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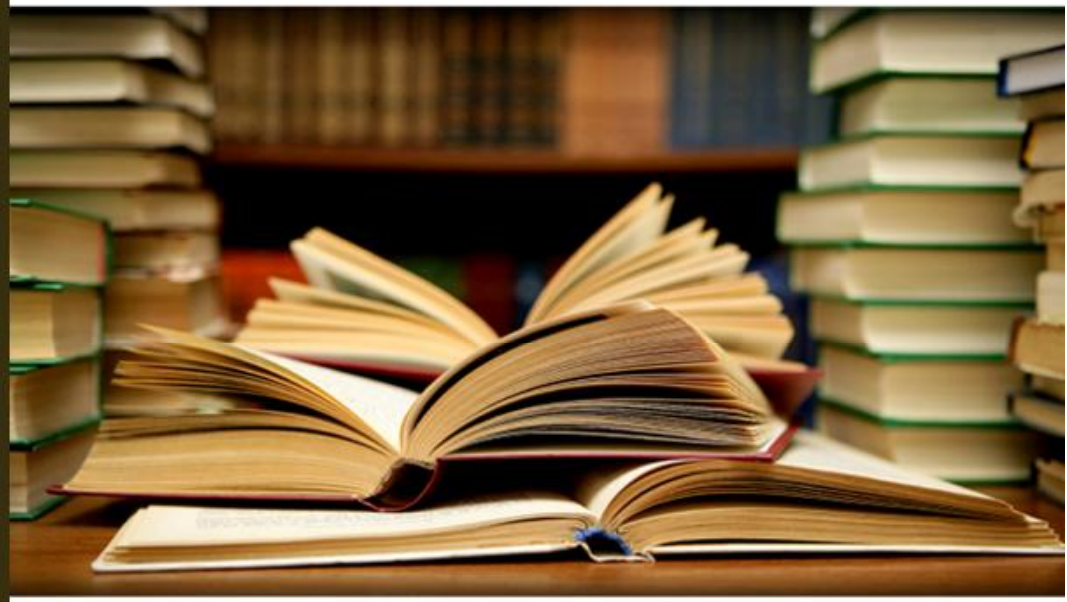

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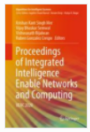

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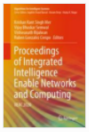

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Roshan R. Karwa ; Sunil R. Gupta All Authors

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II. Literature Review
III. Methodology
IV. Mathematical Model
V. Conclusion
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Abstract:
Misinformation isn't definitely new thing; it is way before the inception of social media. It is evolving since 14th century but the term like "fake news", "post truth" are used commonly during movement of 2016 US presidential election. People use social media to read news as it is lost cost and user friendly platform; also it is possible to share news on social media with one click. With this merit, it is also having major disadvantage. If the news is false or misleading news then spread of such news will have adverse consequence on civilization. Therefore, battling fake news is important and has now become developing area of research. Researchers are using Artificial Intelligence based approach such as machine learning and natural language processing to battle with the fake news. This paper presents a comprehensive overview of the earlier detection techniques as well as proposes mathematical model and methodology to improve the result.

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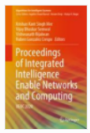

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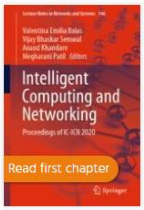

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Preface

Advanced technologies in the current era ensure that we are in turbulent and challenging times as we attempt for wealth creation and business in the fields of manufacturing and automation. Industries are currently looking up to manufacturing and automation engineers for their assistance in increasing the overall productivity in their organizations. It is also the time when policymakers across the globe have started to focus more of their attention on the manufacturing sector due to the presence of disruptive technologies in manufacturing. The International Conference on Intelligent Manufacturing and Automation 2020 (ICIMA 2020) was therefore designed to encourage discussions and research on advancements and applications in the areas of manufacturing and automation. The primary focus of this conference was to bring together academicians, researchers and scientists for knowledge sharing in various areas of manufacturing, automation and other allied domains. This conference covered topics encompassing automation, mechatronics, robotics, manufacturing processes, management and other related areas, such as product design and development, green manufacturing and smart materials with the objective of brainstorming and with specific emphasis on the applications in the field of intelligent manufacturing and automation. The response to the call for papers was overwhelming with 181 articles submitted for this conference. Finally, 82 articles, covering a wide spectrum of topics related to the theme of this conference, were accepted after a thorough review process. We express our sincere appreciation to the authors for their contribution to this book. We would also like to express our sincere gratitude to all the experts and referees for their valuable comments and support extended during the review process. Thank you everyone once again!

