Dr.Anand Mahendran

Curriculum Vitae

Assistant Professor,
Department of Mathematics and Computer Science,
Modern College of Business and Science (MCBS), Muscat, Oman. *+968-97793021*
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Objective: *To obtain a challenging and responsible position in a professionally managed organization. I am looking for an opportunity where I can utilize my skills effectively to the success of the organization and also for further improvement of my personal skills.*

Post Doctoral Research Experience

- Worked as a **Post-doctoral research fellow** in **Laboratory of Theoretical Computer Science, National Research University, Higher School of Economics, Moscow**, Russia from August 2021 to August 2022

Education

- **Ph.D (Computer Science and Engineering)**: **Studies on insertion-deletion systems and contextual grammars related to ambiguity, measures and applications** -VIT University July 2012
- **M.E(Computer Science and Engineering)**
  Government College of Engineering, Tirunelveli (Anna University) May 2003-June 2005
  Percentage: **81.2(First Class with Distinction)**
- **B.E (Computer Science and Engineering)**
  VIT University, Vellore (Madras University) June 2000-May 2003
  Percentage: **80.6(First Class with Distinction)**
- **D.E.E.E (Electrical and Electronics)**
  TPEVR Government Polytechnic, Vellore June 1997-May 2000
  Percentage: **94.2(First Class with Distinction)**
- **10 standard**, NKMHS School, Vellore
  Percentage: **93.8** May 1997

Outstanding Achievements

- **Researcher Award** for the Academic Year 2010-11, 2011-12, 2012-13, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2022-23, 2023-24, 2024-25 for publications
- **Best Academician of the Year-2018** award by Combined Society for Educational Research and Development(CSERD) for the outstanding contribution towards academics
- **Best Researcher Award in the domain of Bio-inspired Computing Models Towards Security** for the year 2019 by International Research Councils
- **NASSCOM** certified trainer for Cybersecurity
- **College Second in M.E(Computer Science and Engineering)** at Government College of Engineering, Tirunelveli
- **College First in Diploma(Electrical and Electronics Engineering)** at Thanthai Periyar Government Polytechnic, Vellore
- **Completed online courses (Elite Member) Introduction to Internet of Things (IoT), Introduction to Automata, Languages and Computation** offered by **NPTEL, Government of India**
- **Completed online courses How to Create a MOOC Course, Introduction to Project Management** offered by **Coursera**
- **Completed Wipro Mission10X learning approach** practitioners certificate
- **Completed Wipro Mission10X certificate** in teaching and learning
- **Two assignments has been certified by Wipro** and uploaded in Wipro Mission10X portal
- **Received best reviewer award from Journal of King Saud University-Computer and Information Sciences, Elsevier**

Skill Set

- **Functional Programming Languages:** OCAML, HASKELL
- **Cybersecurity Tools:** Cisco Packet Tracer, Wireshark, Nessus, Nmap, Metasploit, Hping
- **IoT Programming:** Arduino, Raspberry PI, Intel Galileo, Contiki OS, COOJA Simulator
- **Programming Languages:** C, C++, Python, JAVA, PERL

- **Theory of Computation:** JFLAP, REGEX, GRAIL, Theorem Provers (Coq)
- **Compiler Tools:** OpenMP, Vtune Analyzer, LEX, YACC, CUP, BISON, ANTLR
- **ICT Tools:** Schoology, Rainbow, Moodle

Current Designation

- **Total Years of Experience: 21 Years and 2 Months**
- Currently working as **Assistant Professor** in **Department of Mathematics and Computer Science** at **Modern College of Business and Science (MCBS)**, Muscat, Oman.

Professional Experience

- From **June 2005 to August 2008** as a **Lecturer in School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **August 2008 to January 2009** as a **Senior Lecturer in School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **February 2009 to September 2011** as an **Assistant Professor (Senior) in School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **September 2011 to July 2012** as an **Assistant Professor (Selection Grade) in School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **July 2012 to July 2014** as an **Associate Professor in School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **September 2014 to August 2016** as an **Assistant Professor in College of Computer Science and Information Systems** at **Jazan University**, Kingdom of Saudi Arabia.
- From **August 2016 to August 2021** worked as **Associate Professor-Senior** in **School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **August 2021 to August 2022** Worked as a **Post-doctoral research fellow** in **Faculty of Computer Science, National Research University, Higher School of Economics, Moscow**, Russia.
- From **August 2022 to December 2022** worked as **Associate Professor-Senior** in **School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **January 2023 to June 2024** worked as **Professor Grade 1** in **School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **July 2024 to January 2026** worked as **Professor-Grade 1** in **School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Chennai Campus, Chennai.

Administrative Experience

- From **October 2024 to June 2025** served as **Chair of Theoretical Computer Science-Research Group** in **School of Computing Science and Engineering** at **Vellore Institute of Technology (VIT)**, Chennai Campus, Chennai.
- From **October 2020 to August 2021** as **Head of the Department** for **Internet of Things (IoT)** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **October 2020 to August 2021** as **Head of the Department** for **B.Tech(CSE-Specialization in IoT)** Programme at **Vellore Institute of Technology (VIT)**, Vellore.
- From **December 2011 to February 2014** as **Division Chair** for **Software Systems Division** at **Vellore Institute of Technology (VIT)**, Vellore.
- From **December 2011 to February 2014** as **Programme Chair** for **B.Tech (Computer Science and Engineering)-ABET** accredited at **Vellore Institute of Technology (VIT)**, Vellore.

Research Work Done During Ph.D

- Introduced **six new levels of ambiguity, six new descriptional complexity measures** for insertion-deletion systems.
- Analyzed the **trade-off between the defined ambiguity levels and complexity measures** for insertion-deletion systems.
- Introduced a new variant named **Matrix insertion-deletion systems** to model the various bio-molecular structures.
- Analyzed the **computational completeness and generative capacity** of Matrix insertion-deletion systems with Chomskian hierarchy of grammars.
- Analyzed the **trade-off between the ambiguity levels and complexity measures for internal contextual languages** by introducing a new notion in formal language theory pseudo inherently ambiguous languages.
- Solved an **open problem** mentioned by Gh. Paun.
- Introduced a new variant named **semi-bracketed contextual grammars** and analyzed its generative capacity.

Research Work Done during Post-Doc

- Introduced **twelve new descriptional complexity measures for insertion systems**.
- Analyzed the **trade-off between the introduced measures and various ambiguity levels of insertion systems**.
- **Modelled various bio-molecular structures** that occur at **RNA secondary level, folding process, RNA-Motif, Parallel β-sheets, Anti Parallel β-sheets** using Matrix insertion-deletion systems.
- Analyzed the generative power of **Semi-bracketed Contextual grammars** with the Chomskian hierarchy of languages.

Research Work Done after Post-Doc

- Introduced **four new levels of ambiguity for Matrix insertion-deletion systems** and studied the application of introduced **ambiguity levels in bio-molecular structures**.
- Introduced **three new grammar formalisms** by combining **insertion-deletion systems with programmed grammars**.
- Analyzed the **computational completeness** of **programmed insertion-deletion systems**.
- Introduced a **new grammar formalism** called **matrix picture insertion systems** and studied the application of it towards picture languages.
- Introduced a new class of picture languages called **octogonal picture languages**.
- Introduced a new class of picture languages called **kolam collage grammars** by combining kolam grammars and collage grammars.

Research Interest

- Mathematical Modelling in Data Science using Formal languages and Automata Theory, Bio-inspired computing models and its application towards security in IoT/Fog environment, Grammar formalisms towards natural languages and modelling of bio-molecular structures.

Ph.D Completed

- **On Some Studies of Formal Grammars Towards Picture Languages** (Mrs.G.Ramya-Awarded).
- **A Study on Enhancement of Software Maintenance Processes for Legacy Systems** (Mr.C.J.Satish-Awarded).
- **An Investigation on Various Techniques to Evaluate the Availability Issues in Fault Tolerant Cloud Computing Environment** (Mrs.M.Deepa-Awarded).
- **Developing a Secure Data Communication in Smart Health Care Environment Using Cellular Automata** (Mrs.S.Harinee-Awarded).
- **Detection of DDoS Attacks on Smart Healthcare Using Bio-inspired Computing Approaches** (Mrs.G.Sripriyanka-Awarded).
- **Investigations on Facial Emotion Recognitions Using Deep Learning Approaches** (Mr.J.Samanthisvaran-Submitted).

