VINAYAKUMAR RAVI

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Computational thinker with theoretical and practical experience in Linear algebra, Optimization, Data Mining, Machine Learning, Deep Learning, Transfer Learning, Dimensionality Reduction Methods, Natural Language Processing, and Image Processing. Working on applying these methods for various problems in the fields of Cyber Security, Biomedical informatics, Biomedical image processing, and development of block based programming languages for K-12 children using distributional and parallel frameworks.

Research Summary

- As first author: Published 16 conference papers, 4 shared task working papers, 3 arXiv papers, 32 journal papers, and 10 book chapters.

- Multidisciplinary research collaboration (as coauthor papers): Published 40 conference papers, 9 shared task working papers, 10 arXiv papers, 50 journal papers, and 12 book chapters.

- Published a paper "A Visualized Botnet Detection System based Deep Learning for the Internet of Things Networks of Smart Cities. IEEE Transactions on Industry Applications." (Q1,IF: 3.347)

- Published a paper "Adversarial Defense: DGA-Based Botnets and DNS Homographs Detection Through Integrated Deep Learning. IEEE Transactions on Engineering Management." (Q1,IF: 2.784)

- Organized a shared task on detecting malicious domain names (DMD-2018) in cyber security domain as part of SSCC'18 security symposium.

- Received full scholarship to attend Machine Learning Summer School in London, 2019.

- Three papers related to Cyber Security published in IEEE A* conference.

- IEEE Outstanding Leadership Award (Nov 2020), of the 6th IEEE International Conference on Smart Data as a part of the 2020 IEEE Cybermatics Congress (Blockchain / CPSCom/ Green-Com/ iThings/ SmartData-2020) held (virtually) in Rhodes, Greece, November 4 – November 6, 2020.

- Named among the list of the world's top 2 percent scientists, released by Stanford University in the sub-field discipline of Artificial Intelligence (AI) and Networking & Telecommunications.

- Received Chancellor's Research Excellence Award (April 8, 2021) Amrita Vishwa Vidyapeetham University, AIRA 2021.

- Received best session award for organizing the special session on Artificial Intelligence for Smart Healthcare in the World Conference in Virtual Format on Congress on Intelligent Systems, September 05-06, 2020, conducted by Soft Computing Research Society in association with Springer Publications.

- Received best paper award from Journal of Cyber Security and Mobility and International Journal of Pervasive Computing and Communications.

- Received research grant for Cyber Security research from Cybersecurity Center at Prince Mohammad Bin Fahd University (PMU).

- Google Scholar citations - 6,374, h-index: 37 and i-10:index: 96. In 2021 and 2022, my articles are cited by 1,753 and 2,260 times respectively.

Education

Postdoctoral Research Fellow   Fall 2019- August, 2020
Cincinnati Children's Hospital Medical Center, Cincinnati, USA.

PhD, Computational Engineering & Networking   Fall 2015- June, 2019
Amrita Vishwa Vidyapeetham, Coimbatore, TN, India.

Masters of Computer Application, Computer Science   June 2011- May 2014
Amrita Vishwa Vidyapeetham, Mysore, KA, India.

Bachelor of Computer Application, Computer Science   June 2008- May 2011
JSS College, Mysore, KA, India.

Research and Development Experience

- Sep 2020 - Present - **Assistant Research Professor**, Researching, developing and implementing novel computational and machine learning algorithms and applications for big data integration and data mining for Biomedical and Cyber Security.
- Aug 2022 - Present - **Honorary Adjunct Professor**, ITM (SLS) Baroda University: Joint research collboration in the area of Artificial Intelligence.
- Sep 2019 - Aug 2020 - **Postdoctoral Research Fellow**, Researching, developing and implementing novel computational and machine learning algorithms and applications for big data integration and data mining.
- Aug 2019 - **Research Associate**: Natural language processing and Deep learning Applications for Genomics and Proteomics data analysis.
- July 2019 - **Machine learning summer school participant, MLSS 2019, London** Lectures and Tutorials on Deep Learning, Optimization, Variational Inference, Reinforcement Learning, Interpretability, Gaussian Processes, Kernels, Markov chain Monte Carlo, AI for Good, Approximate Bayesian Computation, Fairness and Ethics in AI, Speech Processing, Learning Theory, Machine Learning in Computational Biology, and Submodularity.
- June 2015 - June 2019 - **Research Associate**: Data Mining, Machine Learning, Deep Learning, Cyber Security, Natural Language Processing, Image Processing, Bio-Medical and Bio-Informatics.
- Jun 2014 - Jul 2015 - **Research Assistant**: Block-based programming development for Indian K-12 Schools.
- Feb 2017 - **Visiting Research Intern**, Lakhshya Cyber Security Labs.