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Contents

Manufacturing

Exploring Ideal Process Parameters to Enhance the Surface Integrity Using Grey Fuzzy Integrated Technique 3
Ramesh R. Rajguru and Hari Vasudevan

Multi-objective Optimization of Dry EDM with Inconel 718 Using Grey Relational Analysis 13
A. S. Bhandare and U. A. Dabade

Predictive Modeling of Surface Roughness in the Machining of Inconel 625 Using Artificial Neural Network 23
Hari Vasudevan and Ramesh R. Rajguru

Measurement of Spur Gear Parameters Using Machine Vision 31
Ketaki Joshi and Bhushan Patil

Modeling and Optimization of Cutting Temperature in Hard Turning of AISI 52100 Hardened Alloy Steel Using Response Surface Methodology 39
Sandip Mane and Sanjay Kumar

Optimization of Surface Roughness During High Speed Milling of Inconel 825 Using Grey Relation Analysis 49
Balagopal Unnikrishnan, Armaan Valjee, Vyankatesh Bagal, and Prashantkumar Patankar

Role of Technological Innovativeness in the Manufacturing Performance of Indian SMEs 61
Anup N. Chawan and Hari Vasudevan

Implementation of 6R Paradigm in the Life Cycle of Automobiles for Sustainability 71
Neel Sanghvi, Jash Patel, Dhairya Vora, Ujwal Sutaria, and Satish Takalikar

Evaluating GSCM Practice–Performance Relationship in Chemical, Textile and Rubber/Plastic SMEs in India 79
Meeta Gandhi and Hari Vasudevan

Investigations on Effect of Cutting and Cutting Fluid Application Parameters on Surface Roughness and Microhardness in Hard Turning of AISI 52100 Alloy Steel 89
Sandip Mane and Sanjay Kumar

Optimization of Cutting Parameters in Dry Turning of AISI 4340 Hardened Alloy Steel with Multilayered Coated Carbide Tool 99
Sandip Mane, Anjali Mishra, and Vaidehi Kannawar

Optimization of Cutting and Cutting Fluid Application Parameters in Turning of AISI 52100 Hardened Alloy Steel Under Minimal Cutting Fluid Application 107
Sandip Mane and Sanjay Kumar

Supplier Selection in MSME Gear Manufacturing Industries Using MCDM Technique 117
Ashish J. Deshmukh and Hari Vasudevan

Agricultural Supply Chain Using Blockchain 127
Ahan Fernandez, Ashriel Waghmare, and Shweta Tripathi

An Empirical Analysis of the Strategic, Organizational, Financial and Technological Issues in the Implementation of Knowledge Management in Indian Automotive SMEs 135
Ibrahim Shaikh and Hari Vasudevan

Optimization of CNC Die-Sinking EDM Process Parameters Based on MRR and EWR by Taguchi Method Using Copper Electrode on P20 Tool Steel 147
Mehul Prajapati and Sowmin Trivedi

Prediction of Surface Roughness and Optimisation of Cutting Parameters in Hard Turning of AISI 52100 Steel Based on Response Surface Methodology 157
Sandip Mane and Sanjay Kumar

Productivity Improvement in Blow Molding Process Through Energy Savings 167
Hari Vasudevan, Rajendra Khavekar, and Nida Sayed

Effect of Cutting Parameters on Microhardness in Turning of AISI 52100 Hardened Alloy Steel with Multilayer Coated Carbide Insert 177
Sandip Mane and Sanjay Kumar

Analysis and Manufacturing of Aerodynamic Components 187
Rajnarayan Yadav, Vinit Katira, Ruchit Doshi,
Shakshi Himmatramka, Parshva Mehta, and Harshil Mody

Design and Manufacturing of Compact and Portable Smart CNC Machine 201
Amit Choudhari, Shamir Talkar, Pavan Rayar, and Aditya Rane

Effect of Plunging and Dwelling Period on Temperature Profile and Energy Dissipation in FSSW and Its Relevance in FSW 211
Niyati N. Raut, Vivek Yakkundi, Akshay Vartak, and S. N. Teli

Prediction of Optimum Sheet Metal Blanking Clearance for IS513CR Steel Using Artificial Neural Network 221
Pradip P. Patil, Vijaya P. Patil, and R. Ramaswamy

Improving the On-Time Delivery of Projects in a Complex Industrial Environment 231
Hari Vasudevan, Rajendra Khavekar, and Krishnan Kaushik

Investigating the Influence of Infill Pattern on the Compressive Strength of Fused Deposition Modelled PLA Parts 239
Sanket Parab and Nilay Zaveri

Analysis of Compound Column-Based Supporting Structures Used in Suburban Railway Transport System: Use of Stiffener Plates 249
Herin Savla, Neel Sanghvi, Saurabh Rasal, and Vinayak H. Khatawate

Drilling Process Quality Improvement by Grey Relation Analysis 257
Janak Suthar, S. N. Teli, Siddesh Lad, and Vijaya Kumar N. Kottur

Enabling Technologies and Current Research Scenario of Industry 4.0: A Systematic Review 265
Bhaveshkumar N. Pasi, Subhash K. Mahajan, and Santosh B. Rane

Evaluation of Green Supply Chain Management Practices in Small and Medium Enterprises in Pune Region 275
Malleshappa T. Bhagawati and P. Venkumar

Review on Perspectives in Supply Chain Trust Evaluation 285
Manu Mathew, Justin Sunny, and V. Madhusudanan Pillai

Building Envelope Optimization and Cost-Effective Approach in HVAC to Support Smart Manufacturing 299
Shamir Talkar, Amit Choudhari, and Pavan Rayar

A Review of the Reliability Techniques Used in the Case of Casting Process Optimization 309
Amit Chaudhari and Hari Vasudevan

Reinforcement Learning for Inventory Management 317
Siddharth Singi, Siddharth Gopal, Shashikant Auti, and Rohit Chaurasia

Implementation of 5S to Set Up Inventory Control System with HTML Coded Spare Management System 327
Sandip Mane, Jay Bhuva, and Smit Patel

