NEWSLETTER

Sports Engineering Association

SPORTS ENGINEERING ASSOCIATION INDIA

SportE

Volume . 2 Issue . 1 November 2023

http://sportsea.org/

FROM THE DESK OF CHIEF EDITORS

Dr. Abhijeet Digalwar

Dr. Arun Kumar Jalan

Dr. Lalit Sharma

Dear Readers,

We are very excited to announce that in first year we have published four SEA newsletter and now for the second year we are going to release of the First issue of the SEA newsletter, "SportE," for the year 2023. On behalf of the Sports Engineering Association (SEA) members and the dedicated editorial team, we extend our heartfelt gratitude to the contributors of this newsletter.

In this edition of SportE, we are highlighting the achievements and events organized by SEA. The major event was ICSE 2023 3rd international conference on Sports Engineering. There is also a workshop and panel discussion sessions before the conference. One section of the newsletter spotlights the impressive accomplishments and invaluable contributions of our members in various SEA activities such as workshops, publication in the sports, and more. This section serves as evidence of their dedication and hard work.

Another section highlights the significant contributions and participation of students. Students will have the opportunity to participate in an engaging quiz, designed to promote awareness of the fascinating intersection of science and sports. We firmly believe that by encouraging students to explore this field, we not only expand their knowledge but also inspire them to pursue careers in sports engineering.

One segment of the newsletter introduces the new members of SEA and offers valuable insights into future opportunities available to SEA members. We remain committed to nurturing the talent and potential of students, and therefore, we are dedicated to sharing information about internships, research programs, scholarships, and other avenues that can help them advance their careers in sports engineering. The enhanced student section will serve as a valuable resource for students, further strengthening their engagement and involvement within the Sports Engineering Association.

We hope you enjoy reading this edition and find it enlightening. Your feedback and suggestions are invaluable to us as we continue to strive for excellence in promoting the application of engineering in the world of sports.

MESSAGE

Birla Institute of Technology & Science, Pilani
K K Birla Goa Campus

Prof. Suman Kundu
Director & Senior Professor

A Message of Goodwill for the SportE Quarterly Newsletter

With a great sense of elation, I convey my warm wishes and express unbound joy in sharing a message of goodwill for the upcoming edition of SportE, the esteemed quarterly newsletter published by the Sports Engineering Association (SEA). With the impending launch of the 1st issue of Volume 2 in November 2023, it is truly inspiring to witness the persistent efforts put forth by SEA in fostering the interface of engineering and sports. As an ardent sports lover, I can sense the enthusiasm and dedication that goes in publishing these exciting newsletters!

SportE, through its informative and engaging content, has become a vital bridge between our engineering community and the dynamic realm of sports. This endeavor is not merely for a newsletter; it represents a significant stride towards nurturing a profound sporting culture within our nation. By amalgamating innovation, technical expertise, and athletic prowess, SEA exemplifies the essential synergy required to drive the growth of the niche area of sports technology in India. The vision is enduring and motivating.

The field of sports engineering is undoubtedly an uncharted territory, abundant with challenges, opportunities, and unforeseen breakthroughs. It is through this very spirit of exploration that ground breaking advancements will emerge. SEA's dedication to this domain, coupled with its unwavering commitment, is commendable. I am optimistic that the SEA team will continue to embark on exhilarating new initiatives, embracing the journey of discovery and contributing significantly to the evolution of sports engineering.

As we eagerly await the forthcoming issue of SportE, I extend my heartfelt wishes for its resounding success. May it continue to be a beacon of knowledge, innovation, and inspiration for all those passionate about sports engineering. I have no doubt that SEA's journey will continue to be characterized by remarkable achievements, a reflection of BITS Pilani's resounding success, and I am excited to witness the positive impact it will undoubtedly have on both the academic and sports communities.

Suman Kundu
(SUMAN KUNDU)

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MESSAGE FROM MEMBER

Dear Members, Friends and Colleagues

Yes, Sports make a difference and it is appropriate to say that the sports play an important role in our societies. When all attention is given on the performance of elite athletes, we as administrators in the profession cannot ignore the fact that sport is truly an activity for everyone in society. The use of technology in enhancing sports facilities and equipment should be the priority for the broader base participation in sports as only to realize the real sense of the words - “SPORTS FOR ALL”.

Technology as we know is the application of Engineering that involves scientific and mathematical knowledge required to improve the sports facilities and equipment at all level. There is a lot of latitude when we talk about how technology helps in sports participation.

