RESEARCH HORIZONS

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In This Issue

Ahmedabad University

Documenting the History of Science and Technology in India

In Conversation with Aparajith Ramnath

Aparajith Ramnath is an Associate Professor in the Humanities and Languages division of the School of Arts and Sciences, Ahmedabad University. Trained as an engineer, he now studies the history of science, technology and industry in India. His PhD thesis documented the evolution of engineering as a formal profession in pre-independence India. He is currently researching the life of the famous engineer Sir Mokshagundam Visvesvaraya for a book project. In this issue of Research Horizons, Professor Ramnath shares his journey from engineering to history, some interesting snippets he discovered in Sir Visvesvaraya's life, and his interests outside work.

You have a bachelor's degree in electrical engineering and a PhD in history. You are one of a few historians of science and technology in India. How did this shift from engineering to history happen?

I went to a school in Chennai that was very focused on science, engineering, and medicine. We did not have a humanities stream in the school. Most of my friends were motivated by an ambition to get into an IIT, but I knew early on that it was not my calling. Deep down, my interests lay elsewhere. But I didn't know what it was that I wanted to do, since there was no role model. So I too ended up in engineering. Then, when it came to choosing a branch, I should have gone with Computer Science, but in the immediate aftermath of the dot-com bust, people advised me that Electrical Engineering would be a safer option. The core courses did not catch my fancy, and I was increasingly occupied with other things I found interesting. In the end, despite completing it with a good result, I wanted to get out of engineering. I worked for a year at a company in Bangalore called Juniper Networks. Even there, I was drawn more to the less technical parts of my job.

During that year, I earnestly decided to figure out what I wanted to do. I realized that studying the past really intrigued me, and temperamentally, I feel more comfortable in a slightly less technological environment. Then the next problem to solve was, 'How do I get into history?' because I did not have any training or experience in history. Through a lot of research and exploration, I came to know that there is a field called the History of Science and Technology (and allied fields like Science and Technology Studies) where one can apply the historical lens and use social science methods to understand science and technology. This was comforting because I was literate in the broad language used to talk about science and technology, and in practical terms, with a background in engineering, I would be eligible to apply for master's courses. History of science is perhaps one of the most open branches of history. Many historians of science and tech come from a science or engineering background.

The decision to move into this field was a leap of faith since there was no institutionalized training programme in India. So, I ended up looking for suitable courses abroad and was accepted for a master's course at Oxford University and got a partial scholarship from Bharat Petroleum. That one year at Oxford was transformative. It finally felt like I was in a field where I could put my best foot forward. Despite not having a formal background in history, I never felt out of place. The excitement of doing something I had never seriously thought I would get to do kept me going. The

following year I was able to get a fully funded spot at Imperial College, London, for a PhD and zeroed in on studying the evolution of engineering as a profession in India. Initially, I wanted to study a recent period, till the 1970s, but as my research developed, the focus shifted entirely to pre-independence India. I travelled extensively in India to collect material for the thesis. However, since the work was on pre-independent India, I ended up finding most of the material in the UK itself, where the colonial records are preserved. Eventually, there was an intense period of drafting, redrafting and being in touch with my supervisors before I finished the thesis.

How was your journey to academia and Ahmedabad?

I did not plan my career consciously or very strategically. I had a gut feeling about what I wanted to do at each stage, explored different options and went along with what was broadly aligned with my interest. That has been the story for me to date. After my PhD, it was clear that I did not want to float around the world on one-year postdocs; I wanted to settle down. Fortunately, I am in a field that does not require any major infrastructure or labs. The work can be done wherever I am with access to the library or archives. Fortunately, IIM Kozhikode at that time had an area called Humanities and Liberal Arts in Management, which had room for people like those with my background, and they were keen on offering courses in business history. I got a job there immediately after my PhD. I worked there for four years.

The move to Ahmedabad, initially, was for personal reasons after I got married. When looking at different institutions here for a job. I had heard about Ahmedabad University from a couple of senior academicians. Finally, what convinced me to accept a position here was the prospect of working in a place where my subject would occupy a central space. Ever since then, it has been a rollercoaster ride, and great things have happened: a new building, dozens of new colleagues, a whole new BA programme and hundreds of new students.

You are currently working on a book about the life of Mokshagundam Visvesvaraya. How did you end up with this project?

My PhD work resulted in a book that was published in 2017. After that, I did several small projects. I worked on the history of Hindustan Aeronautics Limited (HAL) and the birth of the aircraft industry in India, which was published as a paper. Another project was on the engineering companies in Calcutta during the colonial period, which developed into a study on the design of the Howrah Bridge. After a doctorate, one has to learn to operate completely independently without the safety net of supervisors. For a while, I struggled to identify my next project; I thought of various things, building on what I had done, but nothing caught my fancy. During my PhD work, Visvesvaraya had come up many times in my sources. At one point, I wanted to write a chapter on him. However, since that project was not about individuals but the larger sociological changes in the profession, there was no room to go into detail about one person. Towards the end of my PhD, I began writing short proposals to research Visvesvaraya's career. After my friend Jahnavi Phalkey, now the Director of Science Gallery Bengaluru, encouraged me to pursue the idea, I wrote a tentative book proposal. But nothing came of it at the time. Coincidentally, in 2017, just as the book that grew out of my PhD was to be published, an editor from Penguin Random House approached me to write a book on Visvesvaraya. I think neither they nor I had an inkling of what a long undertaking it would turn out to be! It's kept me occupied for several years now, and though stressful at times, the project has given me a sense of purpose. Through the story of this one person, you get to learn about so many different domains of Indian society at that time because he was multi-faceted; he worked on different things from many domains and different geographies during a lifetime of more than a hundred years. My hope is that this biography, being more than the story of an individual, helps the readers understand how his story fits into the evolution of modern India and the generation that built it. While working on this book, I have tried my best to arrive at a technique to

tell the story without hero-worshipping the subject, but at the same time giving him his due.

Visvesvaraya is a pretty well-known personality. His birthday is even celebrated as Engineers' Day in India. While working on this book, did you discover any aspects of his life that were previously not known?

Visvesvaraya is famously associated with the construction of the Krishnaraja Sagar Dam in Mysore. During my research, I found a very interesting bureaucrat that he had to deal with before the dam project was approved. J. S. Chakravarti, a young Bengali bureaucrat, was on loan to Mysore state as the Financial Controller, and he strongly disagreed with Visvesvaraya on the need and utility of allocating substantial funds for constructing a dam. The two of them exchanged several letters and memos, putting across their views, and reading them, we come across a fascinating clash of wits. The arguments in those letters were so sharp and erudite, while at the same time being totally civil. Eventually, they ended up working together.

Visvevaraya was a well-known proponent of professional courses. In 1930, he was invited to address the students at one of the first commerce colleges to be set up in Bombay, Sydenham College. In his speech, he commented: "In an age in which the capacity for management and direction is most prized everywhere, our Universities, instead of training efficient leaders and experts to direct the country's industrial and business affairs, continue to send out unwanted Arts graduates." This, in my view, is an example of one of his more problematic legacies in that we have become a society obsessed with technocratic education that cannot see the value of an education in arts and humanities. Of course, Visvesvaraya was making his remarks in a context when people largely aspired to government jobs, and technical subjects did not have sufficient prestige. But perhaps we've lurched too far in the other direction since then.

What keeps you busy outside work?

Family, first and foremost! As for pastimes, I am a big sports fan. Growing up, I had the chance to try my hand at many different sports ranging from tennis to basketball. I played cricket for the school team. Whenever I get a chance to play, I still enjoy the hand-eye coordination aspect of sports like table tennis. I used to be an active quizzer in school and college. I have a strong interest in languages and do some amateur translations. I have written and published some short stories in the past, but I haven't been in the frame of mind to write fiction for the last few years. Music is another interest. I can play a little bit of piano.

Suman Mallick and **Chena Desai**, PhD students in the Biological and Life Sciences division of the School of Arts and Sciences and members of Professor Ratna Ghosal's research group, have received conference grants of USD 2,500 each from the International Society for Behavioral Ecology (ISBE) to attend the 19th ISBE Congress to be held from September 29-October 04, 2024 in Melbourne, Australia. They have both been selected to deliver oral presentations at the conference. Mr Mallick, a 5th year PhD student, will deliver a talk titled "Understanding feeding competition under laboratory conditions: Rohu (Labeo rohita) versus Amazon sailfin catfish (Pterygoplichthys spp.)" and Ms Desai, a 4th year student, will present about "Sexually immature green chromides exhibit choice-based decision-making in the context of social preferences".

Pragnesh Patel, PhD student in the School of Engineering and Applied Science, received a travel grant of USD 2,720 from the IEEE Geoscience and Remote Sensing Society for presenting a research paper at the 2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2023) in Pasadena, USA from July 16-21, 2023. The title of his paper was 'Crop predictive insights: the synergy of deep learning, multi-source satellite imagery and weather data'.

Awarded Grants

(for the period April, 2023 - March, 2024)

External Grants

Rama Ratnam, School of Arts and Sciences

Optimal neural coding of sensory signals
INR 34,57,696; 3 years
Science and Engineering Research Board, Government of India

In this study, Professor Ratnam will investigate theoretically and validate experimentally the coding characteristics of the optimal spike-timing based neural code by systematically studying its properties over a range of stimulus frequencies and bandwidths, spanning from low to high frequencies. Specific experiments will be designed to validate the optimal code and its predictions. In vivo extracellular recordings in the electrosensory afferents of weakly electric fish will be carried out. They will determine the features of the stimulus that are encoded, the influence of stimulus statistics and bandwidth, and the role of interspike interval correlations. Along with this effort, detailed conductance-based models (extensions of Hodgkin-Huxley kinetic models) to predict ionic currents responsible for optimal coding will be built.