Automation

Production of Composite Repair Patches for Large Aircrafts Using Advanced Automation Techniques 339
Amool A. Raina, Boris Manin, and Thomas Gries

Autonomous Real-Time Navigation Based on Dynamic Line and Object Detection 349
Pavan Rayar, Adarsh Prabhudesai, Samruddhi Pai, and Shaival Parikh

Machine Learning as a Smart Manufacturing Tool 359
Meera B. Kokate, Bhushan T. Patil, and Geetha Subramanian

Tool Changer Selection for the Robot to Attach and Detach the End of Arm Tooling 367
Dhanesh Dhanawade, Nilesh Vijay Sabnis, and Pankaj Gavali

Remote Data Acquisition System for Measurement of Ambient Climatic Conditions and SPV Battery Status 375
Mahesh B. Gorawar, Veeresh G. Balikai, Vinayak H. Khatawate, and P. P. Revankar

Force Sensitive Resistor Based Design and Modeling of Smart Walking Assistance Device by Axial Direction Control for Osteoarthritis 385
Akshay Vasage, Onkar Padhye, Gajanan Kulkarni, Shivram Kerkar, and Mahesh Kumar

Autonomous Package Dispatcher Bot Using Video Processing 395
Manthan Tambe, Sahil Vora, Shaunak Thakar, and Manish M. Parmar

Improvement in Material Feeding by Introducing Kitting in the Assembly Line 407
Chinmay Kule, Shantanu B. Patil, and Sandeep Vaity

Advanced Materials

Microstructure and Roughness Analysis of Drum Brakes of Maruti 800 421
Atul D. Dhale and Swapnil S. Phadnis

A Review on Stress Relaxation Cracking in Austenitic Stainless Steel 427
Indhumathi Dayalan, Prashant Frank Crasta, Sritam Pradhan, and Renu Gupta

Selection of Materials for Manufacturing of Disc Brake Rotor for a Racing Go-Kart Having Single Hydraulic Disc Brake System 435
Aman Dharmendra Chheda and Ravikant Hattale

Comparative Study of Aluminum and Composite Stub Axle Using FEA 449
Rajnarayan Yadav, Vinayak H. Khatawate, Deval Patel, Sahil Thonse, and Danish Sunsara

A Review on Carbon Nanotubes as Novel Drug Carriers in Cancer Therapy 459
Dhyey M. Rajani, Frank Crasta, and Vijaya Kumar N. Kottur

A Review on Squeeze Casting of Aluminium-Based Alloys and Its Composites 469
Dhiraj Nigade, Dhananjay Shukla, and Ravikant Hattale

A Review on Carbon Fibre Reinforced Polymer Composites and the Methods of Their Manufacture, Disposal and Reclamation 475
Aman M. Chulawala, Frank Crasta, and Vijaya Kumar N. Kottur

A Review: In Vitro Investigation of Dental Composite Materials and Tooth Enamel by Using Pin-on-Disc Tribometer 483
Abhijeet Suryawanshi and Niranjana Behera

Design

Development of Spring Life Test Apparatus and Life-Cycle Assessment of Extension Springs 493
Greegory Mathew, Santosh B. Rane, Yogesh Patil, and Sanjay V. Mohan

Design and Manufacturing of Test Rig for Pyrolysis of Waste Tyres of Two-Wheeler Vehicles (ELVs) 503
S. M. Auti and W. S. Rathod

Development of Mathematical Model for Reduction of Process Time for Peddle-Driven Sewing Machine 513
Swapna Ghatole, Yashpal, Mahesh Bundele, and J. P. Modak

Design and Development of an Anti-rolling Mechanism for Hand-Driven Tricycles 523
Vishal Nadar, E. Narayanan, Greegory Mathew, and Rameshbabu Udayar

Investigating Red X Parameter for Short Shot-Type Defect in Plastic Injection Moulds Using Shainin's Design of Experiments 533
Rajendra Khavekar, Hari Vasudevan, and Dharam Ranka

Structural Analysis of the Upright of a FSAE Race Car 543
Vinayak H. Khatawate, Jinesh Sheth, and Prakriti Tulasyan

Design and Analysis of Components of a Rotary Car Parking System 555
Rajnarayan Yadav, Sanjay Kumar, Salil Gavankar, and Suraj Amin

Designing a Cowl Template with DFSS Methodology 571
Sandip Mane, Smit Patel, and Jay Bhuva

Reliability Estimation of Molded Case Circuit Breaker in Development Phase 581
Greegory Mathew and Santosh B. Rane

Design and Development of Easy Access Crisper/Shelf in a Refrigerator 591
Addanki Sambasiva Rao, Vinayak H. Khatawate, and Sumit Mane

Design, Analysis and Optimization of a Single-Pass Straight Pipe Resonator for an Exhaust System of a Single Cylinder Engine 603
Omkar Samant, Gulammoin Kasmani, Jay Saple, Jayraj Ranade, and Vinit Katira

Design and Development of Cost-Effective Solar Water Heating System 615
Sarvesh Kulkarni, Vijaya Kumar N. Kottur, and Prasad Shirodkar

Development of Storage System by Designing a Magazine for Forged Rings 625
Meet Karelia, Mehul Prajapati, and Vinayak Salian

Design of Shredder Machine for ELV Tyres 635
S. M. Auti, Jinesh Sheth, Prakriti Tulasyan, Asmita Gaikwad, and Purnima Bagwe