Research Internship

- One month research visit at **Nagasaki University, Japan** under the guidance of **Prof. Sohei Ito, School of Information and Data Sciences**.
  Internship Summary: In process mining methods, conformance checking is considered to be one of the fine methods. The actual behaviour of the proposed model can be evaulated quantitatively using conformance checking. Such behaviour can be analyzed using event logs. While deriving the process models through various abstractions, there is a chance of encountering errors. In addition to that, the processes can change due to other factors such as environmental shifts and technological updates. The discrepancies between the (proposed) model and actual process executions can be analyzed precisely using conformance checking mechanisms. To overcome the above failure(s) like activity name and ordering, we have used an alignment-based conformance checking method proposed for Petri net models to finite automaton models. However, our proposed method faces two problems. First, it takes a significant amount of time to complete the conformance checking and the second, it does not guarantee the best fitness value.
- Two weeks short term research visit at **University of Bradford-UK** under the guidance of **Prof. Marian Gheorge** in the scheme of The Royal Society-International Exchanges 2021-University of Bradford, UK.
  Internship Summary: The project is aimed at creating a novel formal verification and model based testing approach for a class of nature inspired computation, called spiking neural P systems - a special type of artificial intelligence spiking neural computing model, that is applied in data-driven classification, pattern recognition, signal processing and optimization problems.
- Three months research visit at **University of Aizu, Japan** under the guidance of **Prof.Mohamed Hamada, Associate Professor, Software Engineering Laboratory**.
  Internship Summary: In this internship, I will mainly concentrate on introducing new bio-inspired computing

models and analyzing the generative of the newly introduced model toward picture languages. Later, I will study the ambiguity issues in picture languages using the newly introduced model.

- Two months research internship at **IIT Madras (Computer Science and Engineering)** under the guidance of **Prof. Kamala Krithivasan** in the scheme of Mentoring of Engineering Teachers by INAE Fellows.
  Internship Summary: In this internship, I mainly concentrated on bio-inspired computing models, in particular insertion-deletion systems. Gene insertion and deletion are the operations that occur commonly in DNA processing and RNA editing. Based on these operations, a computing model has been formulated in formal language theory known as insertion-deletion systems. Based on the components used in the derivation such as axiom, contexts and strings, six (new)levels of ambiguity for insertion-deletion systems have been defined. Next, the following results have been proved: There are inherently i-ambiguous insertion-deletion languages which are j-unambiguous for the combinations $(i, j) \in \{(5, 4), (4, 3), (4, 2), (3, 1), (2, 1), (1, 0), (0, 1)\}$. Further, an important result that the ambiguity problem of insertion-deletion system is undecidable has been proved. In addition to that, six new (descriptional) complexity measures for insertion-deletion systems based on used contexts and strings have been introduced. As a last work of my internship, the trade-off between ambiguity levels and (descriptional) complexity measures have been analyzed.

Funded Project - Ongoing and Completed

- **Title:**ForVAIA-SpiN: Formal Validation of Artificial Intelligence Applications - the case of Spiking Neural P Systems
  Role: Co-Principal Investigator
  Amount: 12,000 UK-Pounds
  Sponsored Agency: The Royal Society-International Exchanges 2021-University of Bradford, UK
  Duration and Starting Date:2 Years, 15/March/2022
  Status: Completed
  Project Summary: The project is aimed at creating a novel formal verification and model based testing approach for a class of nature inspired computation, called spiking neural P systems - a special type of artificial intelligence spiking neural computing model, that is applied in data-driven classification, pattern recognition, signal processing and optimization problems. This approach will contribute to the development of learning models that are correct by construction and efficient with respect to certain complexity metrics.
- **Title:**Descriptional Complexity Measures, Ambiguity, Trade-off in Insertion Systems and its Application towards Picture Languages
  Role: Principal Investigator
  Amount: Rs.6,80,000
  Sponsored Agency: CSIR
  Duration and Starting Date:2 Years, 06/June/2019
  Status: Completed
  Project Summary: The main objective of the proposal is to introduce new descriptional complexity measures in insertion systems based on the components used in the derivation such as axiom, context and selector. Next, the trade-off between newly introduced complexity measures and ambiguity will be studied. Finally, the application of insertion systems towards picture languages will be investigated.
- **Title:** A Hybrid Cryptosystem for D2D Communication in IoT Environment
  Role: Principal Investigator
  Amount: Rs.1,00,000
  Sponsored Agency: Research Seed Grant-VIT Vellore, India
  Duration and Starting Date: 1 Year, 15/Sep/2019
  Status: Completed
  Project Summary: The main objective of the proposal is to propose a trust-based model which uses hybrid present encryption algorithm for encryption and decryption. This protocol uses pseudorandom number generator to ensure freshness and anonymity of communication. It provides enhanced security and confidential communication. It can efficiently prevent eavesdropping, location trace, replay attack, spoofing and DOS attack.
- **Title:**Ambiguity, Semantic Issues and Tool Development in Contextual Grammars
  Role: Co-investigator
  Amount: Rs.13,74,240
  Sponsored Agency: Department of Science and Technology(DST), India
  Duration: 09/Nov/2010 to 08/Nov/2014
  Status: Completed
  Project Summary: Mildly Context Sensitive (MCS) formalisms are considered to be an appropriate formalism for describing syntactical structures of natural languages. Contextual grammars were originated as a pure grammar with a linguistic motivation in mind. In recent years, several attempts have been made to analyze the suitability of contextual grammars for MCS formalism. The notion of derivation tree structure for contextual grammars was introduced in

bracketed contextual grammars. In this project, first we investigated the suitability of bracketed contextual grammars for MCS formalisms. Next, we defined a new level of ambiguity by considering the tree structure as a component and investigated further by combining the tree structure with the existing level of ambiguities based on the axioms, selectors and contexts. Further, we analyzed the properties of tree structure of bracketed contextual grammars. Last, but not least, we explored the relevance of contextual grammars to represent semantic information. Finally, we developed a tool for analyzing various ambiguity levels of contextual grammars.

- **Title:**Implementation of Research Management Systems
  Role: Principal Investigator
  Amount: 34,000 Saudi Riyal
  Sponsored Agency: Deanship of Scientific Research, Jazan University, Kingdom of Saudi Arabia
  Duration: 02/Feb/2015 to 12/Feb/2016
  Status: Completed
  Project Summary: The present existing system is not based on web based application, instead of online process it is existing as off-line process i.e (black & white). Such legacy systems consist of enormous manual process like creation, submission reviewing, fund release, periodical status reviewing and result of acceptance were done manually. As the above process is carried out manually, the present system takes huge amount of time to complete the above mentioned tasks. To overcome these issues, of the existing system, we had developed an automated Research Management Systems through web based application. Such an application is developed with some additional features are like edit proposal, cancellation of proposal, modify proposal, withdraw proposal, modify / update investigators, know the status of the proposal, fund release status and statistical report of overall submitted proposal. In addition to the above mentioned automated process, the developed system also provides user friendly environment which needs less knowledge to operate the system with better results oriented when comparing with present existing system is an added advantage.

Center of Excellence-Establishment

- **Title:** Establishing a Center of Excellence on Internet of Things
  Role: Principal Investigator
  Amount: Rs.29,00,000
  Sponsored Agency: VIT Vellore, India
  Duration: 01/Jun/2017 to 02/Jan/2018
  Status: Completed
  Project Summary: The main objective of the proposal is to establish a new Center of Excellence on Internet of Things (IoT). The purpose of establishing the center is to introduce the state of the art technology in IoT by means having latest Arduino/Intel/Raspberry PI boards and different types of sensors. The main initiative in the center of excellence will be on working out real time prototype models and products.

Start-up Venture Research Grant

- **Title:** VZN: Vision for the sightless
  Role: Principal Investigator
  Amount: Rs.60,000
  Sponsored Agency: Startup Venture Grant - VIT Vellore, India
  Duration and Starting Date: 1 Year, 15/Nov/2022
  Status: Completed
  Project Summary: The mail of the proposal is to design a portable device which helps the visually impaired user navigate through different environments and obstacles using an array of ultrasonic sensors as well as a camera for image processing. The user is alerted of obstacles in their general vicinity through vibrational motors and buzzers. The device is also capable of detecting faces and common objects to better help the user understand their surroundings. This invention attempts to narrow the gap that exists between the visually impaired and the general populous, by alerting our consumers of their environment using mechanisms previously mentioned, they get able to contemplate a mental map of their surroundings. Thus, allowing them to maneuver themselves with ease. With the power of IoT we are providing means for the visually impaired to perceive the world and interact positively with their environment through our product which functions using a raspberry pi along with various sensors, cameras, facial detection.

