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Maximising Human Potential
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Survey No. 2, 3, 4 Laxmi Nagar, Kondhwa Budruk, Pune - 411 048. Maharashtra, India.
Contact : (020) 26950301, 26950302 | Fax : (020) 26950304
Website : www.vupune.ac.in | Email : connect@vupune.ac.in

Faculty of Science and Technology

Name of the Faculty: Prof. Siddharth Jabade
Department: Mechanical Engineering
LinkedIn: https://www.linkedin.com/in/siddharth-jabade-a7a31b212/
Research Gate: https://www.researchgate.net/profile/Siddharth-Jabade

Research Summary:

Prof. Siddharth Jabade has received his Ph.D. in Mechanical Engineering from Indian Institute of Technology Bombay (IITB). He has multi-faceted experience in education, research, innovation, intellectual property rights (IPR) and technology commercialization to enable ideation to impact the value chain of innovation. He was Director of Innovation and IPR at the Asian Institute of Technology in Thailand. He has served as an International Consultant for the Asian Development Bank, UNESCO and as a resource person to the World Intellectual Property Organization. He has authored a book titled Nanotechnology Intellectual Property Rights: Research, Design and Commercialization published by CRC press. He is currently the lead author of a book titled Foundations of 21st Century Curriculum: Emerging Technologies, Humanities and the Augmented Age, to be submitted for publication later this year.

Most recently he was the co-inventor of affordable housing technology for SMART GRAM—an initiative sponsored by the President of India's office. The Ministry of Housing & Urban Affairs' Affordable Sustainable Housing Accelerators (ASHA) Award was given to this innovative housing technology on January 1, 2021 by Prime Minister Narendra Modi.

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Name of the Faculty: Prof. Kedar Sant
Department: Mechanical Engineering
LinkedIn: https://www.linkedin.com/in/kedarsant/
Research Area Keywords: Refrigeration systems, Cryogenic systems, Non-conventional Energy Sources, Thermal systems, Heat transfer equipment

Research Summary:

The educational qualifications being B.E. (Mech), M.E. (Mech – Heat Power) and Ph. D. (Mech from IIT Bombay) and experience of almost two and a half decades. The specialization being in Thermal and Fluids branch of Mechanical Engineering, broader areas of interest for research are Refrigeration, Cryogenics, Non-conventional Energy Sources, Thermal systems and Heat Transfer Equipment. The specific research areas are as follows:-

1. Refrigeration systems – analysis for performance enhancement, development of non-conventional systems,
2. Cryogenic systems – Stirling cryocoolers, Materials to be used at cryogenic temperatures
3. Non-conventional Energy Sources – Performance enhancement of Solar Thermal systems for different applications, Development of Solar Thermal systems for new applications
4. Thermal systems – Analysis and development of energy efficient thermal systems, Waste heat recovery in thermal systems, Efficient refrigeration compressor system
5. Heat transfer equipment – Analysis and development of Heat pipes and Loop heat pipes for various applications

Guided M. Tech and B. Tech student projects in above mentioned areas. Completed and ongoing different research projects funded by SPPU, ISRO etc. About 10 research papers published in last 3 years.

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Name of the Faculty: Dr. Nitin Vijay Satpute
LinkedIn: www.linkedin.com/in/nitinsatpute123
Google Scholar: https://scholar.google.com/citations?authuser=1&user=nEgkxUkAAAAJ

Research Summary: Implementing novel and efficient solutions for low frequency vibration energy harvesting. Although vibration energy harvesting has been implemented mainly to ensure battery/cable free operation for small sensors, there is wider scope for improving weight to power ratio and broadband energy recovery of these systems. Innovative features in the published research includes detailed mathematical modeling, better fail-safe characteristics and improved efficiency for the given vibration spectrum.

Computer simulations and experimental investigation to implement non-linear damping systems in order to overcome the limitation of passive vibration isolators to have very low natural frequency in comparison to the operating frequency.

Numerical simulation supported with experimentation on reduced scale prototypes to evaluate the performance. Different sensors like LVDT, accelerometer, rotary encoder and load cells have been used to measure the system parameters. I have found computer-based time and frequency-based data acquisition and analysis to be extremely supportive in design and analysis of the energy harvesters.

Externally sponsored research projects include application of nanoparticles and

phase change material, Semi-active torsional based on MR fluid and development of adsorption-based oxygen generator for health care use.