Design and Development of a Foldable Hand-Driven Tricycle 647
Vishal Nadar, E. Narayanan, Greegory Mathew, and Pascol Fernandes

Assessment of Local Stresses and Strains Using NSSC Rules 659
Vinayak H. Khatawate, M. A. Dharap, Atul Godse, Veeresh G. Balikai, and A. S. Rao

Numerical Comparison of Tube Bank Pressure Drop of an SHTX Using Elliptical and Flat Face Header with Different Nozzle Positions 669
Kartik Ajugia and Mihir Sanghvi

Modal and Static Analysis of Luggage Rack Systems Used in Mumbai Suburban Railway Trains 681
Jash Patel, Neel Sanghvi, Ujwal Sutaria, Deven Shetty, Vaibhav Shah, and Vijaya Kumar N. Kottur

Design and Analysis of Onion Harvester 691
Dhairya D. Mehta, Omkar Atale, Tanvi Hodage, S. M. Auti, and Rohit Chaurasia

Design, Analysis, Prototyping and Testing of Aerofoils for High-Lift at Low Reynolds Number 699
Pavan Rayar

A Review on Vibration Suppression of Flexible Structures Using Piezoelectric Actuators 713
Aniruddha Mallick, Frank Crasta, and Vijaya Kumar N. Kottur

Topology Optimization of Wheel Hub Used in Automobiles 723
Jash H. Patel, Rohan Poojari, Monil K. Shah, Aagam H. Shah, and Vinayak H. Khatawate

Modelling, Investigation and Refinement of Three Stage Helical Gearcase Housing Utilizing Numerical Approach Contemplating Various Relevant Substances 737
Ronak D. Gandhi, Ghanshyam V. Patel, and Sanket K. Patel

Lateral Force Modelling Using Magic Formula Tire Model 753
Aditya H. Bhatt and Prasad S. Shirodkar

Static Analysis of Tripod Housing Using FEA and Its Validation 763
Jash H. Patel, Vinayak H. Khatawate, Gaurav Jain, and Param Shah

Design and Performance Evaluation of a Cost-Effective Radiant Cooling System 777
Rohit A. Rawool, Siddharth Saini, Aksheshkumar A. Shah, Tejas P. Shah, and Vinit Katira

Design and Analysis of 'Kangaroo' Boots 791
Mihir Sanghvi, Hamza Neemuchwala, Md Husain Thekiya, Dinesh Papal, and Kartik Ajugia

Optimization of Brake Rotor Slotting Using Finite Element Analysis 803
Ujwal Sutaria, Vaibhav Shah, Karan Shah, Chaitanya Shah, and Vinayak H. Khatawate

Evaluation of Piping Isometric Drawings Using Six Sigma Process 815
Abrar Khulli, Prasad Shirodkar, Vijaya Kumar N. Kottur, and Rajendra Khavekar

Design of an Accumulator Container for a Formula Student Electric Race Car 825
Harshal Mehta, Ratan Soni, Parvez Shaikh, Raunak Bhanushali, Jobin Abraham, and Dhaval Birajdar

Design and Fabrication of Small Size Parabolic Reflector 837
Harshal Patil and Nishikant Kale

Analysis of Brake Hub Used in Automobiles 849
Dhairya K. Vora, Rishikesh K. Patil, and Vinayak H. Khatawate

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Evaluation of Network Security on basis of Virtualization Techniques in Kali Linux Environment

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Abstract: In today's cyber security space network security has a top priority specially system based on Open Source platform. Kali Linux is the new door for white hat security specialist for hardening security for firm and organization. Kali is secure based distribution from linux family having Debian platform. As it includes over 600 + preinstall security application, so it is needy to keep record of network activity by the system and to the system. As kali linux is power tool for server security, virtualization is secure way to implement that tool. The main purpose of this article to evaluate network security on basis of virtualization techniques for this we track implementation of KVM (Kernel Based Virtual Machine) using three virtualization techniques – virt-manager, kimchi project and SDN (Software Defined Network).
Virt-manager is python-based desktop user interface for editing and customization of virtual machine through lib-virt. Kimchi is HTML based virtual machine management tool specially used for KVM. SDN is a technology revaluation which needed priory in cloud and virtualization world for providing network services. In this paper we aim to present advantages of virtualization techniques to explore network security hardening in kali linux.

Keywords: Kali linux, Kimchi, KVM, SDN, Virt-manager.

1. Introduction

Virtualization in network security is a new era. KVM and linux environment specially kali linux are key elements of network security. Problems arises while selecting a proper flavor of linux for server building are administration security [1], tools configuration, hosting capacity, client request response and hardware support for service providence. For its great security tool support Kali linux is well known, So, it is network demand to host web server on Kali in virtual manner.

In this paper we evaluate performance of virtualization techniques to build strong network policies, with hosting to numerous applications including hardware support.

As shown in Fig. 1, virtual architecture is differing than traditional architecture, which has additional layer and extended to subcategories of operating system and application for effective use of system hardware and extent use of Host Operating System (OS).