Funded Project - Submitted

- **Title:** Secure and Scalable PQC-Enabled Hybrid HPC-Quantum Framework for Biomedical Applications
  Role: Co-Principal Investigator
  Amount: Rs.1,04,00,000
  Submitted Agency: National Quantum Mission, DST, India.
  Status: Submitted

- **Title:** On the study of generative power, ambiguity issues and semantic representation of bracketed, fully bracketed, semi bracketed contextual grammars
  Role: Principal Investigator
  Amount: Rs.13,69,000
  Submitted Agency: India-Japan Cooperative Science Program.
  Status: Submitted
- **Title:** Segmentation and deep learning for Predicting Cyclone and Flood Evolution in tropical and subtropical areas - SPLENDOR
  Role: Co-Principal Investigator
  Amount: Rs.48,75,664
  Submitted Agency: India-Italy Joint Research Project
  Status: Submitted

Consultancy Work- Ongoing and Completed

- **Title:** Automation Tools for Financial Markets
  Role: Co-investigator
  Amount: Rs.5,00,000
  Sponsored Agency: FactEntry, Vellore
  Status: Phase-I - Completed
- **Title:** Automation Tools for Financial Markets
  Role: Co-investigator
  Amount: Rs.5,00,000
  Sponsored Agency: FactEntry, Vellore
  Status: Phase-II - Completed
- **Title:** Assessing log value impact from code base (Text Parsers)
  Role: Principal Investigator
  Amount: Rs.87,400
  Sponsored Agency: SAMSUNG R & D
  Status: Completed
- **Title:** Multi Personal Natural Language Generation (NLG)
  Role: Principal Investigator
  Amount: Rs.2,00,000
  Sponsored Agency: SAMSUNG R & D (PRISM-ELite)
  Status: Completed

Industry Oriented Research Work - Ongoing and Completed

- **Title:** Audio modelling - To Key Moments from Audio data
  Role: Principal Investigator
  Sponsored Agency: SAMSUNG R & D
  Status: Completed
- **Title:** IoT Connectivity - Android & BLE support for IoTivity-Lite
  Role: Principal Investigator
  Sponsored Agency: SAMSUNG R & D
  Status: Completed
- **Title:** Deploy LLaVa-Interactive Model & improve its task specific accuracy for Visual Chat
  Role: Principal Investigator
  Sponsored Agency: SAMSUNG R & D
  Status: Completed
- **Title:** GenAI — NLP driven 3D image editing
  Role: Principal Investigator
  Sponsored Agency: SAMSUNG R & D
  Status: Completed

Papers in SCI Indexed /Peer reviewed Scopus Indexed International Journals

J1 Vijaya Padmanabha,Mohamed Sirajudeen Yoosuf, **Anand Mahendran**,Joseph Mani,Anisha Prima Rodrigues,Gururaj Bijur ,Hothefa Jassim, **Multi-feature Response Attention Network for kidney stone detection and measurement of stone size in ultrasound images**, accepted for publication in **PLOS One**, (SCI and Scopus Indexed, Impact Factor = 2.9).

J2 **Anand Mahendran**,Shreya Roshan, Anurag Velekat, Marian George, Mohamed Sirajudeen Yoosuf, P Vijaya, Joseph

Mani, **Diffie-Hellman Key Exchange Using Splicing System**, accepted for publication in **Kufa Journal of Engineering**, (Scopus Indexed).

J3 Apratim Jha, **Anand Mahendran**, Ibrahim Ghafir, Mohamed Hamada, **Asynchronous Federated Reinforcement Learning for Scalable Load Balancing in Software Defined Networks**, Vol. 29(1), 320, 2026 in **Discovery Computing (Formerly Information Retrieval Journal (IF=1.7)), Springer**, (Scopus Indexed).

J4 Balachandran G, **Anand Mahendran**, **Survey on Grammatical Inference of Formal Languages, Picture Languages**, Vol, 7(2), 181, 2026 in **SN Computer Science, Springer**, (Scopus Indexed).

J5 Moemedi Lefoane, Ibrahim Ghafir, Sohag Kabir, Irfan-Ullah Awan, Khalil El Hindi, **Anand Mahendran**, **Non-Negative Matrix Factorization and Latent Semantic Analysis for Hybrid Feature Selection: A Proposed Machine Learning System for the Detection of Malicious Executable Files**, Vol. 13, pp. 138867-138882, 2025, doi: 10.1109/ACCESS.2025.3596483 in **IEEE Access**, (SCI Indexed, Impact Factor = 3.6).

J6 Marian Gheorghe, Florentin Ipate, Kumar Kannan, Savas Konur, Lakshmanan Kuppusamy, Raluca Lefticaru,**Anand Mahendran**, Mihai Ionut, **Spiking Neural P Systems and Kernel P Systems**, 1-23, 2025 in **Journal of Membrane Computing, Springer**, (ESCI Indexed, Impact Factor = 2.9).

J7 Samanthisvaran, **Anand Mahendran**, **An interactive information based DCNN-BiLSTM model with dual attention mechanism for facial expression recognition**, Vol.15, 26287, 2025. https://doi.org/10.1038/s41598-025-09709-1, in **Scientific Reports, Nature Publishing**, (SCIE Indexed, Impact Factor = 4.6).

J8 Lavanya K, Ibrahim Ghafirb, Sai Harsha Varma Sangarajua, Preksha Mathura, Saipriya Rajagopal, **Anand Mahendran**, **Hierarchical Attention-Enhanced Multihead CNN and Level Sets Segmentation: A Proposed Approach to Enhance the Cyclone Intensity Estimation**, https://doi.org/10.1016/j.asr.2025.10.001, 2025, in **Advances in Space Research, Elsevier**, (SCI and Scopus Indexed, Impact Factor = 2.8).

J9 Samanthisvaran, **Anand Mahendran**, **An Improved Facial Expression Recognition using CNN-BiLSTM with Attention Mechanism**, Vol 20(4), 2025 https://doi.org/10.1371/journal.pone.0320058, **PLOS One**, (SCI and Scopus Indexed, Impact Factor = 2.9).

J10 Lavanya Kandasamy, **Anand Mahendran**, Sai Harsha Varma Sangaraju, Preksha Mathur, Soham Vijaykumar Faldu, Manuel Mazzara, **Enhanced remote sensing and deep learning aided water quality detection in the Ganges River, India supporting monitoring of aquatic environments**, Vol 25, 2025, 103504, https://doi.org/10.1016/j.rineng.2024.103604, **Results in Engineering, Elsevier**, (SCI Indexed, Impact Factor = 6.0).

J11 Ramanathan L, **Anand Mahendran**, Anandakumar S, **Multimodal healthcare data classification with Tangent Namib Beetle Optimization based routing in Blockchain based IoT**, in **Computers and Electrical Engineering, Elsevier**, Vol 120, Part A, 2024, 109614, ISSN 0045-7906, https://doi.org/10.1016/j.compeleceng.2024.109614, (SCI Indexed, Impact Factor = 4.0).

J12 Moemedi Lefoane, Ibrahim Ghafir, Sohag Kabir, Irfanullah Awan, Khalil El Hindi, **Anand Mahendran**, Latent Semantic Analysis and Graph Theory for Alert Correlation: A Proposed Approach for IoT Botnet Detection in **IEEE Open Journal of the Communications Society**, Vol 5, Pages 3904-3919, 2024, DOI: 10.1109/OJCOMS.2024.3419570 (SCI Indexed, Impact Factor = 7.9).

J13 SriPriyanka, **Anand Mahendran**, **Securing IoMT: A Hybrid Model for DDoS Attack Detection and COVID-19 Classification** in **IEEE Access**, Vol 12, Pages 17328-17348, 2024 (SCI Indexed, Impact Factor = 3.6).

J14 Bhasker Bapuram, Murali Subramanian, **Anand Mahendran**, Ibrahim Ghafir, Vijayan Ellappan, Mohammed Hamada **Extended Water Wave Optimization (EWWO) Technique: A Proposed Approach for Task Scheduling in IoMT and Healthcare Applications** in **Evolutionary Intelligence, Springer**, 2024. https://doi.org/10.1007/s12065-024-00947-2 (ESCI Indexed, Impact Factor = 2.6).

J15 Samanthisvaran, **Anand Mahendran**, **An Improved Facial Expression Recognition using CNN-BiLSTM with Attention Mechanism** in **International Journal of Advanced Computer Science and Applications (IJACSA)**, Volume 15(5), Pages 1307-1315, 2024 (Scopus and Web of Science Indexed, Impact Factor = 0.9).

J16 K.Lavanya, Abhilasha Gondchar, Irene Maria Mathew, Sumitkumar Sarda, Anandakumar S, **Anand Mahendran**, Darshika G. Perera, **Land Cover Classification using Landsat7 Data for Land Sustainability** in **Wireless Personal Communications, Springer**, Volume 132, Pages 679-697, 2023 (SCIE Indexed, Impact Factor = 2.2).

J17 S.Anantha Babu, Vijayan E, **Anand Mahendran**, Murali S, Ramanathan L, Manuel Mazzara **A Novel Ensemble based Reduced Overfitting Model with Convolutional Neural Network for Traffic Sign Recognition System** in **Electronics, MDPI**,Volume 12(4), Pages 1-24, 926, 2023 (SCIE Indexed, Impact Factor = 2.8).

J18 Vijayan.E, **Anand Mahendran**, S.Murali,Jeevanandam Jotheeswaran, Adil O.Khadidos, Alaa O. Khadidos, Shitharth Selvarajan **Sliding Principal Component and Dynamic Reward Reinforcement Learning based IIot Attack Detection** in **Scientific Reports, Nature Publishing**, Volume 13, 20843, 2023 (SCIE Indexed, Impact Factor = 4.6).

J19 Lavanya K, **Anand Mahendran**, Ramani Selvanambi, Manuel Mazzara, Jude D Hemanth, **Tunicate Swarm Algorithm with Deep Learning based Land Use and Cover Change Detection in Nallamalla Forest India** in **Applied Sciences, MDPI**, Volume 12(23), Pages 1-23, 11996, 2022 (SCI Indexed, Impact Factor = 4.9).

J20 Latifat Salau, Mohamed Hamada, Rajesh Prasad, Mohammed Hassan, **Anand Mahendran**, Yutaka Watanobe,

State-of-the-art Survey on Deep Learning-based Recommender Systems for e-Learning in **Applied Sciences, MDPI**, Volume 12(23),Pages 1-26, 11996, 2022 (SCIE Indexed, Impact Factor = 2.838).