Research Interests

- Application of Data mining, Machine learning (including Deep learning), Natural language processing and Image processing for Biomedical and Cyber Security
- Big Security Data Analytics
- Cyber Threat Situational Awareness Data Analysis- DNS logs, Spam and Phishing URL and Email, Social media security related data
- Malware, Intrusion, Anomaly, and Fraud Detection
- Internet Traffic Analysis
- Adversarial Machine Learning for Cyber Security
- Application of data mining, Machine learning (including Deep learning), Natural language processing and Image processing for Program Analysis
- Cyber Physical Systems and IoT
- Biomedical Informatics and Biomedical Image processing
- Disease Gene Discovery/Prioritization, Drug discovery and Drug repositioning
- Biomedical text mining

Teaching Experience

- CN733 Neural Network and Deep Learning, (May 2017 - Nov 2017), TA.
- 16CN701 Computational Methods for Cryptography, (May 2017 - Nov 2017), TA.
- 16CN703 Deep learning for visual recognition, (Dec 2017 - May 2018), TA.
- 16CN701 Computational Methods for Cryptography, (May 2018 - Nov 2018), TA.
- 16CN703 Deep learning for visual recognition, (Dec 2018 - Apr 2019), TA.
- ITAP/COSC 3411 Systems Programming, (Dec 2021 - May 2022), Instructor
- ITAP/COSC 3411 Systems Programming, (Aug 2022 - Jan 2023), Instructor
- ITAP/COSC 3411 Systems Programming, (Jan 2023 - Jun 2023), Instructor

Service

- Reviewer - ICACCI 2018, DMD 2018, IWSPA-AP 2018, ICIT 2019, SCML2020, IEEE Access, ICT Express, Security and Communication Networks, Digital Threats: Research and Practice, PeerJ Computer Science, Computer Methods and Programs in Biomedicine, Internet Technology Letter, Information Security Journal: A Global Perspective, IEEE Transactions, etc.
- Program Chair - DMD 2018, IEEE SmartData-2020.
- Editorial board member - JIEC , May 2019 - present.
- Associate Editor: International Journal of Digital Crime and Forensics (IJDCF) - Aug 24, 2020 to present, The Open Bioinformatics Journal - Jul 1, 2020 to present.
- Technical Program Committee - ICCSCT 2020 , MIC-Multimedia 2020 , MIC-Finance 2020 , MIC-Security 2020 , MIC-Cognitive 2020 , CSI2020 , Book: Internet of Things and Secure Smart Environments: Success and Pitfalls, CRC Press , MIC-InfoTech 2020, IEEE TrustCom, 2020 , IEEE STP-CPS, 2020 , IEEE Big Data, 2020 , IEEE SP-DLT, 2020, CMM-2020, ICBBT 2021, IEEE 3SCity-E2C 2021, IEEE IoST-5G&B, MedPRAI-2021, ICRAIE-2022, ICCSCT-2022, ICBBT-2022, HDIS 2022.
- Admissions - CEN, 2016.
- Served as panelist for the First Doctoral Symposium on 6-7 January, 2021 organized by the Department of Computer Science & Engineering of Vidyavardhaka College of Engineering, Mysuru, India.

Talks & Hands-on session on Machine learning in Workshops

- Demo on LSTM based Android Malware classification in TEQIP II sponsored research workshop on deep learning, PSG Tech, Coimbatore, 7, October 2016.
- Deep learning for Cyber Security In Deep learning Workshop organized by Amrita University, Coimbatore, 2017.
- Deep Learning for Cyber Security use cases in AISec 2017 Workshop: Modern Artificial Intelligence (AI) and Natural Language Processing (NLP) Techniques for Cyber Security, Conducted by the Department of Computational Engineering and Networking, Amrita Vishwa Vidyapeetham, 28, October 2017.
- Deep learning for Healthcare and financial data analytics in DeepSci 2017 Workshop: Deep Learning for Healthcare and Financial Data Analytics, Conducted by the Department of Computational Engineering and Networking, Amrita Vishwa Vidyapeetham, Saturday, 16, December 2017.
- Deep Learning for Chemistry in DeepChem 2017: Deep Learning & NLP for Computational Chemistry, Biology & Nano-materials, Conducted by the Department of Computational Engineering and Networking, Amrita Vishwa Vidyapeetham, 22-24, December 2017.
- Deep Learning for Cyber Security use cases in Bharathiar University at the University conference hall on 21, November 2017.
- Deep Learning for Bio-medical Applications in TEQUIP sponsored Faculty Development Program (FDP) at TKM College of Engineering, Kollam, 14, December 2017.
- Deep Learning for Bio-medical Applications in ICMR sponsored Faculty Development Program (FDP) at Mepco Schlenk Engineering College, Sivakasi, 17, January 2018.
- Deep Learning in IEEE (3451) at Kalasalingam Academy of Research and Education, Virudhunagar, Saturday, 3 February 2018
- Workshop for Engineers, Sep 23, 2018, CEN, Amrita school of Engineering.