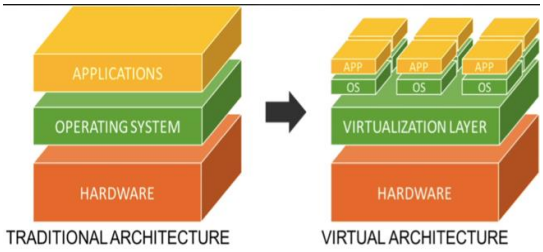

Fig. 1: Virtualization Architecture

This paper is organized as, Section 2 discusses about related work, which provides details of virtualization in network security, Section 3 discusses on methodologies which includes details of virtualization techniques as 3.1 – Virt-manager ; 3.2 – Kimchi Project ; 3.3 – SDN , Section 4 discusses about implementation of virtual machines, Section 5 report about result and evaluation and last Section 6 conclude the paper.

2. Related Work

This section discusses about the literature survey of different researchers in the field of virtualization and network security. The researcher Ganji et al. [2] examined suitable infrastructure for the linux OS. They also mentioned linux system security requirements in server network security. Patil et al. [3] proposed hypervisor level distributed network security (HLDNS) framework which is deploy to monitor VM related network traffic for intrusion detection. Li et al. [4] proposed framework, which divides network security into five stages which are as factor acquisition, model representation, measurement establishment, solution analysis and situation prediction. Bock et al. [5] explain real time hypervisor based on Xvisor for delivering secure and separated environment for virtualized

system. Compastie et al. [6] describe comparison between different virtualization models to build architecture of cloud infrastructure for analyzing network security issues. Yan et al. [7] verified effectiveness of system using client-side distributed energy storage demo project for improving system load characteristics. Potdar et al. [8] describes server virtualization, which provides a platform to run different OS services. They describe performance evaluation of docker container and virtual machines using effective tools. Bahn et al. [9] explains separations of VM for managing unnecessary network traffic.

3. Methodology

For selecting a kali linux for network security in virtualization is due to its special architecture as shown in Fig. 2 [10].

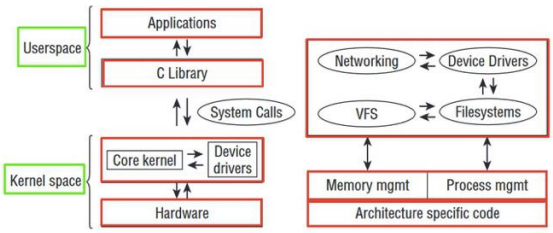

Fig. 2: Kali Linux Architecture

It clears the structure of High-level use in linux system specially kernel. Kali supports specially to VFS (virtual file system) to target virtualization facility. We then evaluate network security in kali linux on basis of following three techniques shown in Fig. 3

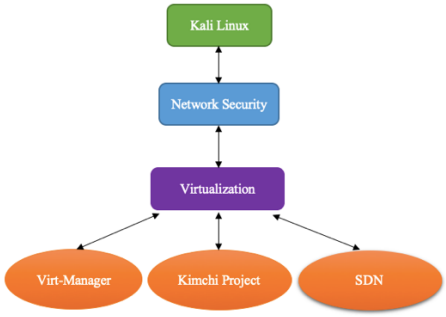

Fig. 3: Three Virtualization Techniques

3.1 Virt-manager:

It is python-based UI for managing virtual machine specially KVM, XEN and LXC containers. It allows users to create, edit, start / stop VM.

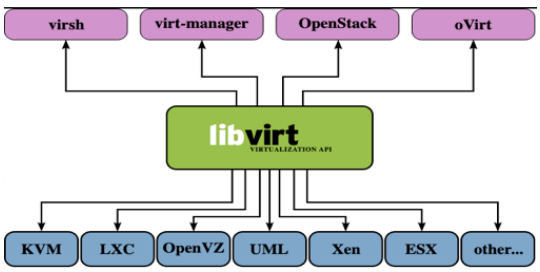

Fig. 4: Virt-Manager

As shown in Fig. 4, virt-manager has different API hands, which use to manage networking Console of different VM.

3.2 Kimchi Project:

Kimchi communicates with libvirt for better virtualization. It is categories in four main modules to facilitate communication between libvirt and Ngnix, which is a web application server to serve user interface. Fig. 5 shows High level architecture use in Kimchi.

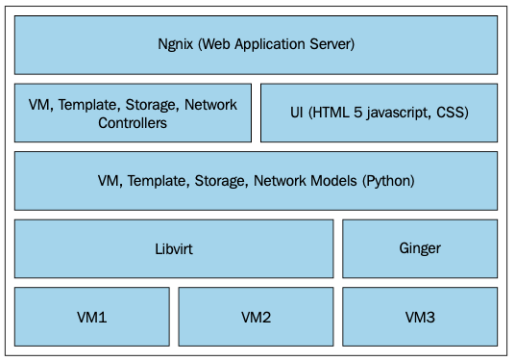

Fig. 5: Kimchi Architecture

3.3 SDN (Software Define Network):

SDN is a high value architecture, which is cost effective, dynamic manageable and adoptable by different VM. ONF (Open Flow) protocol is fundamental element of SDN architecture. Fig. 6, differ SDN from traditional network service.

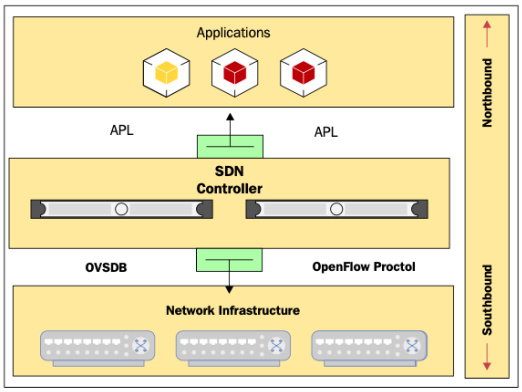

Fig. 6: SDN Architecture

Above figure shows separated control and data planes which helps application to control directly network and give startup to new innovations.