The application of technology in Sport Facility and Equipment Design can bring real changes in terms of Sports Participation and Injury Prevention from low level recreational activities to high level competitive sports. Besides, the elite athletes need a computer based smart equipment that incorporates sensors and computers to evaluate their performance as a part of their training regimen. This may range from Exercise Stress Testing, Cardiovascular Assessment, Strength and Conditioning Assessment and to the Biomechanical Analysis using equipment such as the Ariel Performance Analysis System (APAS).

Sports Engineering Association (SEA) India, since its inception, has been doing various activities in promoting its objectives to connect engineering with sports. The end of this year had us coming together for the 3rd International conference on sports engineering at BITS Pilani (Raj.) India which was a huge success. The cutting-age science and technology application on sports presented by the authors at the conference was of the desirable standard.

We thank all our committee members, office bearers, and volunteers who have generously given their time, energy and skills to make the conference successful. We also acknowledge our members who on their own way are contributing to enable the SEA, India to grow in membership and its activities.

We are also thankful to our sponsors as their support is greatly appreciated. We are looking forward to their continued supports in the future.

There is still much to do, hence we invite professionals from engineering/science/ sports to join us in this endeavor

Best wishes to everyone.

Dr Pintu Modak

Founder Director, SEA, India.

TECHNICAL ARTICLE

An Era of Enhanced Awareness Sporting

Understanding The Future of Sports and Augmenting it with Efforts in AI & Immersive Technology

Sanand Salil Mitra

In the realm of sports, the fusion of human endeavor with technological innovation has always been a catalyst for groundbreaking achievements. The 2020 Tokyo Olympics offered a vivid illustration of this synergy. At the 2020 Tokyo Olympics, the world witnessed a groundbreaking moment in the pool as Caeleb Dressel shattered records to win five gold medals. Behind his phenomenal success was not just years of rigorous training, but also the innovative use of technology. Utilizing motion analysis systems and AI-driven performance analytics, his team was able to dissect every stroke, turn, and kick, optimizing his technique to the finest detail. This fusion of human determination and cutting-edge technology marked a new era in competitive swimming, showcasing the untapped potential of AI in unlocking athletic prowess.

When Eliud Kipchoge set out to break the two-hour barrier for the marathon in the INEOS 1:59 Challenge, it was more than just a test of human endurance. It was a carefully orchestrated event, backed by a team of scientists, nutritionists, and technologists. Using GPS trackers, biometric sensors, and real-time data analytics, they monitored Kipchoge's pace, heart rate, and energy expenditure, making on-the-fly recommendations to ensure he maintained the optimal speed. The result? A historic 1:59:40 finish, a feat made possible by the seamless integration of technology and human spirit. His story is a testament to the transformative power of technology in sports – a power that is poised to reshape the landscape of Indian sports in the coming years.

As we look towards the next decade of 2030’s, the horizon of sports technology in India is vibrant and expansive. The country, already a melting pot of diverse cultures and talents, is on the cusp of a technological revolution in sports. This essay explores the implementable technologies that, while rooted in today's advancements, are set to evolve and become integral to Indian sports. From personalized augmented reality coaching, offering bespoke training experiences, to AI-enhanced biodegradable sports equipment that marries performance with sustainability, the future is ripe with potential. Blockchain technology, often hailed for its security and transparency, is set to revolutionize sports governance in India, ensuring fairness and integrity. Meanwhile, wearable technology will not just track physical performance but also offer insights into the emotional and mental resilience of athletes, a crucial yet often overlooked aspect of sports. Injury prevention, a paramount concern, will see innovative solutions with smart equipment designed to preemptively identify and mitigate risks.

The logistics of sports events, often a Herculean task, will be streamlined and optimized by AI, ensuring seamless experiences for both athletes and spectators. The manufacturing of sports

equipment will undergo a transformation, driven by smart technologies that enhance quality and customization. Biomechanical analysis will play a pivotal role in this, tailoring equipment to the unique needs of each athlete. The future also promises an immersive fan experience, with personalized augmented reality in stadiums, bringing the game closer to the audience like never before. Autonomous drones, buzzing above sports arenas, will capture performances from angles previously unimaginable, offering new perspectives to coaches and fans alike.