J21 **Anand Mahendran**, Kumar Kannan, Mohammed Hamada, Manuel Mazzara, **Analyzing the Trade-off Between Complexity Measures, Ambiguity in Insertion Systems and its Applications** in **IEEE Access**, Volume 10, Pages 100513-100525, 2022 (SCI Indexed, Impact Factor = 3.557).

J22 Sakthivel R, Sumaiya Thaseen I, Vanitha M, Deepa M, Angulakshmi M, Mangayarkarasi R,**Anand Mahendran**, **Efficient Hardware Architecture for COVID -19 Prediction using Ensemble of Deep Learning Models**, in **Sustainable Cities and Society, Elsevier**, Volume 80, 103713, Pages 1-13, 2022, (SCI Indexed, Impact Factor = 7.587).

J23 Indumathi, **Anand Mahendran**, Anandakumar, Mohammed Hamada, Waleed S.Alnumay, Uttam Ghosh, Pradip Sharma, **A Novel Cryptosystem using DNA Sequencing and Contextual Array Splicing System for Medical Internet of Things** in **Computers and Electrical Engineering, Elsevier**, Volume 96, Pages 107429-107441, 2021(SCI Indexed, Impact Factor = 4.89).

J24 C.J.Satish, **Anand Mahendran**,**The effect of 3D visualization on mainframe application maintenance: A controlled experiment** in **Journal of King Saud University - Computer and Information Sciences, Elsevier** Volume 31, Pages 403-414, 2019 (SCI Expanded Indexed, Scopus Indexed, Impact Factor = 13.43).

J25 Harinee, **Anand Mahendran**, **Encryption based on cellular automata for wireless devices in IoT environment** in **International Journal of Arab Information Technology**, Volume 18(3), Pages 347-355, 2021 (SCI Expanded Indexed, Scopus Indexed, Impact Factor = 0.742).

J26 Lakshmanan Kuppusamy, **Anand Mahendran**, **Modelling DNA and RNA secondary structures using Matrix insertion-deletion systems** in **International Journal of Applied Mathematics and Computer Science**, Volume 26/1, Pages 245–258, 2016 (SCI Indexed, Thomson Reuters Indexed, Scopus Indexed, Impact Factor = 1.597).

J27 Lakshmanan Kuppusamy, **Anand Mahendran**, Kamala Krithivasan, **On the ambiguity of insertion-deletion systems** in **International Journal of Foundations of Computer Science**, Volume 22/7, Pages 1747–1758, 2011 (SCI Indexed,Thomson Reuters Indexed, Scopus Indexed, Impact Factor = 0.75).

J28 Lakshmanan Kuppusamy, **Anand Mahendran**, Kamala Krithivasan, Khalid Mohammed, **On the study of ambiguity and the trade-off between measures and ambiguity in insertion-deletion languages** in **Nano Communication Networks Journal**, **Elsevier**, Volume 2, Pages 106–118, 2011 (SCI Indexed, Thomson Reuters Indexed, Scopus Indexed, Impact Factor = 2.947).

J29 Lakshmanan Kuppusamy, **Anand Mahendran**, Kamala Krithivasan,**On the trade-off between ambiguity and complexity measures in contextual languages** in **Fundamentae Informatica**, Volume 122(4) , Pages 315–326, 2013 (ISI, Thomson Reuters Indexed, Scopus Indexed, Impact Factor = 1.33).

J30 C.J.Satish, **Anand Mahendran**, **VTrace-a tool for visualizing traceability links among software artefacts for an evolving system** in **Bulletin of Electrical Engineering and Informatics**, Vol.6(2), Pages 210-218, 2017 (Scopus Indexed).

J31 G.Ramya, **Anand Mahendran**,**Octagonal picture languages** in **International Journal of Reasoning-based Intelligent Systems, Inderscience Publishers**,Volume 10(3/4), Pages 197-203, 2018 (Scopus Indexed).

J32 G.Ramya, **Anand Mahendran**, **Generating Kolam Patterns using Kolam Picture Grammar** in **International Journal of Intelligent Systems and Applications, Inderscience Publishers**,Volume 8(2), Pages 209-220, 2018 (Scopus Indexed).

J33 M.Deepa, **Anand Mahendran**, **Risk - based availability modelling and analysis on fault tolerant cloud computing systems** in **International Journal of Intelligent Systems Technologies and Applications, Inderscience Publishers**, Volume 9(1/2), Pages 37-56, 2019(Scopus Indexed).

J34 Sanket Gaikwad, **Anand Mahendran**, **Deep Learning for Iceberg Detection in Satellite Images**, in **Solid State Technology**, Volume 64(2), Pages 5231-5241, 2021(Scopus Indexed).

J35 Anandakumar S, Samanta Arirta, Sasmithaa Manickam, Abhinav Kumar, Starvos Shiaeles, **Anand Mahendran**, **Linear Regression Trust Management Systems for IoT Systems** in **Cybernetics and Information Technologies**, Volume 21(4), Pages 15-27, 2021 (Scopus Indexed).

J36 SriPriyanka, **Anand Mahendran**, Bio-inspired Computing Techniques for Data Security Challenges and Controls, **SN Computer Science**, Volume 3(6), Pages 1-19, 2022 (Scopus Indexed).

J37 Angulakshmi M, Deepa M, **Anand Mahendran**, Vanitha M, Sumaiya Thaseen I, Karthikeyan P, COVID -19 Predictions using Transfer Learning based Deep Learning Model with Medical Internet of Things, **International Journal on Recent and Innovation Trends in Computing and Communication**, Volume 11(3), Pages 43-50, 2023 (Scopus Indexed).

J38 M, Sumaiya Thaseen I, Vanitha M, Deepa M, Angulakshmi M, **Anand Mahendran**, A COVID-19 Prediction Using a Blockchain Approach Integrated With UV-NET for Urban Management, **International Research Journal of Multidisciplinary Scope** , Volume 5(4), Pages 991-1005, 2025 (Scopus Indexed).

J39 SriPriyanka G,**Anand Mahendran**, Smart Healthcare Applications: Detecting DDoS Attacks Efficiently using Hybrid Firefly Algorithm, **International Research Journal Engineering, Technology & Applied Science Research**, https://doi.org/10.48084/etasr.9760, Volume 15(2), Pages 21136-21143, 2025. (Scopus Indexed).

Papers in Scoped Indexed International Journals

J1 Shanmugavel Anantha Babu, Subramanian Murali, Ellappan Vijayan, **Anand Mahendran**, Lakshmanan Ramanathan, **Blindness detection in diabetic retinopathy using Bayesian variant-based connected component algorithm in Keras and TensorFlow** in **Scientific and Technical Journal of Information Technologies, Mechanics and Optics**, Volume 23(3), Pages 575-584, 2023 (Scopus Indexed).

J2 Panday H, Vijayarajan V, **Anand Mahendran**, Krishnamoorthy A, Surya Prasath V.B, **Stock prediction using sentiment analysis and long short term memory** in **European Journal of Molecular and Clinical Medicine Technology**, Volume 7(2), Pages 5060-5069, 2020 (Scopus Indexed).

J3 **Anand Mahendran**, **A study on trust management system in wireless sensor networks in internet of things** in **International Journal of Advanced Science and Technology**, Volume 29(5), Pages 14084-14099, 2020 (Scopus Indexed).

J4 C.J.Satish, **Anand Mahendran**, **Automated Bug Assignment in Software Maintenance Using Graph Databases** in **International Journal of Intelligent Systems and Applications**, Volume 2, Pages 27-36, 2018 (Scopus Indexed).

J5 **Anand Mahendran**, Y.Venkatesh,G.Vinod Kumar, S.Praveen Kumar, **Theft Control Using IoT** in **International Research Journal of Engineering and Technology**, Volume 5(3), Pages 1005-1008, 2018.

J6 **Anand Mahendran**, Siddharth Chatterjee and V. Vijayarajan, **Password Generation Mechanism Using DNA and RNA Processing** in **Journal of Computational and Theoretical Nanoscience**, Volume 15, Pages 1-5, 2018.

J7 Yalagala Gurudev, **Anand Mahendran**, **Contributory Broadcast Encryption with Efficient Encryption and Short Cipher texts** in **International Journal of Pure and Applied Mathematics**, Volume 118(20), Pages 4523-4529, 2018 (Scopus Indexed).

J8 C.J.Satish, **Anand Mahendran**, **The Impact of Visualizing Traceability Links for Evolving Requirements in Software Maintenance- A Controlled Experiment** in **International Journal of Intelligent Engineering and Systems**, Volume 10(3), Pages 235-244, 2017 (Scopus Indexed).

J9 M.Deepa, **Anand Mahendran**, **An approach to evaluate the availability of system in cloud computing using fault tree technique** in **International Journal of Intelligent Engineering and Systems**, Volume 10(4), Pages 245-256, 2017 (Scopus Indexed).

J10 M.Deepa, **Anand Mahendran**, **Availability Modelling of Fault Tolerant Cloud Computing System** in **International Journal of Intelligent Engineering and Systems**, Volume 1(1), Pages 154-165, 2017 (Scopus Indexed).