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Name of the Faculty: Prof. Kailas Patil

Department: Computer Engineering

LinkedIn: https://www.linkedin.com/in/kailaspatil/

Google Scholar: https://scholar.google.co.in/citations?user=PVxc2VcAAAAJ&hl=en

Research Summary:

Prof. Kailas has built niche expertise for over 18 years with 17 Publications to his name, 3 Books & Datasets each, 10+ journal papers and 8 publications in International Conferences.

He is listed as India's top 15 Cyber Security Researcher, National Critical Information Infrastructure Protection Center (NCIIP) for 2 consecutive years (2021 & 2020).

Furthermore, he was also listed as India's top 15 Cyber Security Researcher, National Critical Information Infrastructure Protection Center (NCIIP) for 2 consecutive years (2021 & 2020)

His three research domains

1. **Internet of Things (IoT)**

The Internet of things (IoT) is the network of physical devices, home appliances, and other items embedded with electronics, sensors, actuators, and network connectivity which enable these objects to connect and exchange data. The applications for internet connected devices are extensive. The research projects in this domain will focus on innovating farming methods. Farming challenges caused by population growth and climate change have made it one of the first industries to utilize the IoT. Also, IoT research projects to enable remote health monitoring and emergency notification systems. In addition, research projects to assist in the integration of communications, control, and information processing across various navigation and transportation systems.

2. **Renewable Energy: (Green Energy)**

Energy is often crucial in human development. The research projects in this domain will focus on renewable technologies and green power that are suited for rural and remote areas. Green power is electricity generated from renewable energy sources.

3. **Security:**

The research projects in this domain will focus on cloud security issues and challenges, auditing systems, network security, mobile security and web security.

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Name of the Faculty: Prof. Yogesh Deshpande
Department: Computer Engineering
LinkedIn: https://www.linkedin.com/in/yogesh-deshpande-phd-413a2817/
Google Scholar: https://scholar.google.com/citations?user=seoyRBsAAAAJ&hl=en

Research Summary: Dr. Yogesh Deshpande obtained his doctorate from Indian Institute of Technology Guwahati (IITG).
His research Interactions between humans and computers should be as intuitive as conversations between two humans. However we find many interactive products around us that fail to achieve this. The research in "Human-Computer-Interactions (HCI)" focuses on human aspects of these interactions with a goal of making these interactions enjoyable and useful to the user. HCI study involves observing and modeling interactions and designing new technologies that let humans interact with computers in novel ways. The research in HCI combines fields of computer science, behavioral sciences, design, media studies, ergonomics and several other fields of study.

Name of the Faculty: Dr. Prasad Gokhale
Department: Computer Engineering
LinkedIn: https://www.linkedin.com/in/prasad-gokhale-200821b/
Google Scholar: https://scholar.google.com/citations?user=8jghcREAAAAJ&hl=en

Research Summary: Dr. Prasad Gokhale has received his integrated M.Tech&Ph.D. degree in Computer Science and Engineering from Indian Institute of Technology Bombay (IITB). He was a member of the Gigabit Networking Laboratory at IIT Bombay. He has published several papers in international Conferences and Journals. He was nominated for Corning Outstanding Student Paper in IEEE/OSA OFC/NFOEC 2010. He is a reviewer for Journal of Optical Communications and Networking (JOCN), Journal of Signal Image and Video Processing Springer, IEEE Communication Magazine. His current areas of interest are Modeling and Optimization of Communication Network, Network Security Machine Learning and IoT.

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Name of the Faculty: Dr. Bharati Sanjay Ainapure
Department: Computer Engineering
LinkedIn: https://www.linkedin.com/in/dr-bharati-ainapure-9b967362/
Google Scholar: https://scholar.google.co.in/citations?user=QESJWnAAAAAJ&hl=en

Research Summary: Dr. Bharati Ainapure has completed B.E. in Computer Science and Engineering from Karnataka University and M. Tech in Computer Science and Engineering from Vishweshryaya Technological Univeristy, Kanataka, in 2008. She did her Ph.D from JNTU, Anatapur, India. Currently, she is working as Associate Professor in Computer Engineering Department, Vishwakarma University, Pune, India. She has more than 20 years of experience in teaching and industry and has published more than 30 research papers in renowned international journals and conferences. She has got an Australian patent grant in 2020. Her research interests include Cloud Computing, Machine Learning, Parallel Computing and high performance computing.