In this essay, we would explore these technologies, exploring their current foundations and envisioning their evolution and implementation in the Indian sports ecosystem by 2030. This journey is not just about technological advancement; it's about harnessing these innovations to elevate the spirit of sports, making it more inclusive, fair, and thrilling for all. As we venture into the future of Indian sports, the landscape is set to be revolutionized by a series of advanced technologies, each bringing a unique dimension to the way sports are played, experienced, and managed.

Personalized Augmented Reality Coaching: This technology stands to democratize high-level coaching across India. By 2030, AR coaching tools could be widely accessible, providing athletes in remote areas with training experiences previously limited to elite sports academies. Imagine a young cricketer in a small town receiving real-time batting advice from an AI-powered coach, projected through AR glasses. This technology could analyze their stance, swing, and even predict ball trajectories, offering instant feedback that is both accessible and affordable.

Beyond just technique refinement, AR coaching can revolutionize strategy training. Later, a badminton player in India could use AR to simulate matches against top international players, understanding their tactics and preparing accordingly. This technology could also be used in team sports like hockey, where players can practice set plays and formations in a virtual environment, enhancing team coordination and strategic understanding. Additionally, AR coaching can be a powerful tool for para-athletes, offering them tailored training modules that cater to their specific needs and abilities.

AI-Enhanced Biodegradable Sports Equipment: In a country grappling with environmental challenges, the introduction of biodegradable sports equipment could be a game-changer. By integrating AI, this equipment can adapt to an athlete's usage patterns and degrade upon reaching its optimal lifespan, significantly reducing waste. For instance, biodegradable cricket bats with embedded sensors could monitor usage and alert players when it's time to replace them, ensuring both performance and sustainability.

The potential of AI-enhanced biodegradable equipment extends to its ability to adapt to changing environmental conditions. Taking this further, cricket bats could adjust their weight and balance based on humidity and temperature, offering optimal performance in varying weather conditions. This technology could also revolutionize water sports, with equipment like surfboards and paddles degrading harmlessly in ocean water, reducing marine pollution. Furthermore, in sports like football, biodegradable balls could provide data on air pressure and impact, helping players improve their kicking techniques.

Blockchain for Transparent Sports Governance: Corruption and mismanagement have long plagued various sports bodies in India. Blockchain technology, with its inherent transparency and security, could ensure fair play and efficient management. In future, we could see blockchain being used to manage contracts, transfer records, and even in anti-doping efforts. This technology would bring a new level of trust and integrity to Indian sports governance.

Blockchain's application could extend to fan engagement, allowing transparent and secure voting for awards or player selections. By 2030, fans of the Indian Premier League (IPL) could be voting for their favorite players for certain awards using blockchain, ensuring a fair and tamper-proof process. This technology could also be used for ticketing, eliminating counterfeit tickets and streamlining the entry process. In grassroots sports, blockchain can track the development and performance of young athletes, ensuring that talent identification is fair and transparent.

Wearable Technology for Emotional Resilience: Mental health is increasingly recognized as crucial in sports. Wearables that monitor psychological states could provide athletes with insights into their stress levels, anxiety, and overall mental wellbeing. By analyzing this data, coaches and psychologists could tailor interventions to enhance mental resilience, crucial for athletes facing high-pressure situations. For example, a shooter at the Olympics could use these insights to maintain peak mental condition during competitions.

In future, these wearables could also predict burnout and suggest rest periods, crucial for athletes in high-intensity sports like boxing or wrestling. They could be integrated with virtual therapy sessions, providing mental health support on the go. In team sports, coaches could use aggregated data from these wearables to gauge the team's overall emotional state, tailoring their motivational strategies accordingly. For sport like archery or shooting, where mental focus is paramount, these wearables could provide exercises to enhance concentration before a competition.

Smart Equipment for Injury Prevention: Injury is a constant threat to athletes. By 2030, smart equipment, using AI to analyze movement patterns, could significantly reduce this risk. In sports like kabaddi, where the risk of injury is high, smart shoes and knee pads could provide real-time feedback on an athlete's movements, suggesting adjustments to prevent knee and ankle injuries. In contact sports like rugby, which is gaining popularity in India, smart helmets could analyze impact force and alert medical staff to potential concussions. For sports involving repetitive motions like bowling in cricket, smart sleeves could monitor arm movements and suggest technique adjustments to prevent strain injuries. In athletics, smart track shoes could analyze foot strike patterns, helping runners avoid injuries like shin splints or plantar fasciitis. This technology could also extend to sports physiotherapy, with equipment providing real time feedback during rehabilitation exercises.