Gaurav Goswami, School of Arts and Sciences

Probing the existence of light bosons with recent cosmological observations
INR 17,48,980; 3 years
Science and Engineering Research Board, Government of India

The standard model of particle physics divides every particle in the universe and even the larger composite particles fit into two broad categories; fermions and bosons. Bosons are particles that carry energy and forces throughout the universe. There are many reasons to suspect that there could be very light bosonic particles in nature other than the ones familiar from the standard model of elementary particle physics. It is important to understand the origin of these bosons in various theories, calculate their observational signatures and interpret the observational data to impose constraints on the theories which predict them. In this project, the models which lead to light bosons of cosmological relevance will be constrained using all of these theoretical and observational tools.

Ashim Rai, School of Arts and Sciences

Structure-function mapping of Salmonella-host cytoskeleton interactions
INR 3,76,24,977; 5 years
DBT/Wellcome Trust India Alliance (Intermediate Fellowship)

Salmonella hijacks the cellular cytoskeletal network by secreting pathogenic factors that mimic host cytoskeletal regulatory proteins. Although cell biological and biochemical studies have identified the key Salmonella pathogenic factors and their cytoskeletal targets, the structural and functional molecular mimicry mechanism of these factors is not understood. This study aims to tackle this question by understanding the impact of pathogenic factors on cytoskeletal remodeling and transport through in vitro reconstitution of these processes and dissecting the structural mechanisms of activation of cytoskeletal proteins by pathogenic factors using FRET-based conformational biosensors.

Akhand Rai, School of Engineering and Applied Science

Development of intelligent pipeline leak detection and localization practices independent of prior leak history
INR 18,29,570; 3 years
Science and Engineering Research Board, Government of India

Leaks in pipelines create fluid supply system malfunctions, potentially leading to the discharge of hazardous materials into the environment, undue maintenance expenses, increased repair costs, system downtime losses, and severe accidents. This project attempts to develop an integrated acoustic emission technology-based framework for pipeline leak detection and localization that does not need any prior leak information and adapts to different operative situations.

Dharamashi Rabari, School of Engineering and Applied Science

Investigations of deep eutectic solvents as catalyst for cyclo-addition of CO2 to propylene oxide: quantum calculations and experimental verification
INR 17,85,200; 3 years
Gujarat Council on Science and Technology

The main objective of this project is to investigate deep eutectic solvents (DES) as catalysts for carbon dioxide cycloaddition to valuable products. Different DESs will be screened for cycloaddition of CO2 to propylene oxide through density functional theory (DFT) calculation. Experiments will be performed for CO2 cycloaddition catalyzed by selected supported DESs and the computational results will be validated.

Maryam Kaveshgar and **Mehul Raval**, School of Engineering and Applied Science

Safety measures of two-wheeler mobility in India (and R10) integration of technical activities, education and awareness
USD 19,715
IEEE ITS Society

This project will promote the study and research on two-wheeler safety along with IEEE ITSS in Indian subcontinent and other IEEE Region 10 (R10) countries by demonstrating technical features, identifying the challenges, bringing in social requirements and creating awareness about the IEEE ITSS and two-wheeler safety. This includes organizing a hybrid-mode technical webinar for researchers to demonstrate and present their findings (paper, talk, simulator and prototypes) in the field of two-wheeler safety and brainstorm the next possible steps.

Minal Pathak, Amrut Mody School of Management

Net zero strategy for the state of Gujarat, India
USD 1,25,000; 1.5 years
United Nations Office for Project Services

At the COP26, India announced its intention to become a net-zero emitter of greenhouse gases by 2070. Since then, sub-national initiatives on climate action have gained prominence. Gujarat's effort to formulate a net-zero transition pathway demonstrates its initiative to align the state's climate ambition to the country's climate targets. This project aims to develop an equitable net zero strategy for Gujarat.

Neel Kamal Chapagain, Amrut Mody School of Management

Cultural landscapes of the Rung community
INR 6,00,000; 2 years
Indian Council of Social Science Research

Rung communities are inhabitants at multiple locations in Uttarakhand in India and Western Nepal, and are listed under the Bhotia scheduled tribe in India. This research is intended to study their unique cultural contributions in the landscape by way of their building culture and everyday practices that represent their close relationship to the landscapes that lived in.

Darshini Mahadevia, School of Arts and Sciences
Sudhir Pandey and **Sujo Thomas**, Amrut Mody School of Management

Socio-economic impact of Pradhan Mantri Mudra Yojana in Gujarat
INR 15,00,000; 6 months
Indian Council of Social Science Research

Pradhan Mantri Mudra Yojana (PMMY) is an initiative of the Government of India that provides financial support to the micro/small businesses involved in manufacturing, trading, and service activities. This research project aims to study the MUDRA (Micro Units Development & Refinance Agency Ltd.) scheme's socioeconomic impact in promoting entrepreneurship, financial inclusion, job creation and livelihood enhancement, economic growth at the grassroots level, women's empowerment, and reduced informal lending among various groups and territories, geographies, age groups, gender, and urban, rural areas in Gujarat.

Ashutosh Kumar, School of Arts and Sciences

Co-delivery of methotrexate and RELA siRNA using nanoscale DNA tetrahedrons and folate liposomes to synergistically target synovial macrophages in rheumatoid arthritis.
INR 79,38,024; 3 years
Gujarat State Biotechnology Mission

Rheumatoid arthritis (RA) is an autoimmune condition that affects 1.5% of adults globally. Every 71 adults out of 100,000 are diagnosed with RA annually, and it is estimated to rise in future due to poor lifestyle. Despite the fact that there is no known cure for RA, various treatments are available that can help with symptom relief and joint preservation. The present RA therapy has a number of problems, including poor patient compliance, a short half-life, low bioavailability, and insufficient solubility. This project aims to design a combination therapy in liposomes directed toward synovial macrophages overexpressing folate receptors. By actively targeting this receptor, we can selectively deliver multiple, distinct therapeutics to inflamed regions, with the potential to both increase the uptake of drugs into the site of action and to greatly reduce side effects by reducing off-target cytotoxicity.

Aditi Patel and **Abdulkhalik Mansuri** have been chosen as recipients of the Rasila Kadia Excellence in Research Award for 2024. This award aims to enhance the global exposure of doctoral students at Ahmedabad University by offering financial assistance for their participation in esteemed international conferences. Ms. Patel, a PhD student in Professor Vivek Tanavde's research group, will be attending the Annual Meeting of the International Society of Extracellular Vesicles in Melbourne, Australia from May 8th to 12th, 2024. Mr. Mansuri, a PhD student in Professor Ashutosh Kumar's research group, will be attending the 34th Annual Meeting of the Society of Environmental Toxicology and Chemistry in Seville, Spain from May 5th to 9th, 2024. This award cycle is designated for conferences taking place between March and August 2024.

Subhash Rajpurohit, School of Arts and Sciences

eDNA assessment of Nalsarovar wetlands: understanding the interplay of life and temperature
INR 12,00,000; 2 years
Climate Change Department, Government of Gujarat

Nalsarover is the largest wetland bird sanctuary in Gujarat. Spanning across 120 sq. km, the sanctuary attracts over 210 bird species. This project will attempt to map the biological signatures of the different microbes and soil dwellers inhabiting the Nalsarovar wetlands through Environmental DNA, eDNA, sampling. They will also profile the environmental variables in the area and investigate their influence on the wetlands' delicate ecosystem. The results of this study will be greatly useful in developing strategies to conserve the highly sensitive wetlands.

Jeemol Unni and **Sonal Yadav,** Amrut Mody School of Management

Digital labour platforms in India: understanding precarity and empowerment
INR 20,00,000; 2 years
Indian Council of Social Science Research

This research project will study Digital Labour Platforms, focusing on web-based and location-based platforms. It distinguishes between two types of gig workers: digital wage/salary workers and digital self-employed workers. Primary survey will be conducted in the cities of Ahmedabad and Pune to examine the key characteristics and motivations for participating in platform work and analyse gender-based differences. It will also seek to understand the perceptions of how they view their jobs. Do taxi and delivery platform workers see themselves as wage employees or self-employed?

Soumen Ghosh, School of Arts and Sciences

Study of electron energy distribution on formation of double layer in expanding plasma
INR 32,51,139; 2 years
Science and Engineering Research Board, Government of India

Plasma is a state of matter that is significantly composed of electrons and ions. Expanding plasma is a phenomenon where ions are accelerated by a double-layer structure in the plasma consisting of two layers of opposite electrical charge. One of the major objectives of this project is to build an expanding plasma device with the flexibility to manipulate the electron energy distributions to study the impact of the double layer strength in the presence of several groups of hot and cold electron and ion populations in the plasma.

Darshini Mahadevia, School of Arts and Sciences

Assessment of adaptation to climate change in Indian cities – report to NATCOM and BTR
INR 34,66,500; 2.5 years
Ministry of Environment, Forests, and Climate Change, Government of India

Indian cities are experiencing compounding vulnerability to extreme weather events owing to their rapidly urbanising landscape, high density, and inequities. This project will assess vulnerabilities to and impacts of extreme weather events (heatwaves/ urban heat island effect, floods, and storm) and vector-borne diseases in Indian cities, assess city-level action plans related to extreme weather events and vector-borne diseases and determine parameters of climate adaptation with a focus on social equity to standardize reporting measures.