J11 M.Deepa, **Anand Mahendran**, **Quality of service on performance evaluation - A survey** in **IIOAB Journal**, Volume 8(2), Pages 8-13, 2017 (Thomson Reuter Indexed, Scopus Indexed).

J12 G.Ramya, **Anand Mahendran**, **Survey on various classes of picture languages** in **International Journal of Applied Engineering and Research**, Volume 11(8), Pages 5376-5381, 2016 (Scopus Indexed).

J13 C.J.Satish, **Anand Mahendran**, **A Review of Tools for Traceability Management in Software Projects** in **International Journal for Research in Emerging Science and Technology**, Volume 3(3), Pages 6-10, 2016.

J14 C.J.Satish, **Anand Mahendran**, **Software documentation management issues and practices: A survey** in **Indian Journal of Science and Technology**, Volume 9(20), Pages 1-7, 2016 (Scopus Indexed).

J15 M.Deepa, **Anand Mahendran**, **Morphological analysis using adaptor grammar- A study** in **International Journal of Pharmacy and Technology**, Volume 8(2), Pages 12563-12577, 2016 (Scopus Indexed).

J16 Jayabrabu Ramakrishnan, **Anand Mahendran**, **A framework and implementation of an online research management system** in **Indian Journal of Science and Technology**, Volume 9(48), Pages 1-5, 2016 (Scopus Indexed).

J17 G.Ramya, **Anand Mahendran**, **A survey on applications of grammar formalism in image processing** in **International Journal of Applied Engineering and Research**, Volume 10(6), Pages 16021-16034, 2015 (Scopus Indexed).

J18 E.Vijayan, **Anand Mahendran**, **Automatic cricket highlights generation based on key frame and image subtraction** in **International Journal of Applied Engineering Research**, Volume 9(18), Pages 4359-4367, 2014 (Scopus Indexed).

J19 Lakshmanan Kuppusamy, **Anand Mahendran**, **Identifying ambiguity levels in gene sequences using matrix ins-del systems** in **International Journal of Innovative Science and Modern Engineering**, Volume 2(10), Pages 18-22, 2014.

J20 L.B.Krithika, **Anand Mahendran**, **Tooltip translator for social networking** in **Indian Journal of Science and Technology**, Volume 7(11), Pages 1744-1749, 2014 (Scopus Indexed).

J21 Muthuraman, **Anand Mahendran**, **Domain independent natural language interface** in **International Journal of Computer Information Systems**, Volume 6(1), Pages 13-21, 2013.

J22 Muthuraman, **Anand Mahendran**, **Meta browsing using natural language processing** in **International Journal of Advances of Science and Technology**, Pages 56-65, 2013.

J23 L.B.Krithika, **Anand Mahendran**, **Opinion mining and summarization of company reviews** in **Journal of Theoretical and Applied Information Technology**, Volume 57(2), Pages 184-190, 2013 (Scopus Indexed).

J24 G.Ramya, **Anand Mahendran**, **A study on various bio-inspired computing models** in **Journal of Theoretical and Applied Information Technology**, Volume 57(3), Pages 418-423, 2013 (Scopus Indexed).

J25 L.B.Krithika, **Anand Mahendran**, **Test case prioritization using hyperlink ranking - A graph theory based approach** in **International Journal of Research in Engineering and Technology**, Volume 2/11, 2013.

Book Published

TB1 S.Murali, E.Vijayan, S.Gnanavel, **Anand Mahendran**, **Data Structures and Algorithms**, published by **Scientific International Publishing Office**, ISBN: 978-93-5625-453-4.

TB2 S.Ramani, S.Rajkumar, **Anand Mahendran**, **Deep Learning-An Approach to Artificial Intelligence**, published by **Scientific International Publishing Office**, ISBN: 978-93-5757-655-0.

Papers in Book Chapters

BC1 Lakshmanan Kuppusamy, **Anand Mahendran**, Eric De La Villemonte Clergerie, **On the new class of bracketed contextual grammars**, In book chapter **Bio-Inspired Models for Natural and Formal Languages** by **Cambridge Scholars Publishing**, Pages 53–81, 2011 (Scopus Indexed).

BC2 Lakshmanan Kuppusamy, **Anand Mahendran**, Eric De La Villemonte Clergerie, **Modelling intermolecular structures and defining ambiguity in gene sequences using matrix insertion-deletion systems**, in book chapter **Biology, Computation and Linguistics, New Interdisciplinary Paradigms**, by **IOS Press**, Vol. 228, pages, 71–85, 2011(Scopus Indexed).

BC3 **Anand Mahendran**, Narmadha, **A study on various cryptographic techniques towards fog environment**, in book chapter **Edge Computing for Massive Parallel Processing of IoT Data Streams (ECOMPIOTS)**, by **IOS Press**, Vol. 35, 215-236, 2020 (Scopus Indexed).

BC4 Harinee, **Anand Mahendran**, **A cloud robotic solution to assist medical application**, in book chapter **Edge Computing for Massive Parallel Processing of IoT Data Streams (ECOMPIOTS)**, by **IOS Press**, Vol.35, 281-306, 2020(Scopus Indexed).

BC5 Lahari Anne,S. Anandakumar,**Anand Mahendran**,Muhammad Rukunuddin Ghalib, Uttam Ghosh, **A study and analysis of trust management system in cloud technologies**, in book chapter **Applications of Artificial Intelligence for Smart Technology** by **IGI Publications**, 220-232, 2020(Scopus Indexed).

BC6 Harinee, **Anand Mahendran**, **A study on various machine learning algorithms towards health care system**, accepted for publication in **Deep Learning in Data Analytics: Recent Techniques, Practices and Applications**, by **Springer Verlag**.

BC7 Priyanka, **Anand Mahendran**, **Security Privacy Issues and Solutions in Internet of Medical Things - A Review**, accepted for publication in **Intelligent IoT Systems in Personalized Health Care**, by **Elsevier**.

Papers Communicated/Under Review in International Journals

CJ1 **Anand Mahendran**, Mohammed Rashique Shuraim, **Bio-inspired probabilistic process modelling using Insertion-Deletion Systems for conformance checking** communicated to **International Journal of Applied Mathematics and Computer Science, AMCS**.

CJ2 **Anand Mahendran**, Akshay Ramesh, Ibrahim Ghafir, **Interpretable Deep Learning with Neuro-Symbolic AI for Early Detection of Rapid Eye Movement Sleep Behavior Disorder** communicated to **Journal of Neuro Science Methods, Elsevier**.

CJ3 **Anand Mahendran**, Apratim K Jha, Mohammed Hamada, **Asynchronous Federated Reinforcement Learning for Scalable Load Balancing in Software Defined Networks** communicated to **International Journal of Communication Systems, Wiley**.

CJ4 Lakshmanan Kuppusamy, **Anand Mahendran**, **On the generative power of semi-bracketed contextual grammars** communicated to **Acta Informatica**.

Papers Accepted/Presented in Referred International Conferences

C1 **Anand Mahendran**, Aditya Raj, Ronit Debnath, Marian **Bio-sequence Analyzer: A tool for classification of Bio-molecular structures** accepted and presented in **ISPEC-17th International conference on Engineering and Natural Sciences-2015 held at Sivas Bilim Ve Technology University, Prague, Czech Republic**.

C2 **Anand Mahendran**, Aditya Raj, Ronit Debnath, Sach Thadani **Analyzing Trust Concerns in Community Cloud Using Finite State Automata** accepted and presented in **ICICT, 2025 held at Vellamal Institute of Technology, Chennai**.

C3 Tarun Sateesh, **Anand Mahendran**, **Parahelp: A Novel Communication System For Users To Communicate Only With The Movement Of The Eyes** presented in **3rd Eurasia International Scientific Research and Innovation Congress-2024), held at Ankara, Turkey**.

C4 Jesse Ismaila Mazadu, Mohamed Hamada, Jesse Jeremiah Tanimu, **Anand Mahendran**, Patience Robert **Network Intrusion Detection System Using Deep Learning Method With KDD CUP99 Dataset** presented in **15th IEEE International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoC-2022)**.

C5 **Anand Mahendran**, Kumar Kannan, Mohammed Hamada, **Analyzing the trade-off between complexity measures, ambiguity in insertion system and its application in natural languages** accepted in **ICRTC-2022** proceedings published in **Springer Verlag-LNNS, Volume 600, Pages 489-499**.

C6 Sripriyanka , **Anand Mahendran**, **Mirai Botnet Attacks on IoT applications: A Review of Challenges and Controls** accepted in **ISMS-2021** proceedings published in **Springer Verlag-CCIS, Pages 49-67**.

C7 **Anand Mahendran**, **Modelling RNA Motifs using Matrix Insertion-deletion systems** accepted in **ICC3-2021** proceedings published in **Springer Verlag-CCIS, Volume 1631, Pages 139-152**.

C8 Akashkumar S, Atreya Niranjan Dyaram, **Anand Mahendran**, **Identification of Tamil Characters using Deep Learning** accepted in **ICMLAS-2021** proceedings published in **Springer Verlag-CCIS, Vol 269, Pages 223-237**.

