (ERC) algorithm and proved that fMRI can replace the invasive IEEG. To further strengthen the statement, the Regional Homogeneity (ReHo), Functional Connectivity (FC) and Low Frequency Oscillations (LFO) study were performed and found to be in agreement with enhanced regional clustering analysis. Post surgical results were also used in proving the correctness of this study.

VIT University, Vellore, Tamil Nadu, India.

Masters in Technology – Biomedical Engineer   **(May 2013 – May 2015)**
- Participated in national wide scientific meetings and conferences.
- Published a paper titled on "Epileptic seizure localization using Regional Homogeneity by Resting State Functional Magnetic Resonance Imaging" at SET International Conference-2015 conducted by VIT University. Author: Allwyn Gnanadas
    Objective: To formulate a system a to replace highly invasive IEEG in epileptic seizure localisation. The golden standard IEEG (Invasive Electroencephalogram) is the current reliable method to determine the epileptic seizure location. Though reliable, it suffers from serious setback, the invasiveness. The Regional Homogeneity (ReHo) along with fractional Amplitude of Low Frequency Fluctuation (fALFF) and Functional Connectivity (FC) using functional Magnetic Resonance Imaging (fMRI) can replace the IEEG standards. These methods are non-invasive and accurate too. The Regional Homogeneity is performed on the patient for whom the IEEG was already performed. The ReHo result found to be in the same region as described by IEEG. On the other hand, the fALFF though not very clear it complements the ReHo results in the studied epileptic patients. Functional Connectivity is known for its accuracy and hence used to calculate the low connectivity network. Low connectivity matrix of epilepsy patients in this study proves that the FC results agree with the ReHo, at least at range of 5mm distance, hence, supporting the results of ReHo and fALFF. The correctness in this study concludes that ReHo

along with fALFF and FC can replace the currently existing invasive golden standard in determination of the epileptic seizure location.

- Published a paper titled "Case study of diabetes awareness among urban and rural population" at SET International conference 2014 conducted by VIT University. Authors: Allwyn Gnanadas, Shiva Sundaram and Herbert Samuel.
  Objective: As there is paucity of report in India on the prevalence of diabetes, we framed a set of questions for people around rural and urban part of the Vellore district located in Tamil Nadu state, India. The questionnaire mainly targets on Demographics, Health status, Diet adherence scale, and awareness scale. Result shows that urban people have more exposure to diabetes mellitus than the diabetes insipidus, where the rural people lack knowledge on both types. The obtained statistical results are pie charted in the research paper.
- Published a paper titled "Low noise high precision Hearing Aid" at SET International conference - 2013 conducted by VIT University. Authors: Allwyn Gnanadas and Arun Kumar.
  Objective: To design a circuit of a hearing aid with highly effective noise filter cutting off noise interferences and provide high precision output. The Hearing aid was tested on a patient and observed it more much effective than the previous ones use by the patient.

ANNA University, Chennai, Tamil Nadu, India.
DMI College of Engineering
Electronics and Communication Engineer   **(May 2009 – May 2013)**

- **Designed** a *"*Surveillance robot with wireless docking station*"*
  Objective: To design a surveillance robot that can be controlled from a short range with great precision. This surveillance robot will be greatly used in battlefields to detect mines buried underground, also provide live video monitoring about the war field environment. The most highlighting feature of this robot is that it has got wireless recharging facility. The robot is driven to the docking system using the DTMF technology. Hence this robot can be used as a complete defence machine

- *Designed* a *"Code locker and Automatic Breaking System"*
  Objective: To develop a system that can effectively reduce road accidents. An IR based automatic braking system which when installed on the vehicle stalls the vehicle if the vicinity of the next vehicle is below the critical range. A code locker is designed. It functions without being programmed; hence the locker cannot be hacked or bugged.

Technical Skills

IoMT, Embedded Electronics, MATLAB, SPM, Keil, Proteus 8
Hands on Experience: Raspberry Pi, ARM development boards, electronic equipment in hospital, Imaging Machines, Instrumentation Amplifier, ECG, Hearing aids, FM transmitter, home automation.

List of Publications

1. Gnanadas, A. Allwyn, Hamshavarthini, S., Rithanya, K.V., Kaviya, P., & Isabella, S. "Nebulizer Add-Ons: Innovative Features for Improved Respiratory Therapy." In 2023 7th International Conference on Electronics, Communication and Aerospace Technology (ICECA), 282-287. IEEE, 2023.