AI-Optimized Logistics for Sports Events: Organizing large-scale sports events in India, with its vast geography and diverse population, is a logistical challenge. AI can streamline this process, from scheduling matches to managing crowd flow. For instance, during the IPL cricket season, AI could optimize match schedules based on weather predictions, player availability, and fan preferences, ensuring a smooth and enjoyable experience for all stakeholders.

By extension, AI could revolutionize the management of large-scale sports events in India, such as marathons and cricket tournaments. AI systems could predict and manage traffic flow, ensuring smooth transportation for athletes and fans. They could also optimize the scheduling of events based on weather forecasts, player availability, and audience preferences. For multi-sport events like the National Games, AI could efficiently allocate resources across various venues, enhancing the overall experience. Additionally, AI could play a key role in emergency response planning, ensuring quick and effective handling of any unforeseen incidents.

Smart Manufacturing for Sports Equipment: The manufacturing of sports equipment in India could see a significant transformation with AI integration. Customization will be key – for example, AI

algorithms could design cricket bats tailored to individual batting styles or badminton rackets adjusted for grip and swing style. This level of customization, powered by AI, would not only enhance performance but also reduce the risk of injuries. The future of sports equipment manufacturing in India could see AI driven customization becoming mainstream. Before the Olympic Games of 2036, manufacturers could offer fully personalized sports gear, from cricket bats to running shoes, tailored to an individual's physique and playing style. AI algorithms could analyze an athlete's past performance data to suggest design modifications for improved efficiency. This technology could also enable rapid prototyping and testing, significantly reducing the time to market for new products. Moreover, AI could ensure sustainable manufacturing practices, minimizing waste and optimizing the use of materials.

Biomechanical Analysis for Equipment Customization: This technology goes hand in-hand with smart manufacturing. By analyzing an athlete's biomechanics, equipment can be customized to suit their specific needs. In sports like tennis, where the play style varies significantly from player to player, rackets could be designed to complement an individual's serve and volley, enhancing their natural game. In the next decade, biomechanical analysis could become a standard part of sports training in India. Athletes in disciplines like gymnastics or diving could use this technology to fine-tune their movements for maximum efficiency and safety. This analysis could also be used in sports medicine, aiding in the rehabilitation of injured athletes by providing customized equipment recommendations. For sports like golf or archery, where precision is key, equipment tailored based on biomechanical analysis could give athletes a significant competitive edge.

Autonomous Drones for Performance Tracking: Drones equipped with AI and cameras will provide a new perspective on performance analysis. In athletics, drones could track a sprinter's form and speed, providing coaches with a comprehensive view of their technique. This technology could be particularly beneficial in training sessions, where immediate feedback is crucial. And before India hosts the Olympics, autonomous drones could be a common sight in Indian sports arenas, providing a wealth of data previously unavailable. In team sports like football or hockey, drones could track player movements, offering insights into team dynamics and fitness levels. For individual sports like athletics, drones could provide detailed analyses of an athlete's form and technique during training, allowing for immediate adjustments. These drones could also be used for broadcasting, offering unique and dynamic perspectives for live sports coverage.

Personalized Augmented Reality Stadium Experiences: The fan experience in stadiums will be transformed by AR. Fans could access player stats, replays, and even different camera angles through their AR devices. This technology would not only enhance the viewing experience but also bring fans closer to the action, regardless of their seat in the stadium. The stadium experience in India could be transformed by AR technology. Fans attending a cricket match or a football game could use AR to access instant replays, player stats, and even different camera angles from their seats. This technology could also offer interactive experiences, such as AR games during halftime or virtual meet-and-greets with players. For families, AR could provide educational content about the sport or the venue, making sports events more engaging for younger audiences. This technology could also be used for navigation within large stadiums, helping fans locate their seats, restrooms, and concession stands with ease.

By 2030, these technologies will not only enhance the performance of athletes but also transform the sports ecosystem in India, making it more inclusive, efficient, and sustainable. The future of Indian sports, powered by these technological advancements, promises to be more exciting, accessible, and engaging for everyone involved. As we stand at the precipice of a new era in sports technology, India, with its rich mix of educational institutions like the IITs, BITS Pilani, NITs, and others, is uniquely positioned to emerge as a global technological powerhouse in the sports world. These institutions, renowned for their cutting-edge research and innovation, are the breeding grounds for the next generation of technologies that will revolutionize sports as we know it.

