A REPORT OF ACTIVITIES

JANUARY–MARCH 2024

Kotak IISc AI-ML Centre

भारतीय विज्ञान संस्थान

A CSR initiative by

kotak
Kotak Mahindra Bank

Kotak IISc AI–ML Centre

EXECUTIVE SUMMARY

The Kotak IISc AI-ML Centre was established at the Indian Institute of Science (IISc) with the vision to become one of the leading Centres in the world in artificial intelligence and machine learning. Since its inception in September 2022, it has been striving towards this vision with the support of the Kotak Mahindra Bank Limited (KMBL).

In this context, targets are set for each quarter, and the Centre organises and conducts activities to achieve these goals. During the period January–March 2024, the Centre organised and supported various talks, lectures, events, and workshops related to artificial intelligence (AI) and machine learning (ML). The research activities of many students were supported through the Kotak scholarship, the PhD top-up scholarship, and the scholarships for IISc MTech and PhD students from the empowered category. Interns and predoctoral fellows were onboarded to work on cutting-edge topics under the guidance of IISc faculty. Responses have been received for the calls for postdoctoral fellows and international chair visiting professors, and they will be selected if found suitable.

AI-ML talks were organised primarily for IISc students. In addition, lectures, courses, training sessions, and workshops were organised and/or supported to enhance the knowledge base and build skills of different target groups. Workshops/technical meetings were arranged with industry counterparts to explore collaboration.

One faculty member was given financial support to attend a leading AI conference abroad. This support will enable Indian academicians and researchers to publish in top-tier venues and also increase the visibility of the Centre.

To inform various target audiences about the opportunities and activities at the Centre, a dedicated webpage and social media handles are regularly updated. The Centre also broadcasts through the Institute emailing system, and puts up posters at prominent places within the campus.

