Vinayakumar Ravi

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Research Interest

Computational thinker with theoretical and practical experience in Linear algebra, Optimization, Data Mining, Machine Learning, Deep Learning and Dimensionality Reduction Methods. Working on applying these methods for various problems in the fields of computational drug discovery, drug repositioning, and Cyber Security using distributional and parallel frameworks. Also, I work in Natural Language Processing, Signal and Image Processing, Bio-medical and development of block based programming languages for K-12 children.

PhD Research Summary - Cyber Security

- Published 28 conference papers, 6 arxiv papers, 15 Journal papers and 11 Book chapters.
- Published a paper titled "S.P.O.O.F Net: Syntactic Patterns for identification of Ominous Online Factors" in A* conference.
- Published two Journal papers in IEEEAccess (Q1, IF: 3.557), 4 Journal papers in Journal of Intelligent Fuzzy Systems (IF: 1.426).
- 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 "A hybrid deep learning image-based analysis for effective malware detection, Journal of Information Security and Applications" (IF: 1.537)
- Published 5 journal papers in scopus indexed journals.
- Organized a shared task on detecting malicious domain names (DMD-2018) in cyber security domain as part of SSCC'18 security symposium.
- Participated in CDMC-2017, CDMC-2018 and IWSAP-AP Cyber security shared tasks.
- Submitted a paper titled "Deep Learning Based Two-Level Framework for Domain Name Systems Data Analysis. IEEE Transactions on engineering Management." (under-review). (Q1, IF: 1.867).
- Manuscript "A Survey of Applications of Deep Learning for Cyber Security" under-preparation for IEEE Communications Surveys Tutorials (Q1, IF: 20.23).
- Google Scholar citations - 845, h-index: 18 and i-10:index: 30. In 2018 and 2019, my articles are cited by 209 and 467 times respectively.
- Received full scholarship to attend Machine Learning Summer School in London, 2019.
- Multidisciplinary research colloboration: published 24 conference papers, 3 Journal papers, 7 arxiv papers, and 4 bookchapters.
- 3 papers related to cyber security are under-review (IEEE-Infocom, A* conference)

Education

Postdoctoral Research, Jegga Research Lab, USA — Fall 2019- August, 2021
Cincinnati Children's Hospital Medical Center, Cincinnati.

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

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

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

Research Experience

- Sep 2019 - Present - **Postdoctoral Research Fellow**, Supervisor: Prof Anil Jegga: Researching, developing and implementing novel computational and machine learning algorithms and applications for big data integration and data mining.
- Aug 2019 - **Research Associate**, Supervisor: Prof Soman KP: 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**, Supervisor: Prof. Soman KP: Data Mining, Machine Learning, Deep Learning, Cyber Security, Natural Language Processing, Image Processing, Bio-Medical and Bio-Informatics.
- Jun 2014 - Jul 2015 - **Research Assistant**, Supervisor: Prof. Soman KP: 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 Cyber Security
- Disease Gene Discovery/Prioritization, Drug discovery and Drug repositioning
- 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, Anamoly 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

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.

Service

- Reviewer - ICACCI 2018, DMD 2018, IWSPA-AP 2018, ICIT 2019, IEEEAccess, ICT Express, Security and Communication Networks.
- Program Chair - DMD 2018.
- Editorial board member - JIEC , May 2019 - 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
- Admissions - CEN, 2016.

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.

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.

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.
- 2nd Social Media Mining for Health Applications Shared Task at AMIA 2017.
- First Security and Privacy Analytics Anti-Phishing Shared Task (IWSPA-AP 2018)

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.

Bookchapters

- **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 Deep-dive 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 (In Press).
- **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.

Journals

- **Vinayakumar R**, Soman KP, Sriram S, Prabaharan Poornachandran, and Mamoun Alazab. Deep Learning Based Two-Level Framework for Domain Name Systems Data Analysis. IEEE Transactions on Engineering Management (under-review)
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Mamoun Alazab, Ameer Al-Nemrat and Sitalakshmi Venkatraman. Deep Learning Approach for Intelligent Intrusion Detection. IEEEAccess
- **Vinayakumar R**, Soman KP, Prabaharan Poornachandran and Mamoun Alazab and Sitalakshmi Venkatraman. Robust Intelligent Malware Detection Using Deep Learning. IEEEAccess
- **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".
- Sriram S, **Vinayakumar R**, Soman KP, Mamoun Alazab, Mamoun Alazab, Muhammad Ajmal Azad, and Ala' M. Al-Zoubi. Spam Emails Detection based on Distributed Word Embedding with Deep Learning. (Under review)
- paper "A Comprehensive Tutorial and Survey of Applications of Deep Learning for Cyber Security" , IEEE Communications Surveys and Tutorials (Ready for submission).