Krishna Swamy, School of Arts and Sciences

Investigating the role of ploidy-dependent chromosome-wide dosage compensation that alleviates proteotoxic stress in introgressed yeast hybrids
INR 42,48,736; 3 years
Science and Engineering Research Board, Government of India

This study can explain how novel species arise from whole genome duplication. The ubiquitin–proteasome system (UPS), which degrades the majority of proteins is critical for the maintenance of cellular homeostasis in eukaryotic cells. Proteostatic imbalance is implicated in a large number of diseases, including neurological diseases such as Alzheimer's and Parkinson's. Aneuploidy, an unbalanced number of chromosomes causes proteotoxic stress as a result of stoichiometric imbalance from proteins on the unbalanced chromosomes and overburdening the UPS in cells. Aneuploidy is a hallmark of cancer with >90% of tumors being aneuploid. This project attempts to dissect the mechanisms underlying contrasting modes of adaptation of haploid and diploid hybrids towards proteotoxic stress.

Darshini Mahadevia, School of Arts and Sciences

Inclusive net-zero transport plan for a Gujarat city
USD 86,000; 1.25 years
United Nations Office for Project Services

Transport contributes to 23% of Green House Gas emissions. It requires concerted efforts to reduce emissions in the conditions of low mobility of a large section of the urban population, namely women, low-income households, and socially marginalized populations. A sustainable and net-zero transport scenario in Indian cities would, therefore, require a paradigm of an enhance-avoid-shift-improve framework; that is, enhance mobility of those not experiencing one now, avoid motorized trips for all, including those making these trips now, shift to public transport and non-motorized transport means including walking, and improve technology in case of motorized vehicles such as public transport modes and private modes. This project will develop a net-zero transport strategy for Surat city.

Amit Nanavati, School of Engineering and Applied Science

GraaS: Graph analytics for security
USD 34,000; 2 years
Cisco University Research Program Fund

Attackers think of the network as a graph: if they get access to one component of the system, they extend their reach from there on to the more valuable resources of the system. A large-scale security semantic network, providing an intuitive modelling method for various attacks and defense scenarios in the real security world, can be modelled as a graph. In today's world, Graphs, therefore, play a central role in cybersecurity analytics. The goal of this project is to build a graph analytics platform and associated tools for research. The platform will be open-source and built in collaboration with researchers from Cisco.

Moulie Ghosh, a PhD candidate in the School of Engineering and Applied Science, was honored with the best paper presentation award at the 76th Annual Session of the Indian Institute of Chemical Engineers, CHEMCON 2023. The conference took place in Kolkata from December 27-30, 2023. Her award-winning presentation was on "XRD analysis of nanosized silicon derived from broken glassware". Ms. Ghosh's doctoral studies are under the supervision of Professor Sridhar Dalai.

Ashutosh Kumar and **Vivek Tanavde,** School of Arts and Sciences

Synergistic chemotherapy and microRNA intervention via liposome-mediated delivery system targeting HER2: a comparative study between miR155/Paclitaxel and miR145/Docetaxel combinations against drug-resistant breast cancer
INR 72,22,136; 3 years
Indian Council of Medical Research

Breast cancer is the most frequently diagnosed cancer and a leading cause of cancer death in women worldwide. HER2-positive breast cancer, which is characterized by overexpression of the HER2 receptor, accounts for about 20-30% of all breast cancer cases. Most currently available treatments fail due to secondary recurrence, metastasis, and drug resistance. In breast cancer, oncogenic miR-155 is elevated, whereas suppressor miR145 is downregulated, and their presence is associated with more aggressive and therapy-resistant tumors. The primary goal of this study is to assess the efficacy of miR155 inhibitors and miR145 mimics in conjunction with chemotherapy (paclitaxel and docetaxel) in chemo resistant tumors employing HER-2 targeting immunoliposomes at low therapeutic dosages.

Ahmedabad University Grants

Startup Grant

Shomen Mukherjee, School of Arts and Sciences

Temporal and spatial dynamics of potential lumpy skin disease vectors in Gujarat, India
INR 25,00,000; 3 years

The One-Health approach recognizes the interconnectedness between environmental-animal-human health. Central to this is the acceptance that we all share this planet. Lumpy skin disease (a viral disease) is an emerging infectious disease among livestock in India, with a recent outbreak causing over 50,000 deaths last year in western India. These deaths are of serious concern not only for local livelihood and economy but also for wildlife conservation since the disease also can affect wildlife (reported in Africa). Central to understanding the transmission of this disease is understanding the ecology of the main vectors, the ectoparasites - hard ticks and flies. The biodiversity of these vectors is poorly known in India because veterinary doctors have focussed mainly on livestock, but the population dynamics of these vectors between seasons and years are even poorly known. This study aims to document the tick and fly species in different land use types (wilderness, pastureland, village etc.) near Bhuj city and document their lifecycle and population dynamics across seasons and years.

Brinky Desai is a fifth year PhD student in the Biological and Life Sciences Division of the School of Arts and Sciences. She received the Morris Animal Foundation Emerging Nations Member Travel Award of USD 1,500 to attend the 8th Conference of the International Society of Wildlife Endocrinology held at the Jim Corbett National Park from 6-10 November 2023 where she gave an oral presentation on "Non-invasive monitoring of stress-indicating hormone in mugger crocodiles (Crocodylus palustris) across diverse habitats". She also received two conference grants from Future Earth (USD 2000) and IUCN CSG (USD 1500) to attend the 27th working meeting of the IUCN SSC Crocodile Specialist Group to be held from 14-20 April 2024 in Australia. She will deliver an oral presentation at the conference on "Monitoring stress physiology of free-ranging mugger crocodiles (Crocodylus palustris) across diverse habitats within central Gujarat, India". Ms Desai's PhD research is under the supervision of Professor Ratna Ghosal.

Seed Grant

Tana Trivedi, Amrut Mody School of Management

Chronicling the textile industry of Ahmedabad: a case study of the Ahmedabad Textile Industry's Research Association
INR 1,90,000; 1 year

Based largely on archival and historical research, this grant seeks to build a platform for facilitating interdisciplinary inquiry into the textile history of Ahmedabad. This project will analyze the archives from the initial years of ATIRA, and construct a historical narrative about the inception, growth and evolution of the organization. This will culminate into a comprehensive case study about the trajectory of ATIRA, its inception in the 1950s, development and growth in the 60s and 70s, and it's scaling down in the 1980s. An annual seminar will be organized that brings together experts from different fields related to textiles, with a special focus on management practices in the textile industry. Finally, a grant proposal will be developed for setting up a museum for ATIRA.

Divita Singh, School of Arts and Sciences

Emotional distractor suppression in Emotion-induced Blindness
INR 3,33,000; 1.5 years

Emotion-induced blindness (EIB) is a phenomenon where irrelevant emotionally salient stimuli (distractors) capture attention, impairing the processing of subsequent relevant visual stimuli (target). The objective of this project is to investigate and develop strategies for emotional distractor suppression within the context of EIB. To achieve this goal, three broad studies are proposed. Study 1 investigates emotional suppression by examining whether reorienting attention away from emotional distractors can prevent their spontaneous capture. In Study 2, the investigation shifts to the role of self-relevance in distractor suppression. Recognizing the saliency-boosting effect of self-associated objects, we hypothesize that self-associated target images will divert attention from emotional distractors. Study 3 explores the impact of increasing semantic familiarity on EIB. Participants will undergo a reaction time task focused on a specific semantic category, followed by an EIB task with targets from the same category.

Bimal Das, School of Engineering and Applied Science

Investigation of fatigue performance of additive manufacturing structural steel by experiment and constitutive material modeling
5,00,000; 2 years

Metal additive manufacturing (AM) components undergoing cyclic loadings during the service period may lose their structural integrity due to process-induced defects. The design of structural components fabricated by the AM technique requires a thorough understanding of the fatigue properties. Fatigue behaviour is primarily influenced by defects at or near the surface, which can initiate and grow cracks, leading to premature part failure. Hence, the study aims to analyse the fatigue deformation response of AM materials.

Akanksha Sharma, a PhD student in the School of Engineering and Applied Science, received the Best Oral Presentation award at the International Conference on Materials for Sustainable Energy, Environment & Health-2023 (ICMSEEH-23). The conference took place at Pandit Deendayal Energy University in Gandhinagar on December 8-9, 2023. Ms. Sharma's PhD research is supervised by Professor Aditi Singhal.

Akhand Rai, School of Engineering and Applied Science

Development of a fault-diagnosis device for rotating machinery using triboelectric nanogenerators
INR 3,00,000; 1 year

Rotating machines (RMs) are used in all types of industrial applications. Gearboxes are one of the key components of a RM. Often, the RMs operate under tough working condition which causes sudden failure in gears before the completion of their expected lifetime. Condition monitoring and fault diagnosis of gears has gained considerable attention among the researchers over the past few decades. Majority of the contemporary gear fault diagnosis techniques employ sensors such as vibration, acoustic emission and motor current to gather information associated with the gear health condition. In recent years, the aggressive development in energy harvesting techniques has provided a viable solution to handle the problem of powering sensors. Triboelectric nanogenerator (TENG) is an effective tool for harvesting energy due to low cost, easier construction, high power density and high energy conversion efficiency. The present project seeks to develop a gear fault diagnosis system using TENGs to eliminate the need of an external electric supply for sensing the gear health condition.

Shuja Ahmed, School of Engineering and Applied Science

Analysis of additive manufacturing of metals and composites by WAAM and FDM processes
INR 4,80,000; 2 years

Additive manufacturing (AM) techniques such as wire arc additive manufacturing (WAAM) and fused deposition modeling (FDM) have revolutionized manufacturing industry by offering an array of benefits such as cost reduction, customizability, and complexity handling. However, there are many challenges during additive manufacturing, such as the selection and optimization of process parameters and post-processing effects that require attention. This study will analyze the microstructure of the parts and the effect of post-processing techniques on the material properties and surface finish. Investigating the effects of friction stirring and metal milling on WAAM and FDM-built parts can provide insights into the development of future manufacturing technologies.