CONTENTS

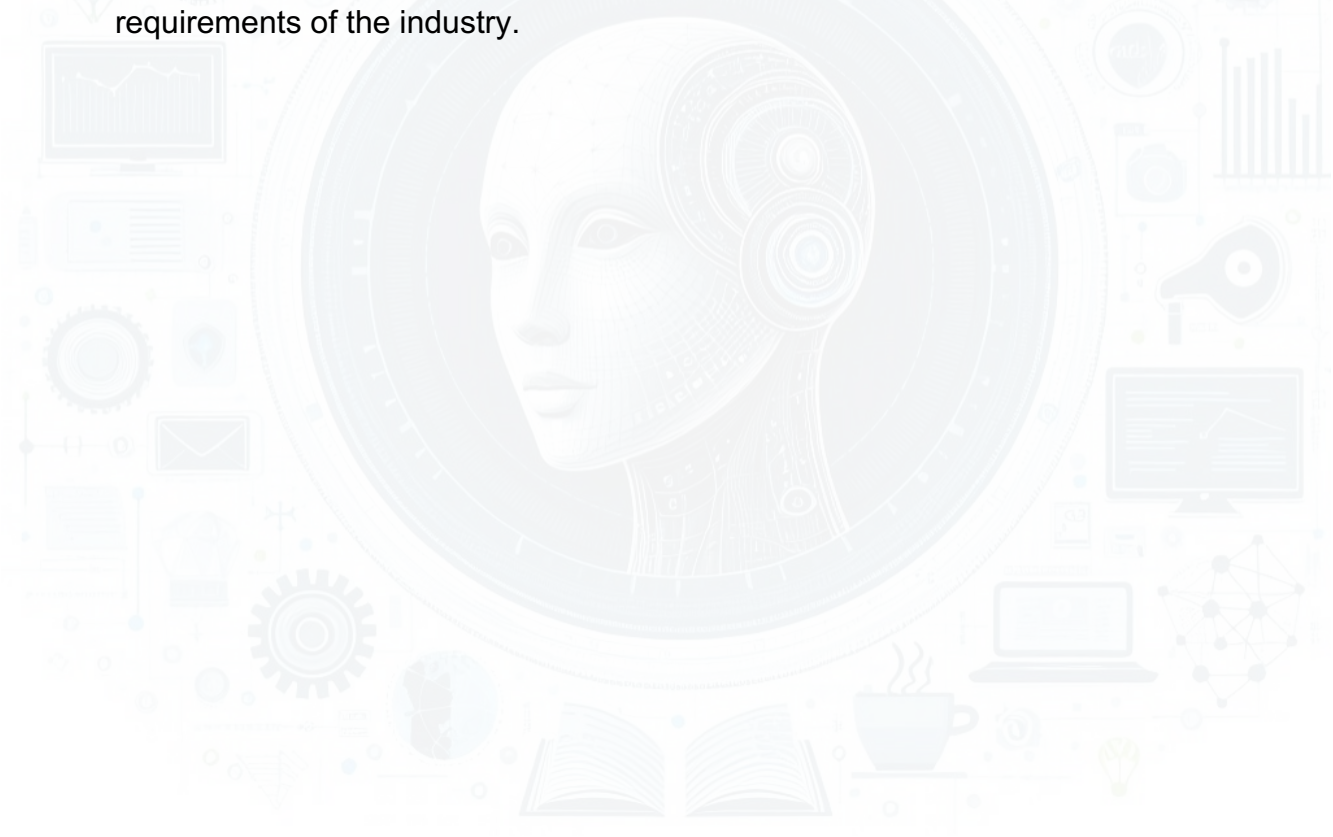
VISION

The main objectives of the Centre are:

(i) to develop rigorously-trained human resources who will become future leaders in artificial intelligence–machine learning and champion India's surge in this area,

(ii) to conduct cutting-edge research in this area, leading to international visibility of the highest order, and

(iii) to develop innovative, deep-tech solutions to meet the current and emerging requirements of the industry.



GOVERNANCE OF THE CENTRE

The governance of the Centre is overseen by the following structure. The Convenor and Co-convenor are responsible for creating technical programmes that are in-line with the memorandum of understanding (MoU) between KMBL and IISc. These programmes are presented to the Scientific Advisory Board (SAB) to ensure that the conceived programmes are compatible with the MoU. The SAB reports to the Governing Board (GB). The Project Review Committee (PRC) also reports to the GB and reviews the overall functioning of the Centre.

Members of the Governing Board

Govindan Rangarajan, IISc (Chair)
Navakanta Bhat, IISc
Yadati Narahari, IISc
Kaushal Verma, IISc
Milind Nagnur, KMBL
Himanshu Nivsarkar, KMBL

Members of the Scientific Advisory Board

Rajesh Sundaresan, IISc (Chair)
Chiranjib Bhattacharyya, IISc
Venkatesh Babu Radhakrishnan, IISc
Srikanth Krishnan Iyer, IISc
Bhaskar Kumar, KMBL

Members of the Project Review Committee

S K Satheesh, IISc (Chair)
P S Anil Kumar, IISc
Rajesh Sundaresan, IISc
Himanshu Nivsarkar, KMBL
Prem Sagar Raju Addala, KMBL

Members of the KIAC Team

Convenor: Chiranjib Bhattacharyya
Co-convenor: Venkatesh Babu Radhakrishnan
Chair Visiting Professor: C Pandu Rangan
Visiting Professor: Viraj Kumar
Program Manager: Grace Mathew Abraham
Systems Administrator: Neetha Ashtakar
Senior Editorial Assistant: Geethanjali Monto
Secretary: Sudha Aithal

KEY ACHIEVEMENTS AT KIAC

January–March 2024

JANUARY–MARCH 2024

The Centre organised and supported various activities during January–March 2024. An overview of these activities, the beneficiaries, and output indicators are presented in the following table.