The potential for research and development in sports technology in India is immense. With a burgeoning youth population passionate about sports and technology, there is a growing pool of talent ready to innovate and push boundaries. Indian educational institutions have already begun integrating sports technology into their research agendas, focusing on areas like biomechanics, data analytics, and material science. This focus is not just academic; it's about creating real-world applications that can enhance the performance of athletes and the experience of fans. India's potential in this domain is not just hypothetical. In the past five years, we have seen Indian athletes embrace technology to achieve remarkable feats. Take, for instance, Neeraj Chopra, whose historic gold medal in javelin at the Tokyo Olympics was a culmination of rigorous training aided by biomechanical analysis and performance tracking technologies. His success is a beacon of India's sporting future, illuminated by technological advancements.

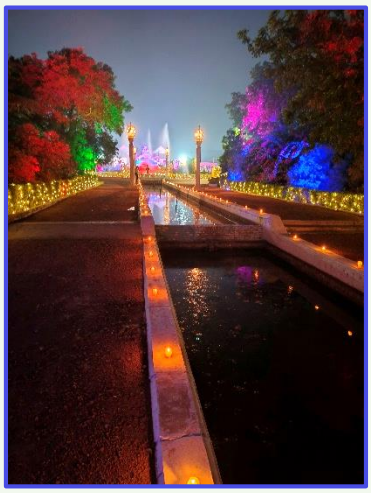
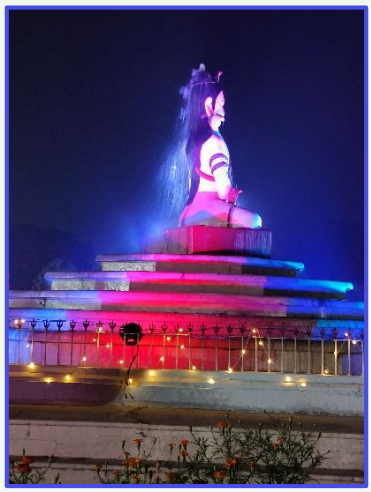
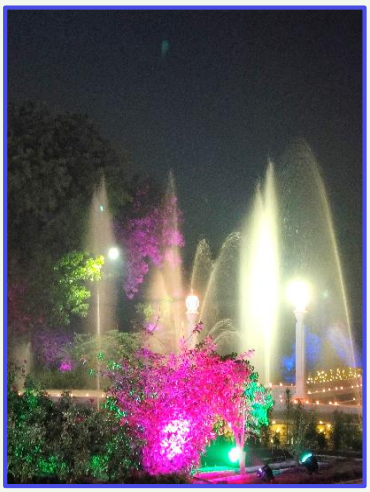
The Indian cricket team's adoption of WHOOP fitness bands is another testament to the country's growing affinity for sports technology. These bands provide players with personalized data on their sleep, recovery, and strain, allowing for optimized performance on the field. This adoption signifies a shift in mindset, where technology is seen as a crucial ally in achieving sporting excellence. India's journey towards becoming a leader in sports technology is also fueled by its vibrant startup ecosystem, which has seen a surge in companies focusing on sports analytics, wearable tech, and fan engagement platforms. These startups, often incubated in or associated with premier institutions, are at the forefront of bringing innovative solutions to the market.

In conclusion, the confluence of India's robust educational infrastructure, its rich pool of talent, and a culture that reveres both sports and technology sets the stage for the country to lead the world in sports technology. From grassroots to elite levels, the integration of technology in sports is poised to not only enhance athletic performance but also to redefine the way sports are experienced and consumed. As Indian athletes continue to make their mark on the global stage, backed by technological prowess, India is well on its way to becoming a beacon of innovation in the sports world.

TECHNICAL EVENT ORGANISED: ICSE 2023

3rd International Conference on Sports Engineering

Sports Engineering Association, India (SEA) and BITS Pilani have jointly organized the 3rd International Conference on Sports Engineering during 2-4 Nov'23 at BITS Pilani, Rajasthan, India in association with International Sports Engineering Association, UK and Ministry of Youth Affairs and Sports, New Delhi.

PRE-CONFERENCE WORKSHOP

The event started with pre-conference workshop on 2nd November 2023. The workshop Coordinated by Prof. Lalit Sharma Physical Education, IGIPESS, Delhi University, New Delhi, India while supported by Dr. Pallab Dasgupta and Dr. Gulab Singh Ruhal.