Sridhar Dalai, School of Engineering and Applied Science

Porous carbon nanofibers derived from cotton textile waste for hydrogen storage
INR 8,00,000; 1 year

Various studies on energy conversion (fuel cells) and energy storage (Li-ion batteries) have captivated interest in the context of minimizing dependence on fossil fuels. Hydrogen is a promising alternate energy source to replace fossil fuels. The gravimetric and volumetric density of hydrogen in a storage material are crucial for both mobile and stationary applications. Activated carbon nanofibers (ACNF) are considered an attractive medium for hydrogen storage applications due to their high specific surface area and adjustable nanopore structure. In this project, chemical activation technology will be used to prepare activated carbon nanofibers with high specific surface area and rich surface groups using textile cotton waste as a precursor.

Mehul Raval, Professor in the School of Engineering and Applied Science, was recognized as an Outstanding Associate Editor for 2022 by IEEE Access to honour his exceptional contributions to the journal. This recognition is given to the top 3% of the IEEE Access associate editors. Professor Raval's research interests include computer vision, engineering education, machine learning, remote sensing, sports data analytics and intelligent transportation systems.

Ratna Ghosal, School of Arts and Sciences

Using a multi pronged approach to assess health of an "ecological indicator" species, the mugger crocodile (Crocodylus palustris) in central Gujarat, India
INR 5,00,000; 1 year

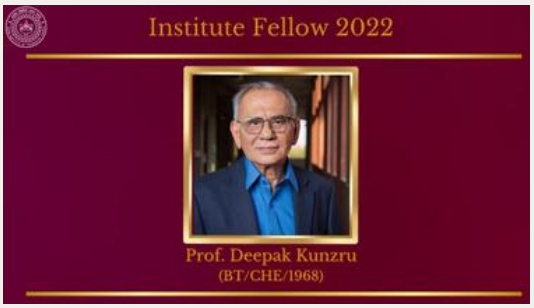
Mugger crocodiles are distributed in isolated pockets throughout India, occupying a range of habitats from sewages and ponds to riverine systems. Most of the Mugger populations are in close proximity to human habitations in several parts of India. Moreover, being an apex predator, Muggers are the ecological indicator species, whose wellbeing assessment will also represent the overall health of the aquatic ecosystems that they belong to. In this project, physiological and behavioral wellness of a focal population of muggers in Petli village of central Gujarat will be monitored.

Rama Ratnam, School of Arts and Sciences

Acoustic signaling and chorusing behaviour in frogs and toads of Gujarat
INR 5,00,000; 2 years

Frogs rely on acoustic communication for successful mating. Males broadcast advertisement calls in dense acoustic choruses to attract females while simultaneously minimizing acoustic interference with their neighbours. Thus, determining the spatial and temporal structure of the chorus (i.e., the locations of callers and their call timing) is necessary to understand how anurans (frogs and toads) manage acoustic interactions. India is a biodiversity hotspot for amphibians, with nearly four hundred and fifty species of anurans. However, unlike anurans of the Americas and Europe, very little is known about the calling behaviour of India's frogs and toads. While there is some data on species call characteristics, there is no data on their chorusing behaviour. The goal of the proposed research is to understand acoustic communication in the breeding choruses of anurans of Gujarat.

Students from the School of Engineering and Applied Science won the grand finale of the ROBOFEST-GUJARAT 3.0. The event was organized by the Gujarat Council on Science and Technology at the Gujarat Science City, Ahmedabad from 29 to 31 December 2023. The winning team had **Manan Hasit Anjaria, Anar Bhagat, Vedanshee Trivedi, Yashveer Singh Yadav and Kanad Patel**. They were mentored by **Maryam Kaveshgar**, Assistant Professor.



Deepak Kunzru, Dean of Graduate School and Research, was endowed with the prestigious Institute Fellow 2022 award by Indian Institute of Technology Kanpur. He is an alumnus of the institute having received the Bachelor of Technology degree in 1968. He also served as a member of the institute's faculty from 1974 to 2013. Professor Kunzru received the award on 02 November 2023 to commemorate the Foundation Day of the institute.

Teaching Material Development/Innovation Grant

Kunal Mankodi, Amrut Mody School of Management

Oorja Development Solutions Limited: transforming Indian agriculture for sustainable growth
INR 1,00,000; 10 months

Oorja is a purpose-driven social enterprise at the intersection of renewable energy and climate-smart agriculture. It is a Farming-as-a-Service (FaaS) company providing integrated solar-powered services to smallholder farmers to power productive use appliances along the agricultural value. The proposed case study will tease out the options of exploring other geographic markets, alternative business models, and alternative Productive Use of Energy (PUE) products for faster break-even and return on investment.

Amrita Bihani, Amrut Mody School of Management

Hearty Mart: fostering growth through ethical leadership
INR 50,000; 6 months

Hearty Mart is a journey of entrepreneurial efforts that started in 2004 with launching a retail store in a Muslim neighbourhood in Ahmedabad. Over the years, the venture has expanded and diversified into several branches of retail food and grocery items. This case study will examine the mechanism of building a community-driven business that reduces inequalities and fosters inclusive business practices in line with SDGs 1 and 10, develop a framework that allows micro-entrepreneurs to collaborate in creating an extensive presence across different verticals and gain from this inter-operability and analyze how leadership ethics play a role in formulating strategic and operational policies of a business.

University Challenge Grant

Mahendra Singh Rao, Amrut Mody School of Management

Designing effective nudges for health and institutional citizenship behaviour: role of psychological ownership
INR 11,50,000; 2 years

Psychological ownership is the feeling that something is "mine". Existing research indicates that the sense of ownership for a product leads to higher intention to purchase it and higher perceived valuation of the product. Psychological ownership can also result in stewardship and prosocial behaviour. Psychological ownership can exist even in absence of legal ownership. This project aims to investigate the impact of psychological ownership on people's choices and behaviour.

Ritesh Shukla, Associate Professor in the School of Arts and Sciences, has been granted patent for an invention titled "A nano-based lateral flow immunoassay kit for the evaluation of glycophorin-A in blood". Professor Shukla's research is focused on nanobiotechnology, toxicology (nanotoxicology), DNA forensics, food forensics, and point of care/detection diagnostic devices.

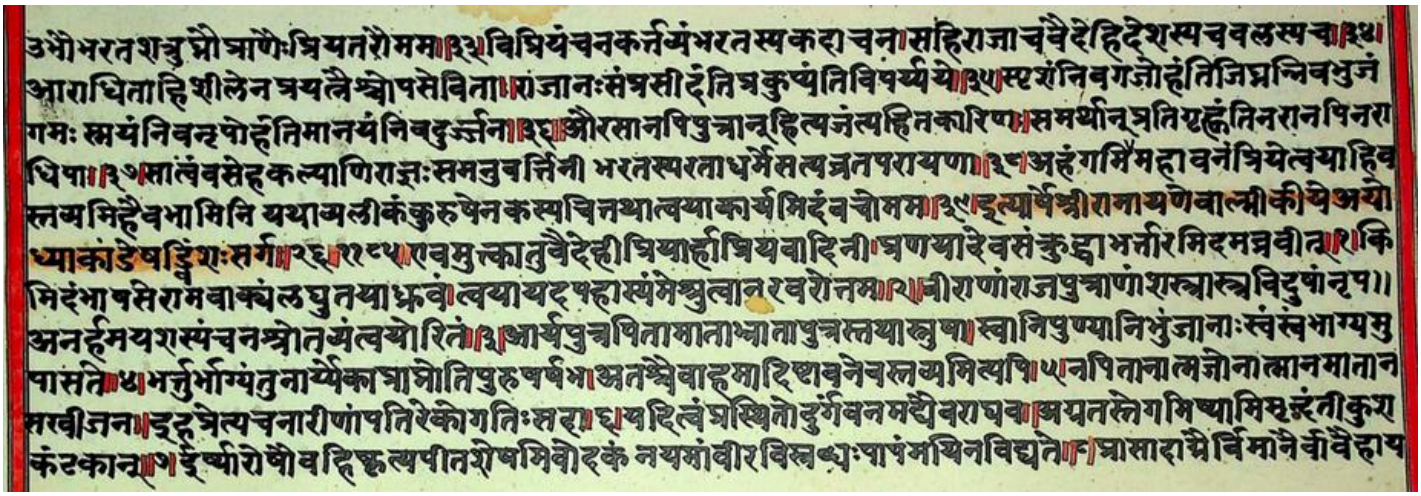
Ramya Srinivasan, Assistant Professor in the School of Engineering and Applied Science, has been granted patent for an invention titled "Bifunctional rotating drum electrode device and method for treatment of persistent organic pollutants". Professor Srinivasan's current research is focused on wastewater treatment, advanced oxidation process, electrochemical and biological methods, and biofilms.

Enraged, But Only Out of Love: Sītā's Disagreement With Rāma

Shishir Saxena

Shishir Saxena is an Assistant Professor in the Humanities and Launguages division of the School of Arts and Sciences. He studies the nature of sentential meaning as well as the deontic logic of Mīmāṃsā. He has recently become quite interested in exploring philosophically and philologically the two Sanskrit epics - Rāmāyaṇa and Mahābhārata. In this issue of the Research Horizons he presents the summary of one of his recent publications analyzing an episode from the Valmini Ramayana. The full paper is available at the Journal of Hindu studies (https://doi.org/10.1093/jhs/hiad022)

The critical edition (CE) of the Vālmīki-Rāmāyaṇa (VRām.) was published by the Oriental Institute (Baroda) between 1960-1975, prepared by means of a sustained application of the philological principles of textual criticism and textual reconstruction. This herculean scholastic effort – given especially the multiple recensions and their versions, as well as the numerous manuscripts and scripts of the VRām. – has become an anchor for all subsequent students of the epic and is considered widely as the most archaic recension of the poem. There have, however, been disproportionately few studies since the publication of the CE to have engaged directly with the Sanskrit text and my paper is a close reading of the verses (in light also of three main Sanskrit commentaries) of a pivotal episode from the Ayodhyākāṇḍa.