C9 Saipriya, **Anand Mahendran**, **To Secure IoT sensor nodes through Fog computing** accepted in **ICESC-2021** proceedings published in **IEEE Explore, Pages 836-844**.

C10 **Anand Mahendran**, Kunal A. Vasavada, Rohan Tuteja, Yashika Sharma, V.Vijayarajan, **Stock Market Analysis and Prediction using Artificial Neural Network Toolbox** accepted in **Embedded Systems and Artificial Intelligence Proceedings of ESAI 2019, Fez, Morocco** and published in **Springer Verlag, Advances in Intelligent Systems and Computing**, 1076, Pages 559-569, 2020.

C11 Joshi Kunal,Vaibhav Kothiram,Mankad,**Anand Mahendran**, **Design of an IoT Enabled Device for Physically Impaired Persons** accepted in **ICSET 2018**, to be held at VIT, Vellore.

C12 Swarup Banik, Joshi Rituraj,Vikram Shamsundar,**Anand Mahendran**, **Design of a security mechanism in fog computing using Blockchain** accepted in **ICSET 2018**, to be held at VIT, Vellore.

C13 Indumathi, **Anand Mahendran**, **Fog security based on biology inspired algorithms** accepted in **ICSET 2018**, to be held at VIT, Vellore.

C14 Vishnu Priya, **Anand Mahendran**, **Analyzing the trust Concerns in Hybrid Clouds Using Finite State Automata** accepted in **ICSET 2018**, to be held at VIT, Vellore.

C15 Dipandan Je, **Anand Mahendran**, **A framework for IoT based intelligent two-wheeler parking system** accepted in **ICSET 2018**, to be held at VIT, Vellore.

C16 Arup Kumar, **Anand Mahendran**, **Proposed model for QR code based authentication system for IoT enabled devices** accepted in **ICSET 2018**, to be held at VIT, Vellore.

C17 Yalagala Gurudve, **Anand Mahendran**, **Contributory broadcast encryption with efficient encryption and short cipher texts** accepted in **ICSIE 2018**, to be held at Jawahar Engineering College, Chennai.

C18 Siddarth Chaterjee, **Anand Mahendran**, **Password generation mechanisms using DNA and RNA processing** accepted in **ICACB 2018**, to be held in Kingston Engineering College, Vellore.

C19 Lakshmanan Kuppusamy, **Anand Mahendran**,**On the generative of Semi-bracketed contextual grammars** accepted in **ICAMTCS 2018**, to be held in St. Xavier Catholic College of Engineering, Nagercoil.

C20 Harinee, **Anand Mahendran**,**A review on various security attacks and algorithms in Cloud environment** accepted in **ICONNECT2K17**, held in K.Ramakrishanan College of Engineering and Technology, Trichy.

C21 **Anand Mahendran**, Lakshmanan Kuppusamy, **Formal language representation and modeling structures underlying RNA folding process**, in **Springer-LNCS: Vol No:10398** proceedings of **ICTCSDM 2016**, held in Kalasalingam University, Tamilnadu, India, Pages 20-30.

C22 Brem Navas, **Anand Mahendran**, **Secured e-commerce transactions through chaotic map** in proceedings of **International Conference on Advanced Computing and Communication Systems (ICACCS -2017)**, held in Sri Eshwar College of Engineering, Coimbatore.

C23 **Anand Mahendran**, Vishnu Vardhan, **Peptide computing to solve NP-complete clique problem** in proceedings of 4th International Conference on **Science, Engineering and Technology (SET)- 2012** held in VIT University, Vellore.

C24 **Anand Mahendran**, Arnab Dutta, **Road traffic management system: A machine learning based approach** in proceedings of 4th International Conference on **Science, Engineering and Technology (SET)- 2012** held in VIT University, Vellore.

C25 Ashwin Rajadesigan, **Anand Mahendran**, **Reporting of new blog comments through spam classifiers** in **Springer - LNCS: Vol No: 7182** proceedings of **CICLING 2012** held in Delhi, India, Pages 490 – 502 (Scopus Indexed).

C26 Lakshmanan Kuppusamy, **Anand Mahendran**, S.N.Krishna, **Matrix insertion-deletion systems for bio-molecular structures** in **Springer - LNCS: Vol No: 6536** proceedings of **ICDCIT 2011** held in Bhubaneshwar, India, Pages 301–311 (Scopus Indexed).

C27 Lakshmanan Kuppusamy, **Anand Mahendran**, S.N.Krishna, **On representing natural languages and bio-molecular structures using matrix insertion-deletion systems and its computational completeness** in **BILC-2011**, Italy, Pages 47–57.

C28 Lakshmanan Kuppusamy, **Anand Mahendran**, Eric De La Villemonte Clergerie, **Modelling intermolecular**

structures and defining ambiguity in gene sequences using matrix insertion-deletion systems in **LBCSI 2011**, held in Tarragona, Spain.

C29 **Anand Mahendran**, Lakshmanan Kuppusamy,**Identifying ambiguities in gene sequences using insertion-deletion systems** accepted in **IES-2011** held in Japan.

C30 Lakshmanan Kuppusamy, **Anand Mahendran**, Kamala Krithivasan, **On the ambiguity and complexity measures in insertion-deletion systems** in **Springer - LNICST: Vol No: 87, 2012** proceedings of **Bionetics-2010** in USA, Pages 425–439 (Scopus Indexed).

C31 Lakshmanan Kuppusamy, **Anand Mahendran**, **New class of bracketed contextual grammars for MCS formalism** accepted for Poster Presentation in **SOFSEM**, January-2009.

C32 Lakshmanan Kuppusamy, **Anand Mahendran**, **A new automata for parsing semi-bracketed contextual grammars** in proceedings of **Ist International Conference on Computer, Communication, Control and Information Technology (C3IT)**, February-2009.

C33 Lakshmanan Kuppusamy, **Anand Mahendran**, Kamala Krithivasan, **On the trade-off between ambiguity and measures in internal contextual grammars** in proceedings of **10th International workshop on Descriptional Complexity of Formal Systems(DCFS)-2008** in Charlottetown, Canada, Pages 216-223.

Papers Accepted/Presented in National Conferences

NC1 Lakshmanan Kuppusamy, **Anand Mahendran**, **Modelling bio-molecular structures using Matrix insertion-deletion systems** in **BIF-Symposium 2013** held at IIT Madras.

NC2 **Anand Mahendran**, Lakshmanan Kuppusamy, **Inference of regular languages through genetic algorithm** in **ETACS 2007** at RCGET, Pondichery.

NC3 **Anand Mahendran**, **A new model for anomaly based intrusion detection mechanisms** in **Vision 2006** at Government college of Engineering, Tirunelveli.

NC4 **Anand Mahendran**, **Anomaly based intrusion detection methods using data mining** in **NCDMA 2006** at Annamalai University, Chidambaram.

NC5 **Anand Mahendran**, **Remote database access through mobile and design and evaluation of replicated databases for mobile systems** in **Networks 2005** at Osmania University Hyderabad.

NC6 **Anand Mahendran**, **Querying the physical world through mobile and design of distributed database for mobile systems** in **CITEL 2005** at Kumaraguru college of Technology- Coimbatore.

NC7 **Anand Mahendran**, **Remote database access through mobile and design and evaluation of replicated databases for mobile Systems for mobile systems** in **Vision 2005** at Government College of engineering, Tirunelveli.

NC8 **Anand Mahendran**, **Distributed resource discovery and resource isolation in Linux based xenoservers** in **Nacipan 2005** at National Engineering College, Kovilpatti.

Research Profile ID

- Google Scholar: https://scholar.google.co.in/citations?user=9n9frz8AAAAJ&hl=en
- Orcid ID:https://orcid.org/0000-0002-7629-9606
- Citation count: 586
- H-Index: 14

Patents Published

- Analysis of availability modelling in Fog computing (Application No:201941046293)
- A hybrid encryption algorithm for D2D communication in IOT environment (Application No:201941038444)

Reviewer in Journals

- Serving as a reviewer for **KSII Transactions on Internet and Information Systems**.
- Serving as a reviewer for **IEEE Transactions on Internet of Things**.
- Serving as a reviewer for **Egyptian Informatics Journal, Elsevier**.
- Serving as a reviewer for **The Arabian Journal for Science and Engineering** published by **Springer-Verlag**.
- Serving as a reviewer for **Cluster Computing** published by **Springer-Verlag**.
- Serving as a reviewer for **Journal of King Saud University - Computer and Information Sciences** published by **Elsevier**.
- Serving as a reviewer for **International Journal of Advanced Intelligence Paradigms** published by **Inderscience**.
- Serving as a reviewer for **International Journal of Computing and Digital Systems**.
- Serving as a reviewer for **Journal of Scientific Research in Allied Science**.
- Serving as a reviewer for **Science Asia journal**.

- Serving as a guest editor for the special issue on **Internet of Things-Journal of Information & Knowledge Management** by World Scientific Publishers.