International Conferences

- Vysakh S Mohan, **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. S.P.O.O.F Net: Syntactic Patterns for identification of Ominous Online Factors. IEEE Xplore
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Evaluating Shallow and Deep Networks for Secure Shell (SSH)Traffic Analysis. IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran,. Evaluating Effectiveness of Shallow and Deep Networks to Intrusion Detection System. IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Deep Android Malware Detection and Classification. IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Long Short-Term Memory based Operation Log Anomaly Detection." IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Deep Encrypted Text Categorization. IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Applying Convolutional Neural Network for Network Intrusion Detection. IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran. Secure Shell (SSH) Traffic Analysis with Flow based Features Using Shallow and Deep networks. IEEE Xplore.
- **Vinayakumar R**, Soman KP and Prabaharan Poornachandran, Applying Deep Learning Approaches for Network Traffic Prediction. IEEE Xplore.
- **Vinayakumar R**, Soman KP, K.K.Senthil Velan and Shaunak Ganorkar. Evaluating Shallow and Deep Networks for Ransomware Detection and Classification. IEEE Xplore.
- Rahul K. Pathinarupothi, **Vinaykumar R**, Ekanath Rangan, Gopalakrishnan E., and Soman KP. Instantaneous Heart Rate as a Robust Feature for Sleep Apnea Severity Detection using Deep Learning. IEEE Xplore.
- Rahul K. Pathinarupothi, Dhara Prathap J., Ekanath Rangan, Gopalakrishnan E., **Vinaykumar R**, and Soman KP. Single Sensor Techniques for Sleep Apnea Diagnosis using Deep Learning. IEEE Xplore.
- Sujadevi VG., Soman KP, and **Vinayakumar R**. Real-time Detection of Atrial Fibrillation from Short time single lead ECG traces using Recurrent neural networks. Springer.
- Sujadevi VG., Soman KP, **Vinayakumar R** and Prem Sankar AU.. Anomaly detection in Phonocardiogram employing Deep learning. Springer.
- Sujadevi VG., Soman KP, **Vinayakumar R** and Prem Sankar AU.Deep models for Phonocardiography (PCG) classification. IEEE Xplore.
- Sreelekshmy Selvin., **Vinayakumar R**, Gopalakrishnan E., Vijay Krishna Menon., Soman KP,. Stock Price Prediction Using LSTM, RNN And CNN-Sliding Window Model. IEEE Xplore.
- Shriya Se, **Vinayakumar, R**, Anand Kumar M., and Soman KP. AMRITA-CEN@SAIL2015: Sentiment analysis in Indian languages. Springer.
- Shriya Se, **Vinayakumar, R**, Anand Kumar M., and Soman KP. Predicting the Sentimental Reviews in Tamil Movie using Machine Learning Algorithms. Indian Journal of Science and Technology (IJST).
- Neethu Mohan, Soman KP, and **Vinayakumar R**. Deep Power: Deep Learning Architectures for Power Quality Disturbances Classification. IEEE Xplore.
- **Vinayakumar R**, Soman KP, and Pradeep Menon. Digital storytelling using Scratch: Engaging children towards digital storytelling. IEEE Xplore.