In a moment of great turmoil, Rāma – upon learning of his fourteen-year banishment – attempts to persuade Sītā to stay on in the palace while he will alone proceed into exile. Sītā disagrees entirely with Rāma and argues variously that she should accompany him – until, of course, she succeeds in the end. This is the first moment in the epic when one hears Sītā speak and a careful analysis of her portrayal here is paramount for any serious understanding of her character. Moreover, this episode – of Rāma's refusal and Sītā's insistence – when studied closely brings to light various foundational characteristics of their extraordinary relationship. There are only a handful of studies that have closely engaged with this episode which furthermore present entirely contrasting accounts. I have demonstrated in this paper that an apposite understanding of their relation and respective personalities can be attained through a literary analysis of the verses, focusing on the motivating emotions mentioned plainly in the text itself. This is a private moment of great emotional upheaval for the central couple and I argue that Sītā's disagreement is not grounded in emotional frailty, male honour or even political fear. Rather, the essential sentiment which permeates this entire episode, including Rāma's final acceding to Sītā's request, is – for the VRām. – love.

Millets: A Nutritious Powerhouse and Promising Crop for Sustainable Agriculture

Mansi Parekh, Kshitija Mishra and Bhuvan Pathak

Mansi Parekh and Kshitija Mishra, students in the Integrated Master of Science in Life Sciences programme, are currently focused on characterizing abiotic stress tolerance in finger millets for their dissertation work.

Bhuvan Pathak, an Assistant Professor in the Biological and Life Sciences division of the School of Arts and Sciences, specializes in enhancing oilseed crops through genome editing and gene stacking techniques.

In India, the millet family includes sorghum (Sorghum bicolor), pearl millet (Pennisetum glaucum), and seven minor millets like finger millet (Eleusine coracana), kodo millet (Paspalum scrobiculatum), tiny millet (Panicum flexuosum), foxtail millet (Setaria italica), proso millet (Setaria italica), barnyard millet (Echinochloa frumentacea), and browntop millet (Brachiaria ramosa). These crops are adapted to dry, arid, and semi-arid tropical regions. Cultivation of millet employs rain-fed farming techniques that have been handed down through generations. Water conservation practices such as bunding and contour ploughing in dryland agricultural regions are employed that maintain soil moisture. In order to maintain soil health, the use of manures and compost is primarily carried out in combination with minimal or no application of chemicals such as fertilizers. Intercropping with legumes or oilseeds optimizes land utilization and encourages natural pest management. These practices ensure sustainable agriculture, preservation of biodiversity, and adaptability to various farming systems. Millet cultivation faces many challenges, including unfavourable weather conditions, a limited supply of seeds, low yields, high production costs, a shorter shelf life of seeds, and a lack of storage facilities.

Millets are rich in protein, essential fatty acids, dietary fibres, Vitamin B, and minerals such as iron, calcium, magnesium, potassium, and zinc. They have been shown to be beneficial for the management of diseases such as diabetes, blood pressure, thyroid imbalances, cardiovascular problems and celiac disease. Despite these health benefits, programmes to promote millet consumption have faced challenges due to low awareness among consumers. Millets were primary food for centuries in various parts of the world, including India. However, the pervasiveness of other cereal crops has led to a decline in millet consumption. Another challenge in popularizing millets is insufficient market infrastructure due to which the farmers struggle to store the produce and obtain a fair market prices. As a result, many are deterred from cultivating millet crops. Investment in research is yet another challenge which if resolved could lead to the development of millet varieties with improved nutrition, higher yield, and resistance to various abiotic and biotic stresses.

Biotechnology tools will play an important role in the future development of millet crops through genetic modification, focused breeding, and precision gene editing techniques. Enhancement of nutritional content includes the increase in macronutrients, vitamins and minerals. Genetic engineering can aid in elevating the level of zinc, iron, and other micronutrients, which are key to addressing deficiency issues. Millet varieties that have enhanced pest and disease resistance can be developed. Genome editing techniques such as RNAi and CRISPR/CAS, which enable precisely targeted gene expression and alteration, can introduce or silence different traits in millet varieties. These may include increasing nutritional content, increased resistance to pests and drought, and higher yield.

In 2018, Government of India created the nutri cereals scheme to distribute millets under the National Food Security Mission. The UN has recognized 2023 as the International Year of Millets. These actions, along with the advances in crop breeding, farming and storage, could provide the much needed impetus for the mass adoption of millets.

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Patel, A., Nariani, D. & Rai, A. (2023). Mental Stress Detection using EEG and Recurrent Deep Learning. 2023 IEEE Applied Sensing Conference (APSCON), January 23-25. 1-3.

Patel, D. (2023). EMED-UNet: An Efficient Multi-Encoder-Decoder Based UNet for Chest X-ray Segmentation. 2022 IEEE Region 10 Symposium (TENSYMP), July 01-03. 1-6.

Patel, D. (2023). Prognosis of Infection Spread Deploying Internet of Bio-NanoThings. 2022 IEEE Region 10 Symposium (TENSYMP), July 01-03. 1-6.

Patel, D. (2023). SplitGlass: A Splitting Based Deep Network for Efficient Human Pose Estimation. 2022 IEEE Region 10 Symposium (TENSYMP), July 01-03. 1-6.

Patil, K., Patel, P. & Kaveshgar, M. (2023). Evaluating Depth Estimation Algorithms in Unstructured Driving Environments. 26th IEEE International Conference on Intelligent Transportation Systems (ITSC), September 24-28. 222-228.

Saxena, S. (2023). Till work do us apart: Exploring the who and why of Leaveism in Higher Education: Context of United Kingdom. 16th Biennial IHRM conference, June 28-30.

Singh, P., Vaishya, A. & Rastogi, S. (2023). Effect of COVID-19 restrictive measures on aerosols in the Indo-Gangetic Plain region. Conference Proceedings of IASTA - 2023, December 12-14. 122-123.

Tanaka, T. & Prabh, S. (2023). Clustered mean-field hard-core model with non-homogeneous clusters. Proceedings of the 21st International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), August 24-September 27. 1-8.

Tathagata Bhowmik, a second year PhD student in the School of Arts and Sciences, received a research grant of USD 1,000 from IUCN CSG under the Student Research Assistance Scheme for a project titled "Developing photogrammetry model as a tool to monitor body conditions in freshwater mugger crocodiles". He also received USD 350 from the Morris Animal Foundation Conference Registration Awards for Emerging Nation Members to attend the 8th Conference of the International Society of Wildlife Endocrinology held at Jim Corbett National Park from 6-10 November 2023. He presented a poster at the conference titled "Understanding context and endocrine correlates of aggressive behavior in female mugger crocodiles during reproductive and non-reproductive phases". Mr Bhowmik is a member of Professor Ratna Ghosal's research group.

The **University Grants Office** organized a seminar on 26 March 2024 titled The Art of Grant Writing. The seminar is part of the Office's efforts to help the University faculty put together effective grant applications. The seminar was conducted by Professor Shagufa Kapadia, Emeritus Professor at M. S. University, Baroda. In addition to being an established researcher in the field of Human Development studies, Professor Kapadia has extensive experience in applying and securing research grants from several national and international funding bodies. Around 15 faculty members and students participated in the event. The topics discussed included pre-proposal activities, elements and structure of a proposal and steps in grant writing.

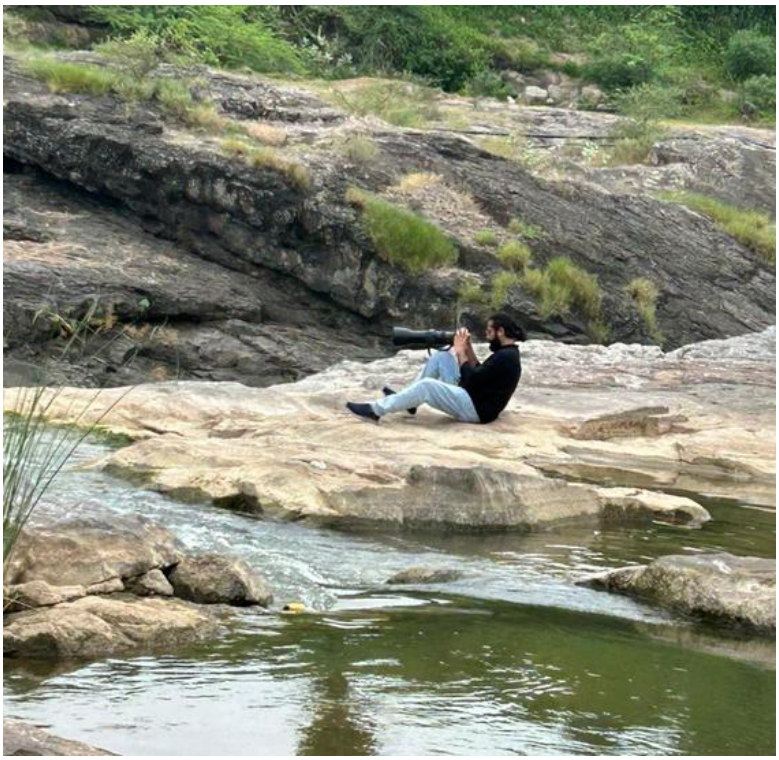
Photographing Birds and Brains

In Conversation with Jayendra Bhalodiya

Jayendra Bhalodiya is an Assistant Professor in the School of Engineering and Applied Science at the Ahmedabad University. His research is focused on developing medical diagnostic tools and techniques through computer science and engineering methods. He primarily develops tools for diagnosing cardiovascular and neurological conditions through computer vision, image processing, and artificial intelligence. In this issue of Research Horizons, Professor Bhalodiya shares his career path, research plans, and an insight into his interests outside work.