Accreditation Activities-ABET

- From **December 2011 to February 2014** as **Programme Chair** for **B.Tech (Computer Science and Engineering)-ABET** accredited at **Vellore Institute of Technology (VIT)**, Vellore.
- Served as a **ABET** committee member (Course Files-Incharge) for B.Tech(Computer Science and Engineering) at VIT University, Vellore.
- Served as a **ABET** committee member (Course Files-Incharge) for B.S (Computer Science) at Jazan University, Kingdom of Saudi Arabia.

Accreditation Activities-NAAC/NCAAA

- Served as a **NCAAA** committee (Course Files-Incharge and School level research activities) for Department of Computer Science at Jazan University, Kingdom of Saudi Arabia.
- Served as a **NAAC** co-ordinator (School Level-All Criteria) at VIT University, Vellore.

Administrative Activities

- Served as a **Session chair** in a International conference **Quantum Innovations for Computing and Knowledge Systems (QUICK-2026)** held in VIT Chennai in association with Deakin University, Australia.
- Served as a Faculty Co-ordinator in Technical event **GRAVITAS-2019** held at VIT University, Vellore.
- Serving as a co-ordinator for **SAMSUNG-PRISM** Research and Development Industry Institute program.
- Served as a **Judge-Code Space** in an Code space Hackathon-2017 held in VIT University, Vellore.
- Served as a **International Advisory Committee member** in an International Conference **ICRATES-2016** held in C.Abdul Hakeem Engineering College, Melvisharam, Vellore.
- Served as a **Technical Committee member** in an International Conference **CCIIS-2013** held in VIT University, Vellore.
- Served as a **Session chair** in a national conference **NCETICT-2013** held in Kingston Engineering College, Vellore.
- Served as a **Curriculum Review** committee member for B.S (Computer Science) at Jazan University, Kingdom of Saudi Arabia.
- Served as a **Excellence Unit** member in College of Computer Science and Information systems at Jazan University, Kingdom of Saudi Arabia.
- Served as a **Graduation Project** committee member for B.S (Computer Science) at Jazan University, Kingdom of Saudi Arabia.
- Served as a **Board-of-studies** member for B.Tech(Computer Science and Engineering) at VIT University, Vellore.
- Served as a **School Research Development** committee member in School of Computing Science and Engineering at VIT University, Vellore.
- Served as a **Examination Cell** committee member in School of Computing Science and Engineering at VIT University, Vellore.

Guest Lectures

- Lecture on **Bio-inspired Computing Models and its Applications** at VIT Chennai.
- Lecture on **IoT, Cyber-physical Systems and its applications** in a FDP at VIT Chennai.
- Lecture on **Modelling of looping bio-molecular structures using 2-Way Quantum finite state automata** in Turing Seminar Series at VIT Chennai.
- Lecture on **Modelling of bio-molecular structures using Matrix Insertion-Deletion Systems** in Nagasaki University, Japan.
- Lecture on **Succinct descriptional complexity measures, ambiguity in insertion systems** in Nagasaki University, Japan.
- Lecture on **Analyzing the trade-off between complexity measures, ambiguity in insertion systems and its application in natural languages** in Laboratory of Complex Systems Modeling and Control, Higher School of Economics, National Research University, Moscow, Russia.
- Lecture on **Cybersecurity and its impact in Real World** in National Level Science Fest at Tiruvalluvar University, Vellore
- Lecture on **Usage of Arrays and Strings in Embedded C Programming** in Faculty Development Programme at VIT Vellore
- Lecture on **Deep Learning and its Application** in Annai Mira College of Engineering and Technology, Vellore.
- Lecture on **Bio-inspired Computing Models and its Applications** in University of Bradford, UK.
- Lecture on **Real time applications and domains that map to cyber physical systems** in ICC3-2021, held at

PSG College of Technology, Coimbatore, India.

- Lecture on **Semi Bracketed Contextual Grammars** in National Research University, Higher School of Economics, Moscow, Russia.
- Lecture on **Real Time Applications of IoT** in Meetu Universiy, Ethiopia.
- Lecture on **IoT and its Applications** in C.Abdul Hakeem Engineering College, Melvisharam, Vellore.
- Lecture on **Programming in IoT** in Saraswati Velu Engineering College, Vellore.
- Lecture on **IoT and its Applications** in Gravitas-2019, VIT Vellore.
- Lecture on **Research Trends in Internet of Things** in Veltech University, Chennai.
- Lecture on **Internet of Things - An introduction** in Vivekananda College of Engineering for Women, Thiruchengode.
- Lecture on **Theory of Computation** in C.Abdul Hakeem Engineering College, Melvisharam, Vellore.
- Lecture on **Mathematics and Computation**, conducted by SIAM Club, VIT University, Vellore.
- Lecture on **Preparation of effective journal paper using LaTeX software** in C.K. Engineering College, Cuddalore.
- Lecture on **Modern trends in E-learning** in Jazan University, Jazan, Kingdom of Saudi Arabia.
- Lecture on **DNA Computing and its applications in Computer Science** in Auxillium College Women, Vellore.
- Lecture on **LaTeX-An Effective Documentation Tool** in Vivekananda College of Engineering for Women, Thiruchengode.
- Lecture on **Grammar formalisms towards natural languages** in C.Abdul Hakeem Engineering College, Melvisharam, Vellore.
- Lecture on **Bio-inspired computing models and natural languages** in a National Conference held in Kingston Engineering College.
- Lecture on **Finite state automata and Pumping lemma** in AICTE sponsored FDP in SKR Engineering College, Chennai.
- Lecture on **Undecidability and NP-Complete Problems** in Nehru Institute of Engineering and Technology, Coimbatore.
- Lecture on **Bio-inspired computing models** in C.Abdul Hakeem Engineering College, Melvisharam, Vellore.
- Lecture on **Push down automata and Turing machine** in Roever Engineering College, Perambalur.
- Lecture on **Context free grammars and push down automata** in AICTE sponsored Faculty development programme in Sudharshan Engineering College, Pudukottai.
- Lecture on **Finite state automata and regular grammars** in AICTE sponsored Faculty development programme in Sengunthar College of Engineering, Namakkal.
- Lecture on **Automata theory** in one day workshop conducted in Ranipettai Engineering College, Ranipettai.
- Lecture on **Code optimization techniques** in one day workshop conducted in Ranipettai Engineering College, Ranipettai.
- Lecture on **Parsing techniques** in one day workshop conducted in Dhanalakshmi Srinivasan College of Engineering, Perambalur.
- Lecture on **Formal languages and automata theory** in one day workshop conducted in Paavai Engineering College, Salem.
- Lecture on **Formal methods in software engineering** in one day workshop conducted in Srinivasan Engineering College, Perambalur.
- Lecture on **Regular expressions and automata theory** in a Faculty Development Programme conducted in Veltech Engineering College, Chennai.
- Lecture on **Theoretical aspects in design of compilers** in a Faculty Development Programme conducted in VIT University, Vellore.
- Lecture on **Design of cache and virtual memories** in Dhanalakshmi Srinivasan College of Engineering, Perambalur.
- Lecture on **Concurrency control techniques in database** in Dhanalakshmi Srinivasan College of Engineering, Perambalur.
- Lecture on **Introduction to Language Translation-Part 1** in a Faculty Competency Development Programme-II in VIT University, Vellore.
- Lecture on **Introduction to Language Translation-Part 2** in a Faculty Competency Development Programme-II in VIT University, Vellore.
- Lecture on **Trade-off between ambiguity and complexity measures in internal contextual languages** in a research seminar in VIT University, Vellore.

Subjects taught - Undergraduate

Cyber Security, Cryptography Fundamentals, Vulnerability Assessment and Penetration Testing, Information Security Analysis and Audit, Information System Management, Theory of Computation, Formal languages and Automata theory, System Analysis and Design, Programming Languages and Paradigms, Compiler Design, System Programming, Computer Programming and Problem Solving, C Programming, Advanced C Programming, Computer System Fundamentals, Internet of Things (IoT), Data Structures, Algorithm Design and Analysis, Cloud Security, Mobile Computing, Software Engineering, System Software, Operating Systems, Data Modeling and Simulation, Network Security, Digital Logic,

Microprocessor and Interfacing, Enterprise Resource Planning.

Subjects taught -Postgraduate

Advanced Compiler Design, Multi-core Programming, IoT Technology and its Applications, Machine Learning, Advanced Algorithm Design and Analysis, Advanced Data Structures, Advanced Operating Systems.