- **Vinayakumar R**, Soman KP, and Pradeep Menon. CT-Blocks Analyser: Analysing CT-Blocks projects. IEEE Xplore.
- **Vinayakumar R**, Soman KP, and Pradeep Menon. Alg-Design: facilitates to learn Algorithmic thinking for beginners. IEEE Xplore.
- **Vinayakumar R**, Soman KP, and Pradeep Menon. Map-Blocks: Playing with online data: infuse to think in a computational way. IEEE Xplore.
- **Vinayakumar R**, Soman KP, and Pradeep Menon. Enhancing Computational thinking with MIT Scratch: Fractals Geometry. IEEE Xplore.
- **Vinayakumar R**, Soman KP, and Pradeep Menon. Building-Blocks: Generating 3D design by snapping blocks. IEEE Xplore.
- **Vinayakumar R**, Soman KP, and Pradeep Menon. DB-Learn: Studying Relational Algebra concepts by Snapping Blocks. IEEE Xplore.
- Swapna G, Soman KP and **Vinayakumar R**. Automated detection of cardiac arrhythmia using deep learning techniques. Procedia Computer Science.
- Swapna G, Soman KP and **Vinayakumar R**. Diabetes: Automated detection of diabetes using CNN and CNN-LSTM network and heart rate signals. Procedia Computer Science.
- Athira V, Geetha P, Soman Kp and **Vinayakumar R**. DeepAirNet: Applying Recurrent networks for Air Quality Prediction.Procedia Computer Science.
- Aswin S, Geetha P and **Vinayakumar R**. Deep Learning Models for the Prediction of Rainfall. IEEE Xplore.
- Anson Simon, **Vinayakumar R**, Sowmya V and Soman KP. Shallow CNN with LSTM Layer for Tuberculosis Detection in Microscopic Images" International Journal of Pure and Applied Mathematics.
- Mohammed Harun Babu R, Sai Bhanuja B, **Vinayakumar R**, Sowmya V. Deep neural network for phonocardiogram signal classification. International Journal of Pure and Applied Mathematics.
- Naren Babu R, Saiprasath G, Arunpriyan J, **Vinayakumar R**, Sowmya V and Soman KP. Performance comparision of machine learning algorithms for malaria detection using microscopic images. International Journal of Pure and Applied Mathematics.
- Swapna G, **Vinayakumar R** and Soman KP. Automated detection of Atrial Fibrillation using deep learning techniques. International Journal of Pure and Applied Mathematics.
- Anu Vazhayil, **Vinayakumar R** and Soman KP "Comparative study of the detection of malicious URLs using Shallow and Deep Networks" ICCNT-2018.
- Rahul Vigneshwaran, **Vinayakumar R** and Soman KP. Evaluating Shallow and Deep Neural Networks for Network Intrusion Detection Systems in Cyber Security" ICCNT-2018.
- **Vinayakumar R**, Mamoun Alazab and Alireza Jolfaei, Soman KP and Prabaharan Poornachandran. Ranosmware Triage Using Deep Learning: Twitter as a Case Study. Springer.
- Sreelakshmi nair, **Vinayakumar R**, and Soman KP. CapsNet for Segregation of plastic and non-plastic. ICACCS-2019. (Accepted).
- Vimal M Kurup, Anupama M A, **Vinayakumar R**, Sowmya V, and Soman KP. CapsNet for Plant disease classification. Springer. ISMAC-CVB (Accepted).
- Naveen Kumar S, **Vinayakumar R**, and Soman KP. Amrita-CEN-SentiDB:Twitter Dataset for Sentimental Analysis and Application of Classical Machine Learning and Deep Learning. (Accepted).
- Naveen Kumar S, **Vinayakumar R**, and Soman KP. Amrita-CEN-SentiDB1:Improved Twitter Dataset for Sentimental Analysis and Application of Deep learning (Accepted).
- Mohammed Harun Babu, **Vinayakumar R**, and Soman KP. Cost-Sensitive Long Short-term Memory for Imbalanced DGA Family Categorization (Accepted).
- Arun Kumar TK, **Vinayakumar R**, Sajith Variyar V V, and Soman KP. Convolutional Neural Networks for Fingerprint Liveness Detection System (Accepted).
- Simran Ketha, Prathiksha Balakrishna, **Vinayakumar R**, Soman KP, Prabaharan Poornachandran, Mamoun Alazab. Deep Learning Approach for Enhanced Cyber Threat Indicators in Twitter Stream, SSCC-2020 (Accepted)
- Sriram S, Akarsh S, **Vinayakumar R**, Soman KP. Towards Evaluating the Robustness of Deep Intrusion Detection Models in Adversarial Environment, SSCC-2020 (Accepted)

- Simran Ketha, Sriram S, **Vinayakumar R**, Soman KP. Deep Learning Approach for Intelligent Named Entity Recognition of Cyber Security, SIRS-2020 (Accepted)
- Simran Ketha, Prathiksha Balakrishna, **Vinayakumar R**, Soman KP. Deep Learning based Frameworks for Handling Imbalance in DGA, Email, and URL Data Analysis. ICC3-2020 (Accepted)
- Sriram S, Shashank Anivilla, **Vinayakumar R**, Soman KP. DCNN-IDS : Deep Convolutional Neural Network based Intrusion Detection System. ICC3-2020 (Accepted)
- Sriram S, Sowmya V, **Vinayakumar R**, Moez Krichen, Shashank A, Soman KP, Dhouha Ben Noureddine. Deep Convolutional Neural Network based ImageSpam Classification, CDMA 2020. (Accepted)
- Sriram S, **Vinayakumar R**, Mamoun Alazab, Soman KP, Prabaharan Poornachandran, Mamoun Alazab. A Deep learning Approach for Botnet Detection in the Internet of Things Networks of Smart Cities, IEEE Infocom2020 (Under review)
- Sriram S, **Vinayakumar R**, Sowmya V, Mamoun Alazab, Soman KP, Multi-scale Learning based Malware Variant Detection using Spatial Pyramid Pooling Network, IEEE Infocom2020 (Under review)
- Sriram S, **Vinayakumar R**, Mamoun Alazab, Soman KP. Malicious URL Detection using Deep Learning, IEEE Infocom2020 (Under review)