- Network infrastructure - Includes network devices such as switches, routers and bridge couple devices.
- Controller – It is centralized control system setup on server which communicate through all devices in network by OPEN API.
- Applications – This includes variety applications like voice, video, technology-based application and security tools like intrusion detection.

4. Implementation

As mentioned above virtualization techniques solves the problem of limited number of system calls, while security management in (HIDS) describe by Zhang et al. [11].Our describe concept result out wrapping of different security mechanism around Guest OS. As mentioned in Section 2, researchers are tried to provide separate security layer around KVM, which can be apply by using different proxy tools like Cloud VPN [12], Hoxx proxy [13] protocol tools etc.

5. Result And Evaluation

By applying three techniques on KVM for network-based virtualization we get different security results on basis of hardware support, software support and their version upgrade factors and all results are express in terms of scale factors (1-10). The chart view is as shown follows Fig. 7.

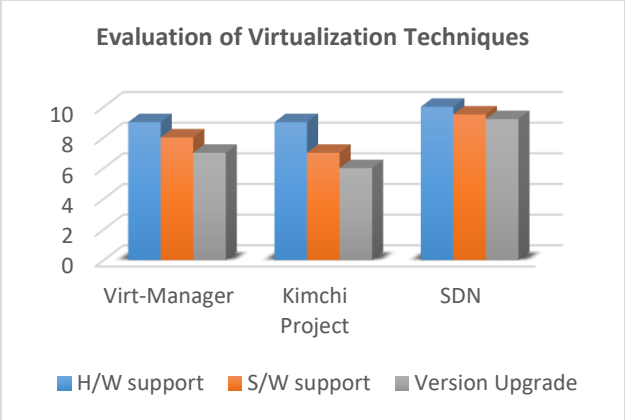

Fig. 7: Chart view of Evaluation

Above mentioned evaluation shows SDN techniques is more effective than virt-manager and Kimchi project with this SDN have additional network infrastructure management and controller.

6. Conclusion And Future Scope

In this paper, we focused on different virtualization techniques and their effective use in network security, which include management of VMs, binding of particular tools required by Kali linux.

In future, virtualization technology can be securely implemented by providing extra kernel support, where SDN based controller can be attack at single point. For this we plan to deploy various security scripts compile in python.

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8TH INTERNATIONAL AND 47TH NATIONAL CONFERENCE ON FLUID MECHANICS AND FLUID POWER 9th-11th December 2020 Indian Institute of Technology Guwahati, India

Day 1 9/12

Inaugural Function	Plenary Session	Tea Break	Keynote Lecture	Parallel Session 1	Lunch Break	Keynote Lecture	Parallel Session 2	Tea Break	Parallel Session 3
8:30-9:00 AM	9:00-9:45 AM	9:45-10:00 AM	10:00-10:30 AM	10:30-12:30 PM	12:30-1:30 PM	1:30-2:00 PM	2:00-4:00 PM	4:00-4:15 PM	4:15-5:30 PM
Hall 1 Inaugural Function	**Hall 1** Prof. Subir Kar Plenary Lecture by **Prof. Gautam Biswas** (IIT Kanpur) Session Chair : Prof. Atul Sharma, IIT Bombay		**Hall 3** **Dr. L. Venkatakrishnan** NAL Bangalore Session Chair : Prof. Ganesh Natarajan, IIT Palakkad	**Session 1A Hall 1** Instability, Transition & Turbulence (8) **Prof. K Arul Prakash, IIT Madras** 30 34 48 56 60 63 94 100 **Session 1B Hall 2** Computational Fluid and Gas Dynamics (8) **Prof. Sandip Sarkar, Jadavpur University** 11 15 16 18 19 23 24 25 **Session 1C Hall 3** Microfluidics (8) **Prof. Partha Sarathi Guha Pattadar, IIT Guwahati** 10 14 22 35 89 125 142 157 **Session 1D Hall 4** Multiphase Flows (8) **Prof. Pranab K Mondal, IIT Guwahati** 20 21 27 32 38 40 49 53		**Hall 1** **Prof. Yosuke Hasegawa** The University of Tokyo, Japan Session Chair: Prof. K Arul Prakash, IITM	**Session 2A Hall 1** Propulsion & Power (8) **Prof. Chetan Mistry, IIT Kharagpur** 5 37 68 77 85 96 141 144 **Session 2B Hall 2** Computational Fluid and Gas Dynamics (8) **Prof. Sukumar Pati, NIT Silchar** 33 58 65 69 73 80 84 86 **Session 2C Hall 3** Aerodynamics (8) **Prof. Sukanta Roy, Curtin University** 28 31 43 44 62 70 104 108 **Session 2D Hall 4** Multiphase Flows (8) **Prof. Binita Pathak, IIT (BHU) Varanasi** 66 71 75 78 81 95 98 111		**Session 3A Hall 1** Fund. Issues & Persp in FM (5) **Prof. Biplab Debnath, NIT Meghalaya** 4 55 59 83 219 **Session 3B Hall 2** Comp. Fl. Gas Dy. (5) **Prof. Amit Dhiman, IIT Roorkee** 87 88 92 97 99 **Session 3C Hall 3** Measurement Tech. in FM (3) + FSI (2) **Prof. Sushanta Dutta, IIT Roorkee** 54 76 138 6 45 **Session 3D Hall 4** Misc (5) **Prof. Balkrishna Mehta, IIT Bhilai** 7 9 29 42 46