Theme: Advances in Sports Performance Analysis and applied Technologies

The Resource persons were:

Prof. KAMLESH TIWARI, Associate Professor, Computer Science, BITS Pilani-Pilani, India

Prof. ASHUTOSH BHATIA, Associate Professor, Computer Science, BITS Pilani-Pilani, India

Dr. RAHUL TIWARI, Biomechanics Lead, SAI, NS NIS, Patiala, India

Dr. VISWANATH SUNDAR, Assistant Professor Physical Education & Sport Science Visva-Bharati, Santiniketan, India







Some glimpses of pre-conference workshop

PANEL DISCUSSION

Theme: Roadmaps towards indigenous Sports Technology

The panel discussion moderated by Prof. **SUDHIR KUMAR BARAI** Director, BITS Pilani-Pilani Campus, India. The panelists were

Prof A K UPPAL, Former Vice Chancellor of Jiwaji University, Gwalior. Former Dean, LNIPE, India

Mr. SHIV PRAKASH SINGH, MD, Shive Naresh Sports, Founder Director, SEA, India

Prof. DAVID JAMES, MD Labosport & former faculty, Shefield Hellam University, Member ISEA,UK

Prof. VIRENDER KUMAR DABAS, Chief Coach, Indian Para Swimming Teams, India

Col. RAJ SINGH BISHNOI, Senior ED, NSNIS, Patiala (PB) India

Dr (Ms) SUNIL DABAS, Padmashri & Dronacharya Awardee. (Kabaddi), Guru gram (HR) India

Panel discussion

CONFERENCE ICSE'23 INAUGRATION

ICSE'2023 Inauguration and Welcome Dinner held on 2nd November 2023 at Shivganga, Birla Education Trust, Pilani

Chief Guest:

Col. RAJ SINGH BISHNOI , Senior ED, NSNIS, Patiala (PB) India

Guest of honor:

Mr. SANAND SALIL MITRA, MD, SportTech Innovation Lab Pvt Ltd, Pune India

Dr (Ms) SUNIL DABAS, Padmashri & Dronacharya Awardee. (Kabaddi), Guru gram (HR) India

CONFERENCE KEYNOTE SESSIONS

Keynotes sessions were organized on 3rd and 4th November 2023. The details are

SPEAKERS	TOPICS
Mr. SANAND SALIL MITRA, MD, SportTech Innovation Lab Pvt Ltd, Pune	Envisioning A World of Enhanced Awareness Sporting
Prof. LLOYD SMITH Professor, Washington State University, President, ISEA, UK	Exploration of research for engineers in Sports
Prof. DAVID JAMES, Former faculty, Shefield Hellam University, Member of ISEA, UK	Technological Advances in Synthetic surfaces for Sport
Prof KAZUYA SEO , Mechanical Engineering, Kogakuin Univ. Tokyo, Japan	Application of Aerodynamics in Sports

Some glimpses of Keynote sessions and valedictory

BEST PAPER AWARDS

ICSE 2023 awarded best paper awards in different tracks. The details are as follows:

ICSE-23-39 1st prize 15000	**Effect of Training on Selected Anthropometric and Physiological Parameters Among Swimming Athletes** Chennakeshavulu. Vemual and Advika Manya Mandala ICMR-NIN, MYAS-NIN Dept. of Sports Science, Tarnaka, Hyderabad, 500007, India
ICSE-23-25 2nd prize 10000	**Awareness and Risk Prevalence of Relative Energy Deficiency in Indian Female Collegiate Athletes** Maitri gaglani and Srinivasa Rao Pachava Myas- Guru Nanak Dev University Department of Sports Science and Medicine
ICSE-23-57 1st Prize 15000	**Using MCDM Techniques for Talent Identification and Management in Sports** M.S. Dasgupta, Jainil Dharmil Shah and Chaitanya Iyer Birla Institute of Technology and Science, Pilani
ICSE-23-96 1st Prize 15000	**3D Numerical Simulations of a Tennis Ball Trajectory** Pasunuru Sai Vineeth and Mahesh Panchagnula Department of Applied Mechanics and Biomedical Engineering, Indian Institute of Technology Madras, Chennai, Tamil Nadu 600036, India
ICSE-23-106 1st prize 15000	**Health Profile and Lifestyle Analysis of Individuals via Mathematical Modelling** Manisha Krishna Naik and Chandrali Baishya Tumkur University, Tumakuru
ICSE-23-37 2nd prize 10000	**Comparision of Body Composition & Cardiorespiratory Functional Differences Among Track & Field Athletes** Chennakeshavulu Vemula[1], Aishwarya. A[2] and Tamali Mondal[2] [1]Teaching Associate (Physiology), ICMR-NIN, MYAS-NIN Dept. of Sports Science, Tarnaka, Hyderabad, 500007, India [2]M.Sc Sports Nutrition, ICMR-NIN, MYAS-NIN Dept. of Sports Science, Tarnaka, Hyderabad, 500007, India
ICSE-23-06 1st prize 15000	**BallTraj: Fast-moving ball trajectory tracking using an encoder-decoder network** Aditya Somani and Aruna Malapati BITS Pilani, Hyderabad Campus)