2. Shwetha, A.K., Vishnu, K., Naveen, K., & Suruthisri, B. "Prosthetic Hand: Design and Analysis of Upper Limbs Using Autodesk." In 2023 7th International Conference on Electronics, Communication and Aerospace Technology (ICECA), 306-310. IEEE, 2023.

3. Gnanadas, A. Allwyn, Priyadharshini, V., Jayashri, N., & Yasika, M. "Classification of Normal and Abnormal ECG Signals Using Machine Learning." In 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS), 953-956. IEEE, 2023.

4. Arunkumar, P., & Gnanadas, A. Allwyn. "A novel low power single phase clocking flipflop design for biomedical applications." AIP Conference Proceedings, 2764(1), [page numbers]. AIP Publishing, 2023.

5. Gnanadas, A. Allwyn, Indhumathi, K., Meenashree Boopal, & R.S. Saranya. "Internet of Things based Development of Continuous Saline Monitoring and Control System." In 2022 6th International Conference on Electronics, Communication and Aerospace Technology, 1440-1444. IEEE, 2022.

6. Gnanadas, Mr. A. Allwyn, Aswin, Mr. S., Hariharan, Mr. A., Karthik, Mr. S., & Manibalan, Mr. B. (2022). Wheelchair Movements Control Using EOG. Mathematical Statistician and Engineering Applications, 71(4), 8486-8495.

7. Gnanadas, A. Allwyn, Indumathi, K., Meenashree, Boopal, R.S., & Saranya. (2021). Development of continuous saline monitoring and automatic control system using IoT. International Virtual Conference on Advances in Communication, Machine Learning, Embedded with Internet of Things (IVC-ACME 2021), Kongu Engineering College, April 2021.

8. Gnanadas, A. Allwyn, Subashini Priyanka, Abinanadhana, Srisurekha, & Pavithra. (2021). AUTOMATED VENTILATOR CONTROL OVER INTERNET. International Virtual Conference on Advances in Communication, Machine Learning, Embedded with Internet of Things (IVC-ACME 2021), Kongu Engineering College, April 2021.

9. Shankar, S., & Gnanadas, A. Allwyn. (2020). Enhanced relative K based Numbering Out of Time Slices (erKNOTS) to locate epileptic seizure origin. Solid State Technology, 63(4), 4290–4300.

10. Rajeshwari, R., Sreelatha, P., Bharath, V., Gnanadas, A. Allwyn, & G. D. M. (2020). EFFECT OF DESEPCEKLING OF ULTRASOUND IMAGES USING ANISTROPIC DIFFUSION METHOD. WAFFEN-UND KOSTUMKUNDE JOURNAL.

11. Shankar, N., Sathish Babu, S., Gnanadas, A. Allwyn, & Rajmohan, V. (2020). Volumetric Estimation of Femur Bone for Detecting Osteoporosis. Journal of Computational and Theoretical Nanoscience, 17(4), 1871–1876.

12. Gnanadas, A. Allwyn, Sathishbabu, S., & Shankar, N. (2020). Post Evaluation of Tumour Cells Using Fused Positron Emission Tomography CT Imaging. Journal of Computational and Theoretical Nanoscience, 17(4), 1877–1879.

13. Gnanadas, A. Allwyn, & Arunkumar, P. (2019). Localization of Seizures in Epilepsy using Low Frequency Fluctuations from Rs-fMRI. International Journal of Recent Technology and Engineering, 8(4), 10576–10579.

14. Gnanadas, A. Allwyn, & Sathishbabu, S. (2019). A REVIEW ON PROCESSING FUNCTIONAL MAGNETIC RESONANCE IMAGING (FMRI) WITH SPECIAL FOCUS ON EPILEPSY. National Conference on "Emerging Trends in Communication, Computing & Embedded Networking" NECCE'19, 1(1), 72.

15. A. A. Gnanadas, S. Sathishbabu and M. Vijayakarthik, "Identification of Epileptic Seizure Using ReHo from Rs-fMRI," 2017 Second International Conference on Recent Trends and Challenges in Computational Models (ICRTCCM), Tindivanam, India, 2017, pp. 292-296

Patent

- Title: IOT BASED COST-EFFECTIVE SOLAR POWERED WATER COOLER SYSTEM

DECLARATION

I hereby declare that all the information provided above is true and accurate to the best of my knowledge and belief. I understand that any misrepresentation or falsification of facts may result in disqualification from consideration.

Place: India.   A. ALLWYN GNANADAS.