Funded Research Projects: Received the amount of Rs. 1,80000/- from BCUD, Pune university for the project title “Elastic Resource Scaling & Load Balancer for Online Shopping using Cloud Computing” during 2013-15 and Received NVDIA Kits from NVDIA worth Rs. 1,29,666/-

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Name of the Faculty: Dr. Sanjesh Sadanand Pawale
Department: Computer Engineering
LinkedIn: https://www.linkedin.com/in/sanjesh-pawale-032a20184/

Research Summary:

1. Computer Network: Main research focus will be on congestion in the network, where the network may be wired and wireless or hybrid type. In wireless network the key issue is to identify the random loss and congestion loss. There is a lot of scope to design various novel methodologies to detect congestion in the network and provide the solution to minimize it with improvement of various networking parameters such as throughput and bandwidth of the network. We can improve the packet delivery ratio as well as the congestion window size also the increase the performance of the overall network.
2. Computer Graphics: This is the second research area where the research work is going on in the field of Computer graphics and image processing. Medical field is one of the domain for applications of image processing algorithms. In computer networking domain also computer graphics and image processing is applied to compress the image or video before sending on network.

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Name of the Faculty: Dr. Chetan Vasantrao Kapadnis

Department: Chemical Engineering

LinkedIn: https://www.linkedin.com/in/dr-chetan-kapadnis-11748914

Google Scholar: https://scholar.google.co.in/citations?user=PH_FM6MAAAAJ&hl=en

Research Summary:

1. Nanotechnology - Primary research focus will be synthesis and applications of nanomaterials in solar thermal energy harvesting, solar desalination, nanofluids for heat transfer enhancement, phase change materials, water and waste water treatment, etc. Nanomaterials would be synthesized by using chemical methods (bottom up approach) in the laboratory. After characterization they would be incorporated in the desired application for improved parameters in accordance with above mentioned applications. The applications currently being studied in the laboratory are use of nanofluids in solar parabolic collectors, flat plate collectors, phase change materials with composite nanomaterials, etc
2. Second research area is related to heat transfer and process equipment design for improved processes, methods, efficiencies, purification in chemical process industry. This involves modification of certain part of equipment or designing of new equipment with new configuration

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Name of the Faculty: Dr. Jagadish V. Tawade
Department: Mathematics
LinkedIn: https://www.linkedin.com/in/dr-jagadish-7030b2176/
Google Scholar: https://scholar.google.com/citations?hl=en&user=m6dGpZkAAAAJ

Research Summary:

The broad area of research of Dr. Jagadish V. Tawade is in both applied and applicable mathematics having 16 years of teaching experience. He has published more than 32 papers in national and international Journals and 07 in conference proceedings. He was awarded as a young scientist by Vision Group on Science and Technology, Govt. of Karnataka in 2013. He was the Senior Research Fellow of DST, New Delhi in 2008.

Many practical problems in science and engineering cannot be solved completely by analytical means. The research in the area of numerical analysis and scientific computation is concerned with the development and analysis of numerical algorithms. The use of numerical methods in conjunction with mathematical modeling to solve large-scale practical problems arises in science and engineering. My focused research areas include numerical solution of boundary value problems arises in continuum mechanics. The Current research area in include:

[1]. Writing mathematical model for Newtonian and non-Newtonian incompressible fluids
[2]. Deriving an equation of momentum, heat and mass transfer of Visco-elastics fluid, Maxwell fluid, Nanofluid, Jeffery fluid, Micro polar fluid, Williamson fluid etc…
[3]. Solving highly non linear differential equations by several numerical and analytical methods.
[4]. The impacts of different physical parameters upon velocity and temperature profiles for fluid flow system are going to be deliberate.

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Name of the Faculty:	Dr. Pooja A. Kulkarni
Department:	Computer Science
LinkedIn:	https://www.linkedin.com/in/pooja-kulkarni-42645965
Google Scholar:	https://scholar.google.com/citations?user=lOn_Jy0AAAAJ&hl=en
Research Summary:	As a computer science faculty my primary research focus remained to utilize IT technology for effective management and improved consumer experience. I have written research papers and done my Ph.D research with an objective of benefiting to the society, companies and government. One of my research paper is on understanding challenges in implanting smart city project in Pune. Wherein we found major challenges is not having clarity about smart city project to both implements and citizens. Another research work was on adoption of electronic payment system by senior citizens. Wherein I tried to identify what problems are faced by senior citizens while adopting electronic payment system. I found that they are willing to use the electronic payment system however; the complexity is major obstacle for them. I also studied security related issues in mobile application from user perspective in another research paper. I have written papers on BI and cloud computing. I studied mobile financial transactions consumer behavior in rural and urban users. My PhD topic was 'An Analysis of Electronic Payment and Security in Online Financial Applications with Respect to User Behavior in the Selected Region of Maharashtra State'. My research was based on TAM model (Technology Acceptance Model) proposed by Davis in 1969. I studied security issues in financial transaction through cell phone. I also proposed preventive mechanism to take care of security issues.

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Name of the Faculty:	Dr Ramkumar Krishnamoorthy
Department:	Computer Science
LinkedIn:	https://www.linkedin.com/in/dr-ramkumar-krishnamoorthy-b2475856/
Google Scholar:	https://scholar.google.co.in/citations?user=9Al9ZEYAAAAJ&hl=en
Research Summary:	My research interests are in the area of Mobile Networks, Machine Learning and Internet of Things, Data Mining etc. Mobile networks introducing a lot new inventions by addressing the various factors in base station improvements, device enhancements and resource allocations much more. At the same time, it suffers from various pitfalls, like QoS enhancement, Mobility, Resource Allocation, Security and all. Not only, is it associated with various domains such as IoT, Cloud, Machine Learning and Edge computing. Due to this several integrations of different networking fields, a lot of things to do here from the bottom to the top level. My research focuses on scheduling in LTE technology. Users will be available from various regions may use different types of applications as well. Each and every application varied with the way the use, where they use, how long they use etc. All these points should be considered by the mobile tower to give the useful services to the users. Here, it is still an issue to assign the resources to all users at all the time. Along with this, it should focus on the Quality of Service also. So, considering these factors, my research addresses all these and gives the solution for that, it is called Scheduling in Heterogeneous Networks.

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Name of the Faculty:	Dr. Shrikaant Kulkarni
Department:	Science & Technology
LinkedIn:	https://www.linkedin.com/in/dr-shrikaant-kulkarni-86366442/
Google Scholar:	https://scholar.google.com/citations?hl=en&user=dQHoN6QAAAAJ
Research Summary:	My research focuses on Chemistry as the domain while the subdomains cover aspects like synthesis of novel nanomaterials, development of methods for characterization of these materials and applications of them in different walks of life. The research further is aimed at evolving greener pathways or routes for the synthesis of a host of advanced materials and analyzing them using various analytical tools to identify their characteristics which further reflect on their utility. Nanomaterials in particular used as catalysts, support materials, adsoebents, absorbents or sorbents etc. for bringing about various chemical reactions, remediation of contaminants like dyes, heavy metals, and other impurities found in industrial waste streams so as to make it harmless and safe to dispose off. The chemistry underlying the preparation of materials of diverse kind are examined and explored such that they find widespread uses in order to address numerous societal problems. The research is also focused upon development of optimum green analytical methods for the separation, analysis and quantification of many analytes of interest from various organic, inorganic materials. Employing right analytical tools, adopting right pathways and interpreting the results in a sound manner too is a prerequisite for furthering the research acumen. The research enlightens, enriches and expands the knowledge base of Chemistry domain in general.

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Name of the Faculty: Dr. Shraddha Khamparia

Department: Department of Water, Sanitation and Hygiene

LinkedIn: linkedin.com/in/dr-shraddha-khamparia-4aa63211a

Google Scholar: https://scholar.google.com/citations?user=N_5Acb0AAAAJ&hl=en

Research Summary:

With integrated approach, the most complex problems can be tackled in the most sustainable and affordable way. With the innovation as the first destination, research in areas of Water, Sanitation and Hygiene is taken as the core. Being associated with Wilo-Vishwakarma University Water Quality Centre of Excellence and being faculty in Science and Technology stream in Vishwakarma University, several industrial projects have been part of the my research journey. While heading the Department of Water, Sanitation and Hygiene (WASH) which is running courses with collaboration with AIT Thailand and Global Sanitation Graduate School (GSGS), Netherland, a correlation of field studies, case studies have been part of the interest in areas of WASH. With the rich experience gained during the Junior Research Fellowship awarded by Symbiosis International University, Pune during doctoral research work, have published international journal papers of high repute (SCI and Scopus indexed), and national journal papers (UGC approved) with 421 citations with H index 7. Contributions in the form of book chapters have also been made by published by Springer and Taylor and Francis. My work has been focused on the green treatment, advanced treatment and sustainable practices for waste water treatment. I have been guiding under graduate students, post graduate degree, sustainability management students and PhD Scholars in their research endeavors. With keen inclination to extend innovative thoughts into a scalable mode, trans-disciplinary ideas interests the most to me sufficing commitment towards sustainable development.