SEA AWARDS

This time the Governing body of the SEA, India introduced awards to honor the professionals in recognition of their valuable contribution towards Physical education/sports/engineering/science in India

Lifetime Achievement Award'2023

Promising Leader-ICSE 23 award

SEA-Member of the Year 2023

The awards were bestowed to the following at the inaugural program of the 3rd International Conference on Sports Engineering

Lifetime Achievement Award'2023

Prof **A K UPPAL**, Former Vice Chancellor of Jiwaji University, Gwalior. Former Dean, LNIPE, India

Prof. **VIRENDER KUMAR DABAS**, Chief Coach, Indian Para Swimming Teams, India

Promising Leader-ICSE 23 award

Dr. **PIYUSH JAIN**, Founder and Secretary PEFI

SEA-Member of the Year 2023

Dr. **VISHWANATHA C.N**, Director, Physical Education, RV College of Engineering, Bengaluru-India

OUR SPONSORS for ICSE'23

1. **INTERNATIONAL SPORTS ENGINEERING ASSOCIATION** (ISEA), England
2. **MINISTRY OF YOUTH AFFAIRS & SPORTS**, New Delhi, India
3. **SHIV NARESH SPORTS PVT LTD, New Delhi India**
4. **SPORTECH INNOVATION LAB PVT LTD**, Pune, India

UNVEILING OF THIRD NEWSLETTER

Vol 1. Issue 4 newsletter of SEA "Sport-E" unveiled by Director Birla education Trust Pilani on 11h September 2023.

MEMBERS ACHIEVEMENTS

Dr. ASISH BERA: An article has been published recently, titled "Fine-Grained Sports, Yoga, and Dance Postures Recognition: A Benchmark Analysis"

Abstract:

Human body-pose estimation is a complex problem in computer vision. Recent research interests have been widened specifically on the sports, yoga, and dance (SYD) postures for maintaining health conditions. The SYD pose categories are regarded as a fine-grained image classification (FGIC) task due to the complex movement of body parts. Deep convolutional neural networks (CNNs) have attained significantly improved performance in solving various human body-pose estimation problems. Though decent progress has been achieved in yoga postures recognition using deep-learning techniques, fine-grained sports and dance recognition necessitates ample research attention. However, no benchmark public image dataset with sufficient interclass and intraclass variations is available yet to address sports and dance postures classification. To solve this limitation, we have proposed two image datasets, one for 102 sport categories and another for 12 dance styles. Two public datasets, Yoga-82 that contains 82 classes and Yoga-107 that represents 107 classes, are collected for yoga postures. These four SYD datasets are experimented with the proposed deep model, SYD-Net, which integrates a patch-based attention (PbA) mechanism on top of standard backbone CNNs. The PbA module leverages the self-attention mechanism that learns contextual information from a set of uniform and multiscale patches and emphasizes discriminative features to understand the semantic correlation among patches. Moreover, random erasing data augmentation is applied to improve performance. The proposed SYD-Net has achieved state-of-the-art accuracy on Yoga-82 using five base CNNs. SYD-Net's accuracy on other datasets is remarkable, implying its efficiency. Our Sports-102 and Dance-12 datasets are publicly available at https://sites.google.com/view/syd-net/home.