Workshop/Seminars/FDP/Symposium attended

- One day workshop on **Agentic AI: Building Autonomous Intelligent Agents** organized by VIT Chennai.
- Five days FDP on **Quantum Computing**, organized by VIT Chennai.
- Seven days FDP on **AI & ML Innovations for a Sustainable Future**, organized by Indian IIT Roorkee.
- Two days workshop on **Quantum Algorithms**, organized by Indian Institute of Science (IISC), Bangalore.
- Five days workshop on **Teaching - Learning Process**, organized by VIT, Chennai.
- Five days workshop on **Advancements in Computing Technologies and IoT**, organized by VIT, Chennai.
- Five days workshop on **Gen-AI and its applications**, organized by VIT, Chennai.
- Five days Faculty Development Programme on **Soft skills for Professional Competence**, organized by VIT, Chennai.
- Three days Faculty Development Programme on **Deep Learning for Computer Vision**, organized by VIT, Vellore.
- Three days workshop on **Impact of AI tools in Scientific Computing**, organized by VIT, Vellore.
- Five days Faculty Development Programme on **Java ad its Applications**, organized by VIT, Vellore.
- Five days National Workshop on **Blockchain Technology and Its Applications**, organized by NIT, Trichy.
- Five days workshop on **Discrete Mathematics**, organized by VIT, Vellore.
- Two days workshop on **Artificial intelligent techniques for smart and sustainable transportation**, organized by VIT, Vellore.
- One week FDP on **Amazon Web Services**, organized by Krishna College of Engineering and Technology, Coimbatore.
- Three days International FDP on **Cybersecurity**, organized by PSGIT, Coimbatore.
- Three days FDP on **IoT and Robotics**, organized by PSGIT, Coimbatore.
- Webinar on **Data Science for Engineers**, organized by Sri Eashwar College of Engineering, Chennai.
- Four days webinar on **Future Vision: Marriage of AI and Blockchain**, organized by Rajarambapu Institute of Technology, Sangli.
- Five days workshop on **Futuristic Skills on Cybersecurity-NASSCOM**, organized by VIT, Vellore.
- Ten days workshop on **Deep Learning and its Applications**, organized by IIT Roorkee.
- Two days workshop on **Machine Learning and its Applications**,organized by Lemma Labs, at IIT Madras.
- Two days workshop on **Applications of IoT**,organized by Lemma Labs, at IIT Madras.
- Three days FDP on **Computer Science and Business Systems**,organized by TCS at ISI, Kolkata.
- One day workshop on **Creation of course contents in MOOC**, organized by VIT, Vellore.
- Four days hands-on workshop on **IBM Cloud application development**,organized by VIT, Vellore.
- One day FDP on **IoT and Blockchain**, organized by TCS, Siruseri, Chennai.
- Five day winter school on **Indian School of Logic and Applications**, at VIT, Vellore.
- Five day workshop on **Recent Trends in Network Security**, at IIT Roorkee.
- Three day Workshop on **IoT Bootcamp**, at VIT University, Vellore.
- Three day Workshop on **Internet of Things**, at VIT University, Vellore.
- Three day workshop on **Emerging Trends in Theoretical Computer Science**, at VIT University, Vellore.
- Two day workshop on **R Programming for Engineers**, at VIT University, Vellore.
- Three day workshop on **Cryptology** at NIT, Trichy.
- One week FDP on **Advanced Image Processing**, at VIT University, Vellore.
- One day workshop on **Digital Tools**, at VIT University, Vellore.
- Two day workshop on **Deep learning: Methods and tools**, at VIT University, Vellore.
- One day workshop on **Project Based Learning**, at VIT University, Vellore.
- One day workshop on **Higher Oder Thinking Skills**, at VIT University, Vellore.
- Two day workshop on **Android App Development**, at VIT University, Vellore.
- One day workshop on **Digital Tools**, at VIT University, Vellore.
- One day workshop on **Higher Oder Thinking Skills**, at VIT University, Vellore.
- Two day workshop on **E-learning Software-JUMP**, at Jazan University, Jazan, Kingdom of Saudia Arabia.
- Five day workshop on **New trends in e-learning**, at Courtyard Marriot Hotel, Jazan University, Kingdom of Saudi Arabia.
- Two day workshop on **Latex for researchers**, at VIT University, Vellore.
- Three day FDP on **Advanced Software Engineering**, at VIT University, Vellore.
- Two days FDP on **Algorithms for intractable problems**, at VIT University, Vellore.
- Three day seminar on **Formal methods update-2011** at VIT University, Vellore.

- CEP-CDEEP course on **Compiler construction with introduction to GCC** at IIT Bombay.
- Seminar conducted on **Advanced topics in theoretical computer science**-Phase-I at VIT University, Vellore.
- Seminar conducted on **Advanced topics in theoretical computer science**-Phase-II at VIT University, Vellore.
- Symposium on **Formal languages and automata theory** at IIT, Madras.
- Three day workshop on **Algorithms and complexity** at NIT, Trichy.
- Ten days **Faculty Development Programme on Foundations of computer science**, at VIT University, Vellore.
- Guest Lecture on **Paradigm shift from traditional to agile methodology in software development**, at VIT University, Vellore.
- Two days workshop on **Advanced workshop on Mission10X learning approach**, at VIT University, Vellore.
- One day workshop on **Mission10X certificate in teaching and learning**, at VIT University, Vellore.
- One day workshop on **Writing Research Articles using LATEX**, at VIT University, Vellore.
- One day workshop on **Effective E-learning Tools and Techniques**, at VIT University, Vellore.
- One day workshop on **Code Obfuscation Techniques**, at VIT University, Vellore.
- Two days workshop on **Android Application Development**, at VIT University, Vellore.
- Two days workshop on **High Performance Computing**, at VIT University, Vellore.
- Fifteen day seminar on **Get to know technical seminar**, at VIT University, Vellore.
- Workshop conducted on **Linux application development**, at Adhiparasakthi College of Arts and Science.
- One day workshop on **DB2** by IBM at VIT University, Vellore.
- One day workshop on **OOAD design by using UML** by IBM at VIT University, Vellore.
- Two day **Faculty orientation programme** conducted at VIT University, Vellore.
- One day training programme based on **Effective guidance and supervision of students projects** conducted at VIT University, Vellore.
- Three day workshop on **From instructional paradigm to learning paradigm** conducted at VIT University, Vellore.

Management Activities

- Organized a three day FDP **Data Science for Computer Vision** at VIT, Vellore.
- Designed curriculum and syllabus for **B.Tech (Computer Science and Engineering)-Specialization in Internet of Things**.
- Organized a 6-day seminar on **Advanced topics in theoretical computer science** at VIT University, Vellore.
- Coordinator in national level technical symposium **ECHO 2003** at VIT University, Vellore.
- Coordinator in national level conference **VISION 2005** at Government College of Engineering, Tirunelveli.
- Organized a 20-day seminar on **Get to know technical seminar** at VIT University, Vellore.
- Organized a national level technical fest **Phreak 2007** at VIT University, Vellore.
- Organized a two day workshop on **Android Application Development** at VIT University, Vellore.
- Organized a three day FDP on **Advanced Software Engineering**, at VIT University, Vellore.
- Organized a guest lecture on **Paradigm shift from traditional to agile methodology in software development**, at VIT University, Vellore.
- Organized a one day workshop on **Software Testing** at VIT University, Vellore.
- Coordinator in the development of **VIT-Accenture Innovation Center**.
- Designed a syllabus for **Computational Linguistics** for B.Tech (Computer Science and Engineering).
- Designed a syllabus for **Paradigms of Programming** and **Formal Languages and Automata Theory** for M.Sc (Computer Science).

Projects Done

- Remote database access through mobile and design and evaluation of replicated database for mobile systems.
- Implementation of web server in Linux.
- Electricity billing and maintenance.
- Automatic starter for 3-phase devices with protection circuit.

Projects guided-Postgraduate

- **Password generation mechanisms using DNA and RNA processing**.
- **Contributory broadcast encryption with ciphertexts**.
- Developing a **parser for regulated rewriting grammars**.
- Developing a **deductive parsing engine for matrix and indexed grammars**.
- Extending **Earley parsing technique for matrix grammar**.
- Extending **Earley parsing technique for picture grammar**.
- **Code optimization techniques for parallel code**.
- Improving the **performance of plagiarism checker on multi-core architectures**.

- Applying **genetic algorithm for minimization of DFA on multi-core architectures**.
- Extending the idea of **LR parsing strategy for Matrix insertion-deletion systems**.

Projects guided-Undergraduate

- **Design Smart Topology to Enhance the Performance in ALSA**.
- Developing a **graphical tool for minimization of DFA**.
- Developing a **tool for recognizing various bio-molecular structures**.
- Developing a **tool for recognizing the various ambiguity levels in contextual grammars**.
- Developing a **grammatical inferencing algorithm for insertion systems**.
- Developing a **ambiguity checker for context-free grammars**.
- Analyzing the **performance of LR parsers on multi-core architectures**.
- Designing a **TINY compiler on Android operating system**.
- Designing a **SMART optimizer on Android operating system**.
- Designing of an **Automatic Code Generator(ACG)**.

Professional Membership

- Life time member in Computer Society of India (CSI)
- Member in IARCS
- Member in IEEE 2009 - 2010

Extra Curricular Activities

- Completed training in (OCB/E10B/CTMX/TEST DESK/POWER PLANT) in BHARAT SANCHAR NIGAM LIMITED, Vellore
- PG diploma in computer application (GRADE-A) in IFG-ACE, Vellore
- English type writing (Lower)

Languages Known

- English, Tamil

Hobbies

- Playing Cricket and Chess, Reading Books

References

1) **Prof. K. Lakshmanan**
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2) **Dr.Manuel Mazzara**
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University of Bradford, UK.
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4) **Dr.Hamada Mohamed**
Senior Associate Professor, Department of Computer Science,
The University of Aizu, Japan.
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5) **Dr.Uttam Ghosh**
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Declaration

I hereby declare that the information provided in this form is true to the best of my knowledge and belief.

Dr. Anand Mahendran