Day 2 10/12

Keynote Lecture	Parallel Session 4	Tea Break	Plenary Session	Lunch Break	Keynote Lecture	Parallel Session 5	Tea Break	Parallel Session 6	GBM
9:00-9:30 AM	9:30-11:30 AM	11:30-11:45 AM	11:45-12:30 PM	12:30-1:30 PM	1:30-2:00 PM	2:00-4:00 PM	4:00-4:15 PM	4:15-6:00 PM	6:00-7:00 PM
Hall 1 **Prof. S. Balachandar** University of Florida, USA Session Chair: Kirti C Sahu, IIT Hyderabad	**Session 4A Hall 1** Instability, Transition & Turbulence (8) **Prof. Sandip Kumar Saha, IIT Bombay** 110 121 172 174 175 182 183 199 **Session 4B Hall 2** Computational Fluid and Gas Dynamics (8) **Prof. Jyotirmay Banerjee, SVNIT Surat** 101 103 105 126 128 129 135 147		**Hall 1** Prof. Aswatha Narayana Plenary Lecture by **Prof. h.c. Franz Durst** FMP TECHNOLOGY GMBH, Erlangen, Germany, Session Chair: Prof. Prabal Talukdar, IIT Delhi		**Hall 3** **Prof. A M Pradeep** IIT Bombay Session Chair: Prof. Himanshu Tyagi, IIT Ropar	**Session 5A Hall 1** Fluid-structure interaction (8) **Prof. Somnath Roy, IIT Kharagpur** 47 91 106 107 137 146 228 240 **Session 5B Hall 2** Computational Fluid and Gas Dynamics (8) **Prof. Pitambar Randive, NIT Silchar** 149 152 158 161 163 165 166 167 **Session 5C Hall 3** Turbomachinery (8) **Prof. A M Pradeep, IIT Bombay** 12 26 39 52 61 64 113 114 **Session 5D Hall 4** Multiphase Flows (8) **Prof. Gaurav Tomar, IISc Bangalore** 173 177 180 184 193 197 201 209		**Session 6A Hall 1** Propulsion & Power (6) **Prof. Neeraj Kumbhakarna, IIT Bombay** 145 153 159 169 176 230 **Session 6B Hall 2** Comp. Fl. Gas Dy. (6) **Prof. Ganesh Natarajan, IIT Palakkad** 181 188 192 194 195 196 **Session 6C Hall 3** Turbomachinery (7) **Prof. Abdus Samad, IIT Madras** 109 115 118 127 136 162 178 **Session 6D Hall 4** Aerodynamics (5) **Prof. Alakesh Chandra Mondal, IIT Kanpur** 134 185 190 220 236	**Hall 1** General Body Meeting of NSFMFP
Hall 2 **Prof. Partha P Mukherjee** Purdue University, USA, Session Chair: Prof. Ashoke De, IIT Kanpur	**Session 4C Hall 3** Microfluidics (8) **Prof. Bahni Ray, IIT Delhi** 170 171 191 207 227 246 264 265 **Session 4D Hall 4** Multiphase Flows (8) **Prof. Arup Kumar Das, IIT Roorkee** 112 120 143 150 151 155 156 164				**Hall 4** **Prof. Saptarshi Basu** IISc Bangalore Session Chair: Prof. Pranab K Mondal, IIT Guwahati				

Day 3 11/12

Keynote Lecture	Parallel Session 7	Tea Break	Parallel Session 8	Lunch Break	Keynote Lecture	Parallel Session 9	Valedictory Function
9:00-9:30 AM	9:30-10:45 AM	10:45-11:00 AM	11:00-12:30 PM	12:30-1:30 PM	1:30-2:00 PM	2:00-3:45 PM	4:00-4:30 PM
Hall 1 **Prof. Srinath Ekkad** North Carolina State University, USA; Session Chair: Prof. Rishi Raj, IIT Patna	**Session 7A Hall 1** Misc (5) **Prof. Santosh K Sahu, IIT Indore** 67 93 102 116 123 **Session 7B Hall 2** Comp. Fl. and Gas Dynamics (5) **Prof. Hrishikesh Gadgil, IITB** 198 202 208 212 215		**Session 8A Hall 1** Misc (6) **Prof. P. Muthukumar, IIT Guwahati** 133 139 148 154 168 261 **Session 8 Hall 2** Comp. Fl. and Gas Dy. (5)+Misc(1) **Prof. Arnab K De, IIT Guwahati** 218 223 226 231 235 211		**Hall 3** **Prof. Ganesh Natarajan** IIT Palakkad Session Chair: Prof. Somnath Roy, IIT Kharagpur	**Session 9A Hall 1** Instability, Transition & Turbulence (6) **Prof. Dipankar Bandyopadhyay, IIT Guwahati** 206 217 224 233 269 270 **Session 9B Hall 2** Computational Fluid and Gas Dynamics (6) **Prof. Paragmani Kalita, Tezpur University** 239 248 249 251 253 271	**Hall 1** Valedictory Function
Hall 2 **Prof. Arup Kumar Das** IIT Roorkee, Session Chair: Prof. Bahni Ray, IIT Delhi	**Session 7C Hall 3** Misc (5) **Prof. Himanshu Tyagi, IITRopar** 179 189 200 204 205 **Session 7D Hall 4** Multiphase Flows (5) **Prof. Suman Ghosh, NITRKL** 214 225 229 244 250		**Session 8C Hall 3** Misc (6) **Prof. Dibakar Rakshit, IIT Delhi** 232 237 242 247 254 255 **Session 8D Hall 4** Multiphase Flows (4) + Misc (2) **Prof. Debabrata Dasgupta, IIT Delhi** 252 257 262 263 256 259		**Hall 4** **Prof. Ashis Kumar Sen** IIT Madras Session Chair: Prof. Rajneesh Bhardwaj, IIT Bombay	**Session 9C Hall 3** Aerodynamics (6) **Prof. Vinayak Kulkarni, IIT Guwahati** 238 243 258 260 266 267 **Session 9D Hall 4** Bio-inspired Fluid Mechanics (7) **Prof. Rajneesh Bhardwaj, IIT Bombay** 51 72 90 117 122 130 245	