My schooling was at Keshod, a town in Junagadh district, until higher secondary school. During that time, I actively participated in extracurricular competitions – essay competitions, sports, painting, etc. It was here that I was introduced to nature activities, and I developed an interest in bird watching. From there, I moved to Ahmedabad to pursue IT engineering at LD College of Engineering. Following graduation, I worked as a Junior Research Fellow in the Department of Industrial and Systems Engineering at IIT Kharagpur. Based on my work as a JRF, I was offered admission to MS by Research course at the same institute. During that time, I explored different research projects, including one on MRI-based analysis of cardiac vessels using algorithms and image processing protocols. This work resulted in an offer of a PhD position in the Warwick Manufacturing Group at the University of Warwick. I had the opportunity to work here with an interdisciplinary group of experts from diverse areas, such as academic professors, engineers specialized in visualization and imaging, cardiac surgeons, and consultant cardiologists. Post-PhD, I continued with the same university but in a different group, which was focused on digital healthcare. I worked on an extensive, nationwide project funded by Health Data Research UK before returning to India.

One of my project supervisors at IIT Kharagpur was Professor Manoj Kumar Tiwari, a well-known figure in Supply Chain Management and Operations Research. After BE, I was keen on joining the industry. However, after working with Professor Tiwari, I was inspired to pursue a career in academia and research instead. The whole experience awoke me to the beauty of research work. Professor Tiwari taught me the basics of performing research, like identifying an impeccable research problem, finding valuable articles, collaborating with diverse people, and identifying an appropriate outlet to publish the results. All this training made a huge difference in establishing a research career.



My view of education is that it should help develop a multi-faceted personality, leading to the overall growth of the person, both as a professional and an individual, contributing back to society. With that in mind, I was keen on contributing towards a healthy society. Based on my skills and training, I have dedicated my career to developing innovative technologies that contribute to improving healthcare. During my PhD, I focussed on the problems in cardiac ailments. When a person suffers a heart attack, some of the muscles in the heart do not receive sufficient blood supply, resulting in a scar in the heart wall. For my doctoral thesis, I developed a method to identify the precise location of such a scar in the heart tissue using non-invasive image processing techniques so that the treatment is planned accordingly. My postdoctoral work, on the other hand, was on brain tissues. Before attempting to remove a brain tumour surgically, the surgeon needs to assess how advanced the tumour is and if it can be safely removed. This is generally done by examining the tumour tissues and various tumour components in an invasive manner. My project involved identifying these components non-invasively through automated image analysis of multiple MRI imaging sequences using segmentation techniques from computer science and engineering.

Since coming to Ahmedabad University, I have continued my work to develop techniques that identify brain tumours through image analysis of radiomics features. The radiomics features are mathematical features within images that can be computed and used to determine the tumour grade. The use of such techniques could potentially circumvent the need to perform an invasive biopsy procedure to identify the nature of a tumour before embarking on surgery. This will ease the burden on the healthcare providers while avoiding painful procedures for the patients. Radiomics analysis has grown over the last decade, and we are now trying to develop image analysis-based biomarkers for tumour detection. These biomarkers, for example, could be in the nature of a high-

intensity area, which are high-value pixels in a tumour image. These could also be based on the entropy or heterogeneity in the images. Once these image-based biomarkers are identified, they are validated using biological data such as gene expression before standardisation. Currently, I am pursuing this work.

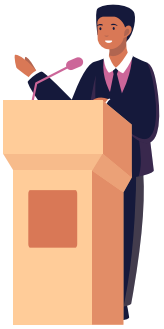
Another project I have developed at Ahmedabad University is related to assisting remote and elderly cardiac patients with teleconsultations. These patients must routinely contact their doctors to communicate their condition. However, a personal visit to the doctor's office may not always be feasible. To help with this situation, we developed web and mobile-based applications that can be used securely for consultations and follow-up. We are currently working to bolster these apps with large language models of artificial intelligence, such as ChatGPT. In the near future, my research will continue in the cardiology and neurology domains to develop novel, cutting-edge tools for diagnostic and preventive medicine.

Looking back at my education and training, from Information Technology at LD Engineering to Operations Research at IIT Kharagpur to Healthcare Engineering at Warwick, I see a consistent evolution towards interdisciplinary work. However, one consistent aspect throughout this journey was Computer Science and Engineering. Another consistent aspect was bird watching and through that, an interest in photography. I started publishing my photography work around the end of my PhD. I approach this aspect of my life as a research project – reviewing the literature, understanding the technical aspects, publishing the results, etc. I am currently involved as an executive committee member of an NGO called Bird Conservation Society, Gujarat, where I contribute to bird conservation activities. I do state-wide systematic surveys to document bird species and populations and give 'Bird Talks' to school students. I have recently started writing a olumn in the Indian Express newspaper, which gives the reader an insight into the world of birds. This is an endeavour to ensure that humans feel connected to birds and contribute to their conservation. I also run a photo series called DD Ecofriends on Doordarshan's Instagram page. Every day, we post one photograph of a bird with its description in the local language to raise awareness. While at the University of Warwick, I was an active member of the photography club. After joining Ahmedabad University, I started mentoring the Photography Club here, helping interested students explore more of photography.

Another interest I picked up while at Warwick was rope climbing. I explored different methods of rope climbing there, such as bouldering, sport climbing, lead climbing, trad climbing and solo climbing. A friend and I had a regular schedule of climbing twice a week indoors and often outdoors over the weekend. In Gujarat, there hasn't been much attention paid to rock climbing. However, there is a spot near Idar called Idariyogadh where there are suitable rocks for bouldering and trad climbing. I am trying to bring this spot some attention because climbing has recently been introduced as an olympic sport.

Research Seminars

(for the period April, 2023 - March, 2024



School of Arts and Sciences

Faculty Recruitment Seminar

Shekhar Chandra, Massachusetts Institute of Technology, USA. Why are anti-corruption reforms difficult to implement? Evidence from India's state police bureaucracy. April 20, 2023.

Rucha Sarwate, Savitribai Phule University, Pune. From melancholy to metamorphosis: observations from the field of psychotherapy. May 2, 2023.

Manjil P Saikia, University of Vienna, Austria. Alternating sign matrices and plane partitions. May 25, 2023.

Anand Dixit, PhD, Iowa State University, USA. Analyzing relevance vector machines using a single penalty approach. May 30, 2023.

Samrat Roy, University of Florida, USA. Regularized high dimension low tubal-rank tensor regression. June 06, 2023.

Pallavi Narayan, Indian Institute of Technology Delhi, New Delhi. Imagining Pamuk's Istanbul: the fictional museum. June 09, 2023.

Mahesh Bhat, Srishti Manipal Institute of Art, Design and Technology, Bangalore. Ways of seeing. July 28, 2023.

Neelanjan Sircar, Columbia University, USA. Ordered chaos: the roots of political centralisation in India. October 03, 2023.

Ajay Akhade, National Institute of Immunology, New Delhi. Reverse induction: activation of a host innate sensor dictates expression of its bacterial stimulus. October 13, 2023.

Neha Aggarwal, Krea University, Sri City. Embodiment and disorientation: a phenomenological analysis of work from home during COVID-19. November 06, 2023.

Aarzoo Gupta, Government Medical College and Hospital, Chandigarh. A comparative study of cognitive behaviour therapy and cognitive retraining treatment in depressive disorders. November 20, 2023.

Kathyayini Dash, University of Cape Town, South Africa. Exploring the possibilities of the inter-discipline: theatre, field, academia. November 30, 2023.

Justin Smolin, University of Chicago Divinity School, USA. Beyond "political theology": political incarnationalism and the premodern South Asian political. December 22, 2023.

Deepan Sivaraman, Dr B. R. Ambedkar University, Delhi. Theatre of hybrid: bridging cultures, aesthetics and disciplines. January 12, 2024.

Kasturi Chatterjee, FLAME University, Pune. Anti-war feminist solidarities: exploring the Russian FAS collective's support for Ukraine. January 24, 2024.

Seminar and Lecture Series

Robert Latiff, George Mason University, USA. Advanced weapons: Technology in the service of violence. April 05, 2023.

Navinder Singh, Physical Research Laboratory, Ahmedabad. Unconventional superconductivity: A Semi-technical overview. April 12, 2023.

Sunil Shanbag, Theatre Arpana, India. Our theatre, my theatre. May 03, 2023.

Eswar Reddy, Indian Institute of Astrophysics, Bengaluru. Where does Lithium come from? Its Evolution in Stars. July 21, 2023.

Angsuman Das, Presidency University, Kolkata. Graphs defined on Groups. August 02, 2023.

Fredy Altpeter, University of Florida, USA. Growth comes from risk: Accelerating crop improvement with novel breeding technologies. August 16, 2023.

Fredy Altpeter, University of Florida, USA. Fueling the bioeconomy and combating climate change: Metabolic engineering and gene editing of bioenergy and forage grasses. August 17, 2023.

Karthikeyan Vasudevan, CSIR-Centre for Cellular and Molecular Biology, Hyderabad. Snakebite problem in India and its solutions. August 29, 2023.

Riho Isaka, University of Tokyo, Japan. Narrating Japan in colonial Gujarat: The circulation of knowledge in modern Asia. September 06, 2023.

Suruchi Thapar, University of Uppsala, Sweden. Gender and empowerment: The 'right to work' in employment-guarantee schemes. September 13, 2023.

Anil Bhardwaj, Physical Research Laboratory, Ahmedabad. Planetary missions of India. October 17, 2023.

Alastair McClure, University of Hong Kong, Hong Kong. Gandhi, Tilak, and the problem of imperial mercy. November 07, 2023.