Shared task Working notes

- **Vinayakumar R.**, Sachin Kumar S., Premjith B., Prabaharan P., and Soman K P. DEFT 2017 - Texts Search @ TALN / RECITAL 2017: Deep Analysis of Opinion and Figurative language on Tweets in French. Opinion analysis and figurative language in tweets in French, Orléans.
- **Vinayakumar R.**, Sachin Kumar S., Premjith B., Prabaharan P., and Soman K P. Deep Stance and Gender Detection in Tweets on Catalan Independence@Ibereval 2017. 2nd Workshop on the Evaluation of Human Language Technologies for Iberian languages, at SEPLN 2017 at University of Murcia, Murcia, Spain.
- **Vinayakumar R.**, Premjith B., Sachin Kumar S., Soman K P. and Prabaharan P. deepCybErNet at EmoInt-2017: Deep Emotion Intensities in Tweets. 8th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis (WASSA-2017), at EMNLP 2017.
- Barathi Ganesh HB, Abinaya N, Anand Kumar M, **Vinayakumar R** and Soman KP. Amrita-CEN@NEEL : Identification and Linking of Twitter Entities. #Microposts2015 Making Sense of Microposts: Big things come in small packages. Florence, Italy.
- Barathi Ganesh HB, **Vinayakumar R**, Anand Kumar M, Soman KP. Health Care Text Classification through Class Embedding. 2nd Social Media Mining for Health Applications Shared Task at AMIA 2017.
- Harikrishnan Nb, **Vinayakumar R** and Soman Kp. CEN-Security@IWSPA 2018: A Machine learning approach towards Spam Detection. IWSPA-AP
- **Vinayakumar R**, Barathi Ganesh H B, Prabaharan Poornachandran, Anand Kumar M and Soman Kp. DeepAnti-PhishNet: Applying Deep Neural Networks for E-mail Spam Detection. IWSPA-AP
- Barathi Ganesh Hb, **Vinayakumar R**, Soman Kp and Anand Kumar M. Distributed Representation using Target Classes: Bag of Tricks for Security and Privacy Analytics Amrita-NLP@IWSPA 2018. IWSPA-AP
- Anu Vazhayil, **Vinayakumar R** and Soman Kp. CENSec@Amrita: Spam Detection using classical Machine learning techniques. IWSPA-AP
- Nidhin Unnithan, Harikrishnan Nb, Akarsh S, **Vinayakumar R** and Soman Kp. Security-CEN@Amrita Machine learning based Spam E-mail detection. IWSPA-AP
- Vysakh S Mohan, Naveen J R, **Vinayakumar R** and Soman K P. A.R.E.S: Automatic Rogue Email Spotter. IWSPA-AP
- Hiransha M, Nidhin Unnithan, **Vinayakumar R** and Soman Kp. CEN-DeepSpam: Deep learning based spam detection. IWSPA-AP

- **Vinayakumar R**, Harikrishnan Nb, Nidhin Unnithan, Soman Kp and Sai Sundarakrishna. CEN-SecureNLP Detecting E-mail spam using Machine learning techniques.

arXiv

- **Vinayakumar R**, Soman KP, Mamoun Alazab, Sriram S, and Simran K, A Comprehensive Tutorial and Survey of Applications of Deep Learning for Cyber Security
- **Vinayakumar R**, Srirma S, Soman KP, and Mamoun Alazab, Malicious URL Detection using Deep Learning
- **Vinayakumar R** Barathi Ganesh HB, Prabaharan Poornachandran, Anand Kumar M and Soman KP, Deep-Net: Deep Neural Network for Cyber Security Use Cases.
- Amara Dinesh Kumar, **Vinayakumar R** and Soman KP, DeepImageSpam: Deep Learning based Image Spam Detection.
- Amara Dinesh Kumar, **Vinayakumar R** and Soman KP, A Brief Survey on Autonomous Vehicle Possible Attacks,Exploits and Vulnerabilities.
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