4:15-6:00 PM		Session 6B Hall 2
	Comp. Fl. Gas Dy. (6)	
	Session Chair :	Prof. Ganesh Natarajan, IIT Palakkad
181	Anand Bharadwaj S, and Nikhil Das	Numerical Investigation of the Effects of Varying Membrane Permeability on Concentration Polarization in Membrane Separation
188	Snehasis Chowdhury, Tanmoy Mondal, and Prince Raj Lawrence Raj	Assessment of Various RANS Based Turbulence Models for Predicting Near Wall Flow and Heat Transfer Quantities for a Turbulent Slot Jet Impingement
192	Vipul Kumar Gupta, Pradeep Kumar Jha, Pramod Kumar Jain	Effect of Submerged Entry Nozzle Port Angle on Fluid Flow and Solidification of Continuous Casting Bloom
194	Tilekar N, Atrey M, and Gandhi P	Parametric Investigation of Liquid-cooled Fractal-like Heat Sink
195	Subhra Sankar Kalita, Anoop Kumar Dass	Multiple Stable Solutions for Two-Sided Lid-Driven Cavity using Multigrid-Accelerated Streamfunction-Velocity Formulation
196	Kalyan Deepak. G, Sujan B Thapa, Raja Mangalagiri, and Satya P Jammy	Performance of various shock capturing schemes on CPU's and GPU's

4:15-6:00 PM		Session 6C Hall 3
	Turbomachinery (7)	
	Session Chair :	Prof. Abdus Samad, IIT Madras
109	Subodh Khullar, Sandeep Kumar, Rahul Goyal, Krishna M. Singh, Michel J. Cervantes, and B. K. Gandhi	Comparison of Turbulence Models for Predicting the Flow Field in the Draft Tube of a High-Head Francis Turbine at Part Load Operation
115	Rajavamsi Gangipamula, Pritanshu Ranjan, and Ranjit S Patil	Hydraulic Noise Reduction in a Volute Pump Using Source Modification - A Test Data Correlation and Numerical Simulation Approach
118	M. Ananth Pai , N. G. Rasu , R. Manoharan , L. S. Ismail , V. Krishnaprasad , A.N. Patra	Mathematical Modelling of Fuel Transfer Pump for Combat Aircraft Fuel System Applications
127	Dhrumil Ganatra, Ranjit Jovin Cyriac, M. Rajendrakumar and K. Natesan	Transient RANS Solution Approach for Predicting Rotordynamic Coefficients of Seals
136	Maitreyee Saini, Abhishek Kaimal.m, Pranav J, Shravan Kumar	Performance improvement of Darrieus hydrokinetic turbine through design modifications
162	K. Kumar, Atul S. Tumane, R.A. Kubde, Abhijeet Kulkarni, B.M Shinde and S.G Sutar	Cannibalisation of Kaplan Turbine Runner Blades – A Case Study
178	Maya M. Kurulekar, K. Kumar, Shardul Joshi and Abhijeet Kulkarni	A pilot study on retrieving energy potentials during minimum discharge through irrigation dependent hydro power plants

4:15-6:00 PM		Session 6D Hall 4
	Aerodynamics (5)	
	Session Chair :	Prof. Alakesh Chandra Mondal, IIT Kanpur
134	Ninad Patil, Alok Kumar, S. K. Sinha and Arvind Deshpande	Dynamic Wind Load Analysis on Heliostat
185	C Dinesh Prabhu, Ganapati Joshi, Ajay Misra, and Amogh Kulkarni	Numerical Analysis of Wave Drag Reduction in Cascade Fins by Altering Leading Edge Shape
190	Akshay Joshi, Amogh Kulkarni1, Ganapati Joshi	Experimental study of leading edge tubercles on Propeller performance
220	Vasanth Kumar G, Aritras Roy, Rinku Mukherjee	Tip Vortices over Wing Surface using Oil Flow Visualization
236	Ashutosh Saraswat, Lakhvinder Singh, S N Singh	Design of Mixing Tube to Improve Thermal Characteristics of an Ejector

General Body Meeting of NSFMFP

6:00-7:00 PM — **Hall 1**