ACTIVITY	TYPE (number)	Number of beneficiaries/ participants	Output indicators
EDUCATION AND SKILL DEVELOPMENT	Kotak IISc AI-ML talk series (8)	420	education, collaboration, outreach
	Events (1)	244	skill development, education, teaching, outreach
	Courses and training sessions (1)	46	skill development, education, teaching
	Workshops (4)	298	skill development, education, capacity building
SUPPORT	Kotak scholarship	2	support for students
	PhD top-up scholarship	1	support for students
	Scholarships for MTech and PhD students from the empowered category	68	support for students from empowered categories
	Internships	4	support for research, training human resources, developing solutions for current requirements
	Predoctoral fellowships	7	support for research, training human resources, developing solutions for current requirements
	Attending leading international AI conferences	1	skill development, visibility, enabling publications in prestigious journals and participation in top-level conferences
COLLABORATIONS	Discussions with academia and industry (2)	20	development of innovative, deep-tech solutions to meet the current and emerging requirements of the industry
OUTREACH	KIAC webpage, social media, and YouTube channel	(accessible to all)	information dissemination, motivation for women researchers in STEM

REPORT OF ACTIVITIES

January–March 2024

The Kotak IISc AI-ML Centre organised multiple activities during January–March 2024. These activities have been organised in the following pages under four heads:

(i) education and skill development,
(ii) support,
(iii) industry–academia collaborations, and
(iv) outreach.

EDUCATION AND SKILL DEVELOPMENT

The Centre contributed to enhancing the knowledge and skill of a plethora of participants from academia and industry, from India and abroad, across a range of age, educational, cultural, and socio-economic backgrounds. This was done through the Kotak IISc AI–ML talk series, events, courses and training sessions, and workshops. Some of the programmes aimed at introducing teachers to generative artificial intelligence technologies for programming.

Kotak IISc AI-ML talk series

The Kotak IISc AI–ML talk series facilitates exposure of students to the research work and state-of-the-art in their respective fields of expertise. It includes talks by eminent scientists and researchers from academia and the industry from all over the world, with whom IISc students and faculty can interact and collaborate on various projects. The talks are held at IISc and open to all; non-IIScians can attend upon request.

KIAC organised eight talks between January–March 2024, a brief summary of which is provided below.

Multimodal Generative LLMs: Unification, Interpretability, Evaluation

Mohit Bansal, John R & Louise S Parker Professor and Director of the MURGe-Lab (UNC-NLP Group), Department of Computer Science, UNC Chapel Hill
8 January 2024; Department of Computational and Data Sciences, IISc
Attendees: 45

In this talk, Mohit Bansal presented his team's journey on large-scale multimodal pretrained (generative) models across various modalities (text, images, videos, audio, layouts), enhancing important aspects such as unification (for generalisability, shared knowledge, and efficiency), interpretable programming/planning (for controllability and faithfulness), and evaluation (of fine-grained skills, faithfulness, and social biases). He started by discussing early cross-modal vision-and-language pretraining models (LXMERT). He then looked at early unified models (VL-T5) to combine several multimodal tasks (such as visual QA, referring expression comprehension, visual entailment, visual common sense reasoning, captioning, and multimodal translation) by treating all tasks as text generation. Next, he looked at recent progressively more unified models (with joint objectives and architecture, as well as newer unified modalities during encoding and decoding) such as textless video-audio transformers (TVLT), vision-text-layout transformers for universal document processing (UDOP), and composable any-to-any text-audio-image-video multimodal generation (CoDi).

He also discussed interpretable and controllable multimodal generation (to improve faithfulness) via large language model (LLM)-based planning and programming, such as layout-controllable image generation via visual programming (VPGen), consistent multi-scene video generation via LLM-guided planning (VideoDirectorGPT), and open-domain, open-platform diagram generation (DiagrammerGPT). He concluded with important faithfulness and bias evaluation aspects of multimodal generation models, based on fine-grained skill and social bias evaluation (DALL-Eval), interpretable and explainable visual programs (VPEval), as well as reliable fine-grained evaluation via Davidsonian Semantics (DSG).

Object-centric 3D Scene Understanding from Videos