John E. Cort, Denison University, USA. Jain book history: nineteenth century arguments over whether or not to print the sacred scriptures. November 22, 2023.

G. N. Devy, Thinker and Cultural Activist. India as a linguistic civilisation: language diversity and the making of India. November 29, 2023.

Awam Amkpa, New York University, USA. Global crossroads and the challenges to a liberal education in the Humanities. January 10, 2024.

Maya Jasanoff, Harvard University, USA and Tansen Sen, New York University Shanghai, China. Histories and possible futures of South/Asia in the world? January 16, 2024.

Jonardon Ganeri, University of Toronto, Canada. What is an Inquiry into the truth? New ideas from Jaina philosophy. February 09, 2024.

Frederick Coolidge, University of Colorado, USA. The neurological foundation for peace and ahimsa. February 14, 2024.

Chethan Krishnan, Indian Institute of Science, Bangalore. A smooth horizon without a smooth horizon. March 13, 2024.

Ward Berenschot, University of Amsterdam, Netherlands. How clientelism varies: informal politics in India and Indonesia. March 20, 2024.

Mou Banerjee, University of Wisconsin-Madison, USA. The love tub of duff: Christianity, conversion and the law in colonial Calcutta. March 27, 2024.

Research Seminar Series

Rakesh Sengupta, SR University, Hyderabad. Recalling a single object: Going beyond the capacity debate. September 20, 2023.

Niranjan Balachandran, IIT Bombay, Mumbai. List colorings for graphs on the torus and other surfaces. September 21, 2023.

Gregory D Booth, University of Auckland, New Zealand. Unintended consequences – Music, culture, hegemonies and identity in 20th and 21st century India. September 22, 2023.

Florian Schreier-Aigner, University of Vienna, Austria. Fully complementary higher dimensional partitions. September 27, 2023.

Seiko Okayanam, University of London, UK. In the shadow of polarisation: 'subaltern' candidates and intra-party politics of the Indian National Congress in the 1980s. October 04, 2023.

Ramesh Kasilingam, Indian Institute of Technology Madras, Chennai. Towards the Poincaré conjecture. October 11, 2023.

Sarah Melsens, FLAME University, Pune. Brokers of modernity? Architect-entrepreneurs building Pune, 1930-1992. October 12, 2023.

Urmi Nanda Biswas, Ahmedabad University, Ahmedabad. Navigating uncharted trajectories: Indian women immigrants in Canada. October 18, 2023.

Andre Ganswindt, University of Pretoria, South Africa. Winning with poo – non-invasive endocrine monitoring as a tool for wildlife conservation and animal welfare. October 30, 2023.

Andrew Engilis, Jr., University of California, Davis, USA. Exploring biodiversity in Sulawesi, Indonesia. October 31, 2023.

Prajamitra Bhuyan, Indian Institute of Management Calcutta, Kolkatta. Estimation of population size with heterogeneous catchability and behavioural dependence: applications to air and water borne disease surveillance. November 01, 2023.

Pramod Eyyunni, Birla Institute of Technology & Science, Pilani. A new generalisation of the minimal excludant arising from an analogue of Franklin's identity. November 08, 2023.

Hari Sai Ganesh, Indian Institute of Technology Gandhinagar, Gandhinagar. Mathematical modeling and optimisation of industrial and building systems. November 22, 2023.

Pinaki Majumdar, Harish-Chandra Research Institute, Prayagraj. Correlated quantum systems out of equilibrium. January 24, 2024.

Arup Lal Chakraborty, Indian Institute of Technology Gandhinagar, Gandhinagar. Laser-based sensors for trace gas monitoring – why and how. January 31, 2024.

Nayandeep Deka Baruah, Tezpur University, Tezpur. Srinivasa Ramanujan and a glimpse of his mathematics. February 07, 2024.

Intersections Seminar Series

Ranu Roychoudhuri and Samyaday Choudhury, Ahmedabad University. Are you seeing closely? April 26, 2023.

Keita Omi and Amit Nanavati, Ahmedabad University. US Presidential policy decision directives (PPDDs), 1961-2022. November 01, 2023.

Social Science Research Seminar

Sarthak Bagchi, Ahmedabad University, Ahmedabad. Making sense of the caste survey in Bihar. February 28, 2024.

Joel Lee, Williams College, USA. The implied Rajput: caste and disguise in the U. P. police. March 06, 2024.

Performing and Visual Arts Divisional Seminar

Arpan Mukherjee, Kala Bhavan, Visva Bharati, Santiniketan. Historical processes and the craft of photography. February 12, 2024.

David Claman, Princeton University, USA. Orientations: western composers and Indian music. February 28, 2024.

Tapati Guha-Thakurta, Centre for Studies in Social Sciences, Calcutta. Monuments on the move: colonial and postcolonial journeys across Britain and India. March 05, 2024.

Sarnath Banerjee, Indian Institute of Technology Gandhinagar, Gandhinagar. Comics, politics, and the enchanted everyday. March 14, 2024.

Atul Bhalla, Shiv Nadar Institute of Eminence , Gautam Buddha Nagar. Auscultation: false clouds and real deluges. March 20, 2024.

Humanities and Languages Research Seminar

Akeel Bilgrami, Columbia University, USA. Does the concept of truth apply only to the propositions of science? January 04, 2024.

Shishir Saxena, Ahmedabad University, Ahmedabad. Enraged, but only out of love: Sītā's disagreement with Rāma in the Ayodhyākāṇḍa of the Vālmīki-Rāmāyaṇa. January 12, 2024.

Mai OKI, Kyoto University, Japan. The usage of the word viśvarūpa- in an iconographic context especially from the perspective of Vaiṣṇava worship. January 29, 2024.

Sayako Kanda, Keio University, Japan. Greek merchants and the East India Company in the Bengal Frontier, c.1770-1830. March 06, 2024.

Chandrahas Choudhury, Novelist and Travel Writer. The Value(s) of a literary education: beauty, truth, language, freedom, and democracy. March 28, 2024.

Mathematical and Physical Sciences Research Seminar

Prasanna Venkatesh, Indian Institute of Technology Gandhinagar, Gandhinagar. An invitation to ultracold gases in cavity via Bloch Oscillations. January 10, 2024.

Himel Mallick, Cornell University, USA. Multimodal integration in the age of million cells and billion parameters. January 17, 2024.

Arup Lal Chakraborty, Indian Institute of Technology Gandhinagar, Gandhinagar. Laser-based sensors for trace gas monitoring – why and how. January 31, 2024.

Hemant Mishra, Cornell University, USA. Equality in some symplectic eigenvalue inequalities. March 01, 2024.

Girish Arash, Statistical Consultant. Modern drug development and a brief history of drug regulation in the USA. March 06, 2024.

Eshita Mazumdar, Ahmedabad University, Ahmedabad. Varieties of zero-sum invariants and their behaviours. March 13, 2024.

Anindya Chanda, Tata Institute of Fundamental Research, Mumbai. Quasigeodesic Anosov flows in dimension three. March 20, 2024.

Mohit Randeria, Ohio State University, USA. Are there bounds on the superconducting transition temperature? March 21, 2024.

Punit Gandhi, Virginia Commonwealth University, USA. Conceptual modeling of dryland vegetation patterns across timescales. March 27, 2024.

Social Sciences Divisional Seminar

Sabah Siddiqui, Krea University, Sri City. The ghost as method: an epistemological framework for empirical psychology. February 07, 2024.

Rahul Verma, Ashoka University, Sonipat. Changing party systems of India: rise and decline of the Congress Party. March 13, 2024.

School of Engineering and Applied Science

Faculty Recruitment Seminar

Souvik Roy, Indian Institute of Engineering Science and Technology, Shibpur. Does robust computation exist? May 04, 2023.

Aakash Patil, Stanford University, USA. Machine learning-accelerated modelling and simulations. October 20, 2023.

Dhiraj Kumar, Indian Institute of Technology (ISM) Dhanbad, Dhanbad. Ultrafast laser surface functionalization of materials. December 21, 2023.

Hemant Chouhan, Indian Institute of Technology Delhi, New Delhi. High strain rate testing of composites and cost-effective automation for future composites. February 19, 2024.

Hitesh Shrimali, Indian Institute of Technology Mandi, Kamand. Energy efficient hybrid analog-to-digital converters. March 14, 2024.

Bhawnath Tiwari, University of Franche-Comté, France. Mechatronics in industry and healthcare. March 29, 2024.

Research Seminar

Jigar Raval, Physical Research Laboratory, Ahmedabad. Email forensics – concepts, tools and techniques. September 06, 2023.

Yogesh Verma, ISRO - Space Applications Centre, Ahmedabad. Cyber security- security controls, best practices and research opportunities. September 13, 2023.

Sanjay K Madria, Missouri University of Science and Technology, USA. Efficient revocation in attribute-based encryption scheme for secure data sharing in cloud. January 16, 2024.

Manohar Kakunuri, National Institute of Technology Warangal, Warangal. Engineering physicochemical properties of carbon nanomaterials for present and future batteries. January 22, 2024.

Leadership Series

Rajeev Sangal, International Institute of Information Technology Hyderabad, Hyderabad. Transforming academic institutions: experiments with a human touch. January 24, 2024.

Industry Expert Talk

Viraj Kumar, Indian Institute of Science, Bangalore. Leveraging generative AI for programming. February 05, 2024.

Håkan Lutz, Luvly AB, Sweden. India's role in future technologies and urban transport revolution: accelerating global climate targets. February, 15, 2024.

Lecture Series

H S Jamadagni, Indian Institute of Science, Bangalore. How does a university transit its teaching and research to find value in industry and society? October 13, 2023.

Amrut Mody School of Management

Faculty Recruitment Seminar

Sugat Chaturvedi, University of Sussex, UK. Words matter: gender, jobs and applicant behavior. June 08, 2023.