Link: https://ieeexplore.ieee.org/abstract/document/10177209

NEW MEMBERS

L/2023/22/09/10059
Dr. MANJUNATHA REDDY A H
Associate Professor, Biotechnology
RV College of Engineering, Bengaluru, India;

LIFETIME, SEA

L/2023/27/10/10060
Dr. REVANNA C
Director, Physical Education
JSS Science and Technology University, Mysuru, India

ANNUAL MEMBER, SEA

A/2023/09/04/10032
Mr. MEKALA RAMAKANTH
Physical Education Teacher
CBSE
India

A/2023/11/23/10033
Mr. HARISH KUMAR
Assistant Professor, Physical Education
The State Council of Educational Research and Training, Delhi, India

STUDENT MEMBER, SEA

S/2023/09/20/1013
Mr. MANISH MEENA
Student, Indian Institute of Technology, Gandhinagar, India

STUDENT CORNER

STUDENT QUIZ

Winners for Quiz 4 {AUGUST 2023}

Congratulations to all the winners of Quiz-4! As a reward, each winner will receive a one-year student membership in the Sports Engineering Association (SEA) free of charge. This membership will provide them with the opportunity to work closely with the SEA team.

Name	Institute
ARYAN P NAIK	RVITM, Bangalore
SARJAN PATEL	BITS Pilani
TEJAS HEGDE	RVITM, Bangalore
MANJUNATH NEERALAKERI	RVITM, Bangalore
WASIM MUSTAFA	UNIVERSITY OF KASHMIR
SUSANTA KUMAR PANDA	LNIPE Gwalior (MP)

Project financial support

We encourage students from engineering and science disciplines to actively participate in various activities such as product design, movement analysis, app development, and software development. To support their involvement, we are announcing a cash support program. All student members are eligible to apply, and the application process is open throughout the year. To apply, please submit a one-page summary of your project along with your student membership number to sportsengineeringindia@gmail.com.

Additionally, SEA (Sports Engineering Association) provides funding opportunities to student members for undertaking small projects in sports technology. We also strive to offer them a nationwide platform to showcase their development work through newsletters and conferences.

Student Project Scheme

The objective of this scheme is to encourage students to explore innovative technology applied in sports. Under this scheme, individual student members or groups of student members of SEA can apply for financial support of up to Rs. 10,000/- to undertake minor research projects or develop prototypes, models, or products. The duration of the projects should not exceed six months. The details of the application procedure can be found on the SEA website, http://sportsea.org. Full-time students in undergraduate or postgraduate programs in engineering, science, or sports science are eligible to apply after becoming student members of SEA.

Online Quiz for Students: Quiz 5 (will open on 10 Dec'23 and close on 25 Dec'23)

This Quiz is designed for students and only students can participate in the quiz. Purpose of the quiz is just to promote awareness about science and sports among the student community. No data will be stored on the website regarding your responses.

Students are required to follow the guidelines before attempting the quiz

Students are required to furnish his/her personal details.

The quiz will comprise Objective Type Multiple Choice Questions (MCQs).

Each question has four options, and the student has to click the appropriate option.

Students can attempt the quiz only once.

A quiz will open on December 10, 2023, and will close on December 25, 2023.

Winners will be informed by email in fifteen days after the quiz closes.

All winners shall be issued E-Certificates.

The first ten winners (first attempters) will be given student memberships in the Sports Engineering Association (SEA) for one year and can work closely with the team of SEA.

Decisions of the quiz organizing team will be final and binding in case of any discrepancy or dispute.

Use the following link to participate in the online quiz:

https://docs.google.com/forms/d/e/1FAIpQLSdQuRYk_b7oFecVZ1B0rG8TPSjony0IoKBpD6fW_jfuXZ6f4A/viewform

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EDITORIAL TEAM

INVITATION FOR SEA MEMBERSHIP

We invite professionals from engineering/science/sports to join us and become a member of the SEA family. Please use the link below to register for the membership.

Membership Link: http://sportsea.org/joining-payment-process/

Opportunities/ Benefits of joining the SEA as Member

- Receive a Membership Certificate, inclusion of profile in Membership Gallery, discount on Conference registration charges
- Opportunity to utilize the collaborative platform to interact with Domain experts and other members of SEA
- Discount on conferences, workshops and any other professional development events organized by SEA
- Student members may get an opportunity to work in research projects
- Receive periodicals / newsletter, publish articles in periodicals & newsletters
- Receive award / recognition for innovative contribution to the technology development Attend board meetings (only for life members)
- Opportunity to open State Chapter (only for life members)
- * (A full-time student at any time during her/his period of study can join SEA as Student Member through a onetime payment of token membership fee. Student members are eligible to get Rs 10,000/- as grant for innovative project development. On completion of course, he/she will cease to be a Student Members but are encouraged to make fresh application for Life membership of SEA remitting the full life membership fee.)

Sports Engineering Association

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