- Artificial Intelligence and Data Science For Cyber Security, Oct 14, 2018, CEN, Amrita school of Engineering.
- A Workshop on Application of Deep learning for Cyber Security, Dec 18-19, IIITM-K, Kerala.
- A Workshop on Modern Artificial Intelligence Techniques for Cyber Security, Jan 03-04, Janson Institute of Technology.
- Two day Workshop on Machine Learning – Hands on with Python/Matlab, Knowledge Resource Centre (KRC), C-DAC Centre @ Thiruvananthapuram, July 5 to6, 2019.
- Panelist for First Doctoral Symposium on 6-7 January, 2021 organized by Vidyavardhaka College of Engineering(VVCE) , Mysuru, India.
- An invited talk on "Insights into applications in Research domains" for the PG students of first year in the Department of Computer Science and Engineering, VVCE, Mysuru on 12th February 2021.
- Keynote Speaker, "Image-based Malware Representation Approach with Convolutional Neural Networks for Effective Malware Classification", Fifth International Conference in Communication, Devices and Networking (ICCDN, December 15-16, 2021, Sikkim, India, https://www.iccdn.org.in/keynote/). In this talk, Dr. Ravi presented image-based malware classification using convolutional neural network.
- Keynote Speaker, "A hybrid EfficientNet deep learning and image visualization for effective malware classification", AICTE-sponsored, IEEE technically co-sponsored International Conference ICICICT-2022 on 11th & 12th August 2022 at Vimal Jyothi Engineering College, Kannur, Kerala, India. In this talk, Dr. Ravi presented hybrid deep learning approach for image-based malware classification.

PhD Course Work
- MA607 - Linear Algebra
- CN613 - Computational optimization theory- linear and non-linear methods
- CY603 - Pattern Recognition and Machine Learning
- CN624 - Scientific Computing
- CN703 - Computational Methods for Cryptography
- CN733 - Neural network & Deep learning
- CY800 - Research Methodology
- Foundation Mathematics
- Computational Thinking

Online Coursework
- Neural Networks and Deep Learning, Coursera, Aug. 2017
- Deep Learning with Tensorflow, Big Data University, Dec. 2016
- Deep Learning Prerequisites: The Numpy Stack in Python
- Big Data, Big Data University, Jul. 2016
- Big Data Foundations, IBM, Jul. 2016
- Functional Programming Principles in Scala, Coursera, Jul. 2016
- Hadoop, Big Data University, Jul. 2016
- Spark Fundamentals, Big Data University, Jul. 2016
- HTML and CSS, Udemy, Jan. 2015

Co-organized events
- October 28, 2017 - AISec 2017: Modern Artificial Intelligence (AI) and Natural Language Processing (NLP) Techniques for Cyber Security.
- December 16, 2017 - Blockchain 2017: Blockchain and Machine Learning.
- November 11, 2017 - DeepSci 2017: Deep Learning for Healthcare and Financial Data Analytics.
- December 22-24, 2017 - DeepChem 2017: Deep Learning & NLP for Computational Chemistry, Biology & Nano-materials.
- November 25-27, 2017 - A Refresher experiential course on linear algebra and Optimization for Most Modern Signal processing and pattern classification.
- October 06, 2022 - Artificial Intelligence Forum, PMU, Saudi Arabia.

Participation in NLP and Cyber Security Shared Tasks
- Named Entity rEcognition and Linking (#Micropost2015 NEEL): Named Entity Recognition and Linking.
- International Cybersecurity Data Mining Competition CDMC 2016.
- VarDial 2017 - Fourth Workshop on NLP for Similar Languages, Varieties, and Dialects.
- Stance and Gender Detection in Tweets on Catalan Independence@Ibereval 2017.
- WASSA-2017 Emotion Intensity Task.
- DEFT 2017 Text Search @ TALN / RECITAL 2017 Opinion analysis and figurative language in tweets in French.
- International Cybersecurity Data Mining Competition CDMC-2017, CDMC-2018, CDMC-2019, CDMC-2020, CDMC-2021.
- 2nd Social Media Mining for Health Applications Shared Task at AMIA 2017.
- First Security and Privacy Analytics Anti-Phishing Shared Task (IWSPA-AP 2018)
- CDMC

Technical Skills
- Languages: C, C++, Java, Scala, Python, R, Introduction to Julia, Weka, Matlab.
- Web development: HTML, CSS, JavaScript, JSON, JQuery, Php, Bootstrap, XML, Jsp.
- Educational Platforms: MIT Scratch, Snap Berkley, BYOB, Scribble, Beetle Blocks.
- Machine Learning: Spark Mllib, Apache Mahout, XG-boost, Scikit-learn, Dato, Hpelm, Gurls, LibSVM.
- NLP: Word2vec, Spacy
- Big data Platforms: Hadoop, Apache Spark.
- Database: MySQL, Introduction to Oracle, Apache Cassandra.
- Deep Learning platforms: TensorFlow, Theano, Keras, Deeplearning4j, Torch, Basics of Caffe, DeepChem and DragoNN
- Comfortable with Windows and Linux OS.
- Documentation Tool: LibreOffice, Microsoft Office, and Latex.

Edited Book
- Chinmay Chakraborty, Uttam Ghosh, **Vinayakumar Ravi**, Yogesh Shelke. Efficient Data Handling for Massive Internet of Medical Things- Healthcare Data Analytics, Springer Internet of Things - Technology, Communications and Computing.

Research Grants
- Received research grant for proposal titled "An Intelligent Hybrid Framework for Advanced Cyber Attacks Detection" from Cybersecurity Center at Prince Mohammad Bin Fahd University (PMU) in April 2021 (Amount 5,000/- USD).
- Received research grant for proposal titled "Robust Malware Detection using Multi-View Deep Learning" from Cybersecurity Center at Prince Mohammad Bin Fahd University (PMU) in August 2022 (Amount 5,000/- USD).

Call for Papers and Special Session Organization in a Conference
- Deep learning for Security Applications (DMD 2018) in ICACCI-2018 and SSCC-2018.
- Artificial Intelligence for Smart Healthcare (AISHC) in Congress on Intelligent Systems 2020.
- Advanced Deep Learning Methods for Multidisciplinary Applications (ADMMA-2020) in IC-STCEE 2020.
- Artificial Intelligence for Medical, Biomedical and Health Informatics (AIMBHI), ICCIS 2020.
- Role of Advanced Deep learning techniques and Continuous Deep Analytics for Biomedical and Health Informatics, FICTA-2021.
- Green Internet of Things in 5G and Beyond, Wireless Communications and Mobile Computing, 03 Dec 2021
- Next-Generation Wireless Networks (NGWN) for Autonomous Intelligent Communications, Wireless Communications and Mobile Computing, 04 Feb 2022

- Advanced Computational Intelligence System for Secure Medical Imaging Applications, Computational and Mathematical Methods in Medicine, 01 Apr 2023
- AI Enabled Imaging Components in Visual Sensor Networks for Security and Surveillance, Optical Engineering—SPIE Digital Library, August 2023 item AI Enabled Medical Data Analysis and Processing in Internet of Medical Things (IoMT), Bioengineering, MDPI, 2023.

Book Chapters

- **Vinayakumar R**, Prabaharan Poornachandran and Soman KP. Scalable Framework for Cyber Threat Situational Awareness based on Domain Name Systems Data Analysis. Big data in Engineering Applications. Springer.
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran and Vijay Krishna Menon. A Deepdive on Machine learning for Cybersecurity use cases. Machine Learning for Computer and Cyber Security: Principle, Algorithms, and Practices. CRC press, USA.
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Mamoun Alazab and Alireza Jolfaei. DBD: Deep Learning DGA-Based Botnet Detection., Springer.
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Mamoun Alazab and Sabu M. Thampi. AmritaDGA: A Comprehensive Data set for Domain Generation Algorithms (DGAs). IET.
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Akarsh S, and Mohamed Elhoseny. Deep learning Framework for Cyber Threat Situational Awareness based on Email and URL Data Analysis. Springer.
- **Vinayakumar R**, Soman KP, and Prabaharan Poornachandran. DeepDGA-MINet: Cost-Sensitive Deep Learning based Framework for Handling Multiclass Imbalanced DGA Detection. Springer.
- **Vinayakumar R**, Soman KP, Akarsh S and Prabaharan Poornachandran. Application of Deep Learning Architectures for Cyber security. Springer.
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Akarsh S and and Mohamed Elhoseny. Improved DGA Domain Detection and Categorization using Deep learning Architectures with Classical Machine learning Algorithms. Springer.
- Harikrishnan NB, **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Time Split based Pre-processing with a Data-driven Approach for Malicious URL Detection. Springer.
- Harikrishnan NB, **Vinayakumar R** and Soman KP. Deep learning architecture for big data analytics in detecting intrusions and malicious URL. IET.
- Amara Dinesh Kumar, Harish Thodupunoori, **Vinayakumar R**, Soman KP Mamoun Alazab and Sitalakshmi Venkatraman. Enhanced Domain Generating Algorithm Detection based on Deep neural networks. Springer.
- Sreelakshmi nair, **Vinayakumar R**, and Soman KP. Deep Segregation of Plastic (DSP): Segregation of Plastic and Nonplastic Using Deep Learning. IET.
- Anson simon, **Vinayakumar R**, Sowmya V, Soman KP. A Deep Learning Approach for Patch Based Disease Diagnosis from Microscopic Images. Elsevier.
- Swapna G, **Vinayakumar R**, and Soman KP Diabetes Detection using ECG Signals: An Overview. Springer.
- Sriram S, **Vinayakumar R**, Mamoun Alazab, Simran K, Ala' M. Al-Zoubi, and Soman KP. Spam Emails Detection based on Distributed Word Embedding with Deep Learning, Springer.
- Sriram Srinivasana, **Vinayakumar R**, Ajay Arunachalam, Mamoun Alazabd, Soman KP. Malicious URL Detection using Deep Learning, Springer.
- **Vinayakumar Ravi**, Harini Narasimhan, Tuan D. Pham. EfficientNet-Based Convolutional Neural Networks for Tuberculosis Classification, Springer.
- D.B. Vishwas, M. Gowtham, A.V. Ajay, K. Raghavendra, **V. Ravi**, and S. Goundar, Blockchain-Based Secure Method for Tiger Detection Using Machine Learning, Convergence of Internet of Things and Blockchain Technologies, Springer
- G.B. Janardhana Swamy, D.R. Janardhana, C.P. Vijay, and **V.Ravi**, Blockchain-Enabled IoT Integrated Autonomous Sewage Management System, Springer
- S.P. Anandaraj, S. Poornima, R. Vignesh, and **V. Ravi**, Industrial Automation of IoT in 5G Era, Springer

- S. Durga, E. Daniel, S. Deepakanmani, T.M. Neeba, & **Vinayakumar Ravi**, Blockchain-based Privacy Preservation Technique for Digital Forensics Records, In Artificial Intelligence and Blockchain in Digital Forensics, River Publishers.
- M. Ramaiah, V. Chithanuru, A. Padma, & Vinayakumar Ravi,, A Review of Security Vulnerabilities in Industry 4.0 Application and the Possible Solutions Using Blockchain, Cyber Security Applications for Industry 4.0, CRC Press.

Journals

- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Mamoun Alazab, Ameer Al-Nemrat and Sitalakshmi Venkatraman. Deep Learning Approach for Intelligent Intrusion Detection. IEEE Access
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran and Mamoun Alazab and Sitalakshmi Venkatraman. Robust Intelligent Malware Detection Using Deep Learning. IEEE Access
- **Vinayakumar R**, Mamoun Alazab , Sriram Srinivasan , Quoc-Viet Pham , Soman Kotti Padannayil , K Simran,"A Visualized Botnet Detection System based Deep Learning for the Internet of Things Networks of Smart Cities." IEEE transaction on Industrial Applications
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran and Sachin Kumar S. Detecting Android Malware using Long Short-term Memory-LSTM. Journal of Intelligent and Fuzzy Systems - IOS Press.
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran and Sachin Kumar S. Evaluating Deep Learning Approaches to Characterize and Classify the DGAs at Scale. Journal of Intelligent and Fuzzy Systems - IOS Press.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Evaluating Deep learning Approaches to Characterize, Signalize and Classify malicious URLs. Journal of Intelligent and Fuzzy Systems - IOS Press.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Detecting Malicious Domain Names using Deep Learning Approaches at Scale. Journal of Intelligent and Fuzzy Systems - IOS Press.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Evaluation of Recurrent Neural Network and its variants for Intrusion Detection System (IDS). Special Issue On Big Data Searching, Mining, Optimization & Securing (BSMOS) Peer to Peer Cloud Based Networks in IJISMD.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. A Comparative Analysis of Deep learning Approaches for Network Intrusion Detection Systems (N-IDSs). Special Issue On: Recent Advances on Cyber Security and Privacy for Cloud-of-Things in IJCDF. (In Press)
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Vysakh S Mohan and Amara Dinesh kumar. ScaleNet: Scalable and Hybrid Framework for Cyber Threat Situational Awareness based on DNS, URL, and Email Data Analysis. Journal of Cyber Security and Mobility.
- **Vinayakumar R** and Soman KP. DeepMalNet: Evaluating shallow and deep networks for static malware detection. Elsevier - ICT Express.
- **Vinayakumar R** and Soman KP. Siamese Neural Network Architecture for Homoglyph Attacks Detection. ICT Express
- Swapna G, **Vinayakumar R** and Soman KP. Diabetes detection using deep learning algorithms. Elsevier - ICT Express.
- Vysakh S Mohan, **Vinayakumar R**, Sowmya V, Soman KP. Deep Rectified System for High-speed Tracking in Images".
- Shisrut Rawat, Aishwarya Srinivasan, **Vinayakumar Ravi**, and Uttam Ghosh, Intrusion detection systems using classical machine learning techniques vs integrated unsupervised feature learning and deep neural network, Internet Technology Letter, Willey.
- Rajlaxmi Patil, Rajshekhar Biradar, **Vinayakumar Ravi**, and Poornima Biradar, Uttam Ghosh, Network traffic anomaly detection using PCA and BiGAN, Internet Technology Letter, Willey.
- G. Siva Shankar,P. Ashokkumar, **R. Vinayakumar**, Uttam Ghosh, Wathiq Mansoor, and Waleed S. Alnumay, An Embedded-Based Weighted Feature Selection Algorithm for Classifying Web Document, Wireless Communications and Mobile Computing, Hindawi.

- Shalli Rani, Manpreet Kaur, Munish Kumar, **Vinayakumar Ravi**, Uttam Ghosh & Jnyana Ranjan Mohanty. Detection of shilling attack in recommender system for YouTube video statistics using machine learning techniques, Soft Computing, Springer.
- Mangayarkarasi R, Vanmathi C, **Vinayakumar Ravi**, Neeraj Kumar, An Intrusion Detection System using Optimized Deep Neural Network Architecture, Transactions on Emerging Telecommunications Technologies, Willey.
- **Vinayakumar Ravi**, Mamoun Alazab, Sriram S, Ajay Arunachalam, and Soman KP. Adversarial Defense: DGA-based Botnets and DNS Homographs Detection through Integrated Deep Learning. IEEE Transactions on Engineering Management.
- **V. Ravi**, H. Narasimhan, T.D. Pham, A Cost-Sensitive Deep-Learning based Meta-Classifier for Pediatric Pneumonia Classification using Chest X-rays, Expert Systems, 2022, available online at 10.1111/EXSY.12966
- **V. Ravi**, V. Acharya, T.D. Pham, Attention deep learning based large-scale learning classifier for cassava leaf disease classification, Expert Systems, 2021
- **V. Ravi**, H. Narasimhan, C. Chakraborty, T.D. Pham, Deep learning-based meta-classifier approach for COVID-19 classification using CT scan and chest X-ray images, Multimedia Systems, 2021
- Thiyagarajan Krishnan, S.Sankar, **Vinayakumar Ravi**, Dwarakacharla Harshavardhan reddy, A Dual Band Circular Patch Antenna Using Hexagon Shaped Slots, 2021, International Journal of Communication Systems, available online at 10.1002/dac.5125
- A. Arunachalam, **V. Ravi**, V. Acharya, and T.D. Pham, Toward Data-Model-Agnostic Autonomous Machine-Generated Data Labeling and Annotation Platform: COVID-19 Autoannotation Use Case, IEEE Transactions on Engineering Management, 2021
- V. Acharya, **V. Ravi**, T. D. Pham and C. Chakraborty, Peripheral Blood Smear Analysis Using Automated Computer-Aided Diagnosis System to Identify Acute Myeloid Leukemia, IEEE Transactions on Engineering Management, 2021
- A. Arunachalam, **V. Ravi**, M. Krichen, R. Alroobaea and S. Rubaiee, Mathematical model validation of search protocols in mp2p networks, Computers, Materials & Continua, 2021
- D.S. Nayagi, G.G. Sivasankari, **V. Ravi**, K.R. Venugopal, and S. Sennan, REERS: Reliable and energy-efficient route selection algorithm for heterogeneous Internet of things applications, International Journal of Communication Systems
- H.K. Bhuyan and **V. Ravi**, Analysis of Subfeature for Classification in Data Mining, IEEE Transactions on Engineering Management, 2021
- H. K. Bhuyan, C. Chakraborty, S. K. Pani, and **V. Ravi**, Feature and Subfeature Selection for Classification Using Correlation Coefficient and Fuzzy Model, IEEE Transactions on Engineering Management, 2021
- S. Chauhan, R. Banerjee, C. Chakraborty, M. Mittal, A. Shiva, and **V. Ravi**, A self-congruence and impulse buying effect on user's shopping behaviour over social networking sites: an empirical study, International Journal of Pervasive Computing and Communications, 2021
- **V. Ravi**, M. Alazab, S. Srinivasan, A. Arunachalam, and K.P. Soman, Adversarial Defense: DGA-Based Botnets and DNS Homographs Detection Through Integrated Deep Learning, IEEE Transactions on Engineering Management, 2021
- A. Arunachalam, **V. Ravi**, M. Krichen, R. Alroobaea, and J.S. Alqurni, Analytical comparison of resource search algorithms in non-dht mobile peer-to-peer networks, Computers, Materials & Continua, 2021
- M. Ramaiah, V. Chandrasekaran, **V. Ravi**, and N. Kumar, An intrusion detection system using optimized deep neural network architecture, Transactions on Emerging Telecommunications Technologies, 2021
- S. Rani, M. Kaur, M. Kumar, **V. Ravi**, U. Ghosh, and J.R. Mohanty, Detection of shilling attack in recommender system for YouTube video statistics using machine learning techniques, Soft Computing, 2021
- S. Selvaganapathy, S. Sadasivam, and **V. Ravi**, A review on android malware: attacks, countermeasures and challenges ahead, Journal of Cyber Security and Mobility, 2021
- V. Sureshkumar, S. Balasubramaniam, **V. Ravi**, and A. Arunachalam, A hybrid optimization algorithm-based feature selection for thyroid disease classifier with rough type-2 fuzzy support vector machine, Expert Systems, 2021

- P. Yadav, N. Menon, **V. Ravi** and V. Sowmya, Lung-GANs: Unsupervised Representation Learning for Lung Disease Classification Using Chest CT and X-Ray Images, IEEE Transactions on Engineering Management
- M. Sathyamoorthy, S. Kuppusamy, R.K. Dhanaraj, and **V. Ravi**, Improved K-Means Based Q Learning Algorithm for Optimal Clustering and Node Balancing in WSN, Wireless Personal Communications
- A. Prithiviraj, A. Maheswari, D. Balamurugan, **V. Ravi**, M. Krichen et al., Multi-Criteria Fuzzy-Based Decision Making Algorithm to Optimize the VHO Performance in Hetnets, CMC-Computers, Materials & Continua, 2021
- M. Ganeshkumar, **V. Ravi**, V. Sowmya, E.A. Gopalakrishnan, and K.P. Soman, Explainable Deep Learning-Based Approach for Multilabel Classification of Electrocardiogram, IEEE Transactions on Engineering Management, 2021
- Ganeshkumar M, **Vinayakumar Ravi**, Sowmya V, Gopalakrishnan E.A, Soman K.P · Chinmay Chakraborty, Identification of Intracranial Haemorrhage (ICH) using ResNet with Data Augmentation using CycleGAN and ICH Segmentation using SegAN, Multimedia Tools and Applications, 2022
- Hemanta Kumar Bhuyan, A.Vijayaraj, **Vinayakumar Ravi**, Development of Secrete Images in Image Transferring System, Multimedia Tools and Applications, 2022
- Malathy Jawahar, J Prassanna, **Vinayakumar Ravi**, L Jani Anbarasi, S Graceline Jasmine, R Manikandan, Ramesh Sekaran, Suthendran Kannan, Computer-aided Diagnosis of COVID-19 from Chest X-ray Images using Histogram Oriented Gradient Features and Random Forest Classifier, Multimedia Tools and Applications, 2022
- Sachin Dhawan, Hemanta Kumar Bhuyan, Rashmi Gupta, **Vinayakumar Ravi**, Subhendu Kumar, An Efficient Steganography Technique Based On S2OA & DESAE Model, Multimedia Tools and Applications, 2022
- L Jani Anbarasi, Malathy Jawahar, **Vinayakumar Ravi**, Sherin Miriam Cherian, S Shreenidhi, Sharen. H, Anxiety and Sleep Disorders during COVID-19 lockdown, Sleep and Biological Rhythms, Health and Technology, 2022
- Rajasekhar Chaganti, **Vinayakumar Ravi**, Tuan D. Pham, Deep Learning based Cross Architecture Internet of Things malware Detection and Classification, Computers & Security, 2022
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- Shamika Ganesan, Feb 17, 2020, Dec, 08, 2020 - Residual attention methods for Image based malware classification.
- Ganeshkumar M, August, 2020 - May 2021 - Medical image processing using deep learning
- Srividhya Lakshminarayanan July 2021 - May 2022 - Deep Learning Framework for Multi-Stage Diagnosis of Alzheimer's Disease
- Theivaprakasham Hari July 2021 - May 2022 - Odonata identication using deep learning

Research Collaboration
Research Work done with Influential Researchers
- Prof. Mamoun Alazab, Charles Darwin University, Australia.
- Prof. Tuan D. Pham, Prince Mohammad Bin Fahd University, Saudi Arabia.
- Prof. Nazeeruddin Mohammad, Prince Mohammad Bin Fahd University, Saudi Arabia.
- Prof. Alireza Jolfaei, Macquarie University, Australia.
- Prof. Sitalakshmi Venkatraman, Melbourne Polytechnic, Australia.
- Prof. Ameer Al-Nemrat, University of East London, United Kingdom.
- Prof. Mohamed Elhoseny, Mansoura University, Egypt.
- Prof. Moez Krichen, Albaha University, Saudi Arabia.
- Prof. Annappa B, NITK, Surathkal, India.
- Prof. Neeraj Kumar, Thapar Institute of Engineering and Technology, India.
- Prof. Sabu M Thampi, IIITM-K, Kerala, India.
- Prof. Anand Kumar M, NITK, Surathkal, India.
- Prof. Sowmya V, Amrita Vishwa Vidyapeetham, India.
- Prof. E. A. Gopalakrishnan, Amrita Vishwa Vidyapeetham, India
- Prof. Uttam Ghosh, Vanderbilt University, USA.
- Prof. Lakshmi Nambiar, Amrita Vishwa Vidyapeetham, India.
- Prof. Chinmay Chakrabarty, BIT Mesra, India.
- Prof. Quoc-Viet PHAM, Pusan National University, South Korea.
- Prof. Vijay Krishna Menon, Amrita Vishwa Vidyapeetham, India.

- Prof. Prabaharan Poornachandran, Amrita Vishwa Vidyapeetham, India.
- Prof. Shalli Rani, Chitkara Univesrity, India.
- Prof. Gururaj H L, Vidyavardhaka College of Engineering, India.
- Ms. Vasundhara Acharya, Manipal Academy of Higher Education, India.
- Dr. G. Siva Shankar, Sri Ramachandra Institute of Higher Education and Research, India.
- Dr. P. Ashokkumar, Sri Ramachandra Institute of Higher Education and Research, India.

Research Work done with Industry Researchers
- Prof. Pradeep Menon, Chief Officer, Lakhshya Labs, India
- Dr. Yogesh Shelke Global Research and Analytics Firm, India

Research Work done with Postdoctoral Researchers
- Dr. Manish Dasyani, University of South Florida, USA.
- Dr. Ajay Arunachalam, Örebro University, Sweden.
- Dr. Mohit Mittal, INRIA, France.

Research Work done with Graduate Students during Pursuing PhD
- Barathi Ganesh H. B. - Application of NLP for Health Data Analysis: 2015-2019
- Sachin Kumar S and Premjith B - Application of machine learning with NLP approaches for Social media data analysis: 2015-2019
- Neethu Mohan - Deep learning architectures for power quality disturbances classification: 2015-2019
- Rahul K Pathinarupothi - Deep learning for Sleep Apnea Detection: 2015-2019
- Rajasekhar Chaganti from University of Texas at San Antonio - Deep learning applications in Cyber Security 2021-present

Master Students Worked Under My Guidance
- Shriya Se, 2015 June-Dec 2016, Sentiment analysis in Indian languages.
- Harikrishnan NB, 2016 June-2018 May - Machine learning based Cyber Security.
- Akarsh S, 2017 June-2019 May - Application of Machine learning and Image processing for Malware Analysis.
- Anu Vazhayil, 2017 Dec-2018 Oct - Deep learning for URL and Phishing Email Analysis, Application of machine learning and deep learning for protomics and Genomics.
- Vysakh S Mohan, 2017 Nov-2018 May - Deep learning for DGA, URL and Phishing Email Analysis.
- Naveen JR, 2018 Jan-May - Application of NLP and Deep learning for Phishing Email Analysis.
- Hirnsha M, 2018 Jan-May - Application of Convolutional neural network for Phishing Email Analysis.
- Nidhin A Unnithan, 2018 Jan-May - Application of Classicla machine learning algorithms and Deep learning architectures for Phishing Email Analysis.
- Sreelekshmy Selvin, 2017 Nov-2018 May - Application of LSTM, RNN and CNN-sliding window model for Stock price prediction.
- S Aswin, 2018 Jan-May - Deep Learning Models for the Prediction of Rainfall.
- V Athira, 2018 Jan-May - Application of Deep learning architectures for Air Quality Prediction.
- Anson Simon, 2018 Jan-May - Application of Deep learning for Microsscopy Image Analysis.
- Amara Dinesh Kumar, 2018 June-2019 May - Application of machine learning for DGA, URL and Spam analysis, Image spam detection, Vehicular security.
- Naveen Kumar KS, 2017 June-2019 May - Application of Deep learning for Protein Sequence Analysis, Emotion detection in Social media data.
- Mohammad Harun Babu, 2017 June-2019 May - Application of Deep learning for Cyber Security.
- Sai prasad, Naren Babu and Arun Kumar, 2018 Jan-May - Machine learning for Microscopy image analysis.
- Sriram S, 2018 Nov-2019 May, Machine learning for Cyber Security
- Simran K, 2018 Nov-2019 May, Machine learning, Deep learning and Natural language processing for Cyber Security, Deep learning applications in Smart city.

- Sreelakshmi S, 2018 Jan-2018May, Deep learning and Image processing for Plastic and Non-plastic seggregation
- Shashank Anivilla and Sai Aparna, 2018 Jan-2019 May - Malware Analysis, Image spam and Webpage spam detection
- Rahul vigneshwaran, 2018 May-2018 Oct - Deep neural networks for Intrusion detection
- Vidya Prasad, 2018 Nov - May 2019 - Deep learning based Sanskrit Sandhi splitting
- Shamika Ganesan, Feb 17, 2020, Dec, 08, 2020 - Residual attention methods for Image based malware classification.
- Harini Narasimhan, Nov, 2020 - Dec 2021 - Biomedical informatics and Healthcare applications.
- Pooja Yadav and Neeraj Menon from VMware, Bangalore, India, Jan 2021-Aug 2022 - Lung disease diagnosis using chest X-ray images and malware classification
- Arun Prakash from CEN Jan 2022-Present - Pediatric Pneumonia Diagnosis using chest X-ray images
- Kabilan N from CEN Jan 2022-Present - In-Vehicle Intrusion Detection System

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