Prateek Jain, Indian Institute of Management Bangalore, Bangalore. Professional peer networks and mutual fund performance. September 12, 2023.

Kousik Ganguly, O. P. Jindal Global University, Sonipat. Political connections, cost of capital and investment decisions: evidence from India. September 20, 2023.

Abhishek Poddar, O. P. Jindal Global University, Sonipat. Impact of governance on risk and competition – a comparative analysis of US and Indian banks. September 28, 2023.

Anomita Ghosh, University of Illinois, Urbana Champaign, USA. Persistence in physicians' locations: long-run evidence from decentralised loan repayment programs. October 06, 2023.

Kinshuk Saurabh, Nirma University, Ahmedabad. Corporate governance, expropriation mechanisms and cross-border acquisitions by Indian firms. October 17, 2023.

Shobha Das, Krea University, Sri City. Planning ahead for business schools. October 30, 2023.

MD Azharuddin Akhtar, India Development Foundation, Gurugram. Assessing the economic impact of cancer diagnosis and treatment on Indian households: a comprehensive analysis of costs, coping strategies, and financial hardship. October 31, 2023.

Ben Krishna, Indian Institute of Management Kozhikode, Kozhikode. Understanding the process of building institutional trust among digital payment users through national cybersecurity commitment trustworthiness cues: a critical realist perspective. November 08, 2023.

Tanmoy Kundu, International Management Institute, New Delhi. Home delivery vs. out-of-home delivery: syncretic value-based strategies for urban last-mile e-commerce logistics. November 27, 2023.

Manjot Singh Bhatia, LM Thapar School of Management, Chandigarh. Capabilities for closed-loop supply chain: empirical evidence from emerging economies. November 28, 2023.

Sabyasachi Das, Gokhale Institute of Politics and Economics, Pune and Northwestern University, USA. Decentralizing the development-conservation trade-off: evidence from forestland diversions in India. November 29, 2023.

Rama Velamuri, Mahindra University, Hyderabad. Key factors in building high-quality business schools: my personal reflections. December 15, 2023.

Amit Das, Krea University, Sri City. Machine learning on noisy data. January 22, 2024.

Shresth Garg, Harvard University, USA. Dynamic effects of price controls and deregulation policies: evidence from the Indian cement industry. January 23, 2024.

Sriparna Goswami, Iowa State University, USA. Advertising spillovers and consumer awareness in the caft beer market. January 30, 2024.

Rakesh Chaturvedi, FLAME University, Pune. Integrating Raiffa and Nash approaches to bargaining using interim agreements. February 13, 2024.

Amit Singh, Indian Institute of Technology Jodhpur, Jodhpur. Do online reviews influence car sales? February 15, 2024.

Anshumaan Tuteja, University of Warwick, UK. What explains the stock market's response to QE policy? Evidence from a decomposition of the US S&P500 index. February 16, 2024.

Sakshi Sharma, Libera Università Internazionale degli Studi Sociali Guido Carli, Italy. Resource-based digital platform ecosystem development: case study of a superapp in Vietnam. February 21, 2024.

Shruti Sardeshmukh, Shiv Nadar University, Noida. Decoupling in hybrid arrangements: insights from the Australian defence industry. February 22, 2024.

Research Seminar

Subhalaxmi Mohapatra, Anant National University, Ahmedabad. I mean business: exploring women entrepreneurs' journey in India from an emancipation perspective. April 05, 2023.

Sunil Prashar, Kyoto University, Japan. Assessing the resilience of Delhi to climate-related disasters: a comprehensive approach. April 19, 2023.

Mayank Aggarwal, Ahmedabad University, Ahmedabad. Firm complementarity and randomness: Firms strategies for managing risk in interconnected industry ecosystems. April, 26, 2023.

Supratim Das Gupta, Ahmedabad University, Ahmedabad. Greener energy choices and work from home (WFH): Survey results from India. May 08, 2023.

Neel Kamal Chapagain, Ahmedabad University, Ahmedabad. Changes in heritage discourse: Ruptures and disruptions as innovative turns in the evolution of built environments. July 24, 2023.

Sudipta Sarangi, Virginia Polytechnic Institute and State University, USA. Social networks and intergenerational mobility. July 31, 2023.

Darius Palia, Rutgers Business School, USA. Impact of Dodd-Frank on CEO pay and bank risk. August 24, 2023.

Prashant Chintapalli, Ivey Business School, Canada. Managing product-reusability under supply disruptions. August 10, 2023.

Indradeep Ghosh, Massachusetts Institute of Technology, USA. The financial lives of low-income households in India. September 22, 2023.

Rama Jayanti, Cleveland State University, USA. To trust or not to trust: effects of disclosure of pharmaceutical industry payments to physicians. October 04, 2023.

Samarth Gupta, Ahmedabad University, Ahmedabad. Tenure, earnings and productivity of platform delivery workers: evidence from India. October 11, 2023.

Aranya Chakraborty, Ahmedabad University, Ahmedabad. The role of experience in learning for index insurance products: evidence from rural Kenya. October 18, 2023.

Paulo Scalco, Federal University of Goias and State of Goias Treasury Department, Brazil. Tax reform in Brazil: similarities with the Indian reform and the use of tax benefits as regional development policy. November 09, 2023.

Arun Upadhyay, Florida International University, USA. Too invested to change: the role of uncertainty avoidance on firms' greenhouse gas emissions. December 12, 2023.

Sudhir Pandey, Ahmedabad University, Ahmedabad. Investigating cause-related marketing patronage intention by examining Schwartz's theory of human values and female fashion leadership. December 14, 2023.

Krishna Savani, The Hong Kong Polytechnic University, Hong Kong. Counteracting hiring discrimination: Insights from decision biases and mindsets. December 15, 2023.

Krishna Kumar Balaraman, Indian Institute of Technology Jodhpur, Jodhpur. Microfoundations of strategic foresight capabilities – a measure of employee foresight. December 19, 2023.

Sudip Bhattacharya, University of Connecticut and the US Census Bureau, USA. Business schools in the 21st century: an imagination. December 20, 2023.

Murali K Mantrala, University of Kansas School of Business, USA. Holistic selling: an emerging paradigm in B2B markets. January 10, 2024.

Atul K Shah, City University, UK. Corporate governance, accounting and the big four con-merchants. January 11, 2024.

Rohan Ravindra Gudibande, Krea University, Sri City. Land redistribution and coercive violence: evidence from West Bengal. January 17, 2024.

Neel Kamal Chapagain, Ahmedabad University, Ahmedabad. Perceptions of change and resilience in the post-2015 earthquakes in Nepal. February 02, 2024.

Expert lectures

Sunil Mani, Ahmedabad University, Ahmedabad. Innovation performance of two high-technology industries from India- A comparative analysis of India's pharmaceutical industry vis-à-vis the computer software services industry. February 29, 2024.

Sunil Mani, Ahmedabad University, Ahmedabad. Impact of new technology on India's manufacturing industry: The case of diffusion of multi-purpose industrial robots. March 05, 2024.

Sunil Mani, Ahmedabad University, Ahmedabad. Policies for promoting technological self-reliance in India: An analysis of patent and R&D tax policies. March 13, 2024.

The Conversation Series

Isabel Guerrero, Executive Director of IMAGO Global Grassroots. Scaling up development impact. October 28, 2023.

Ravi Kant, CEO and Managing Director of Tata Motors. Leadership lessons. How to manage self, team, and task. January 31, 2024.

Leadership Series

Tirthankar Patnaik, the Chief Economist at the National Stock Exchange of India. Retail investments in India during and after the pandemic. April 05, 2023.

Thomson Jose, Senior Executive Vice President - Branch Banking Head, HDFC Bank (Gujarat). The HDFC Bank story. September 02, 2023.

Aravind Chinchure, Physicist turned CxO-coach. Shaping the future: navigating the era of industry 4.0. October 09, 2023.

Binoy Parikh, Executive Director at Katalyst Advisors. Navigating mergers & acquisitions in India. October 14, 2023.

Jasmin Gupta, Founder and Director of Meitmoney and Chief Digital Officer at Pahal Finance. The FinTech story. October 21, 2023.

Ravi Kant, CEO and Managing Director of Tata Motors. Importance of trust in leadership. January 31, 2024.

Siddhartha Kadia, Member of the Board of Directors for ALS Limited and Applied Technical Services. Why multidisciplinary education matters: personal journey of Siddhartha Kadia. January 03, 2024.

School of Public Health

Research Seminar

Ankita Shah, State Health System Resource Center Gujarat, Ahmedabad. Social context and under nutrition among Indian children and adolescents: Insights from two theory driven studies. October 12, 2023.

Kranti Suresh Vora, Government of Meghalaya, Shillong. Human resources for universal health coverage in low resource settings: evaluation and strategies. October 26, 2023.

Kala M. Mehta, University of California, USA. Data science to increase access: self help groups and transport interventions. February 21, 2024.

Bhavesh Parekh, Marengo CIMS Hospitals, Ahmedabad and Vishal Choksi, Apollo-CBCC Cancer Center, Ahmedabad. Close the gap: cancer prevention and screening. February 23, 2024.

Siddhartha Kar, University of Cambridge, UK. Integrative epidemiology: interdisciplinary insights into human ageing and disease from the basic science of public health. March 20, 2024.

Naiya Patel, EmpVic Research Public Health Solutions, India. Early stage lung cancer survival and pre diagnosis exposure to air pollution in the United States. March 21, 2024.

Chetkar Jha, Washington University, USA. Multiple hypothesis testing to estimate the number of communities in sparse stochastic block models. March 26, 2024.

Sagnik Halder, University of Florida, USA. Regularized estimation in high dimensional heavy tailed time series. March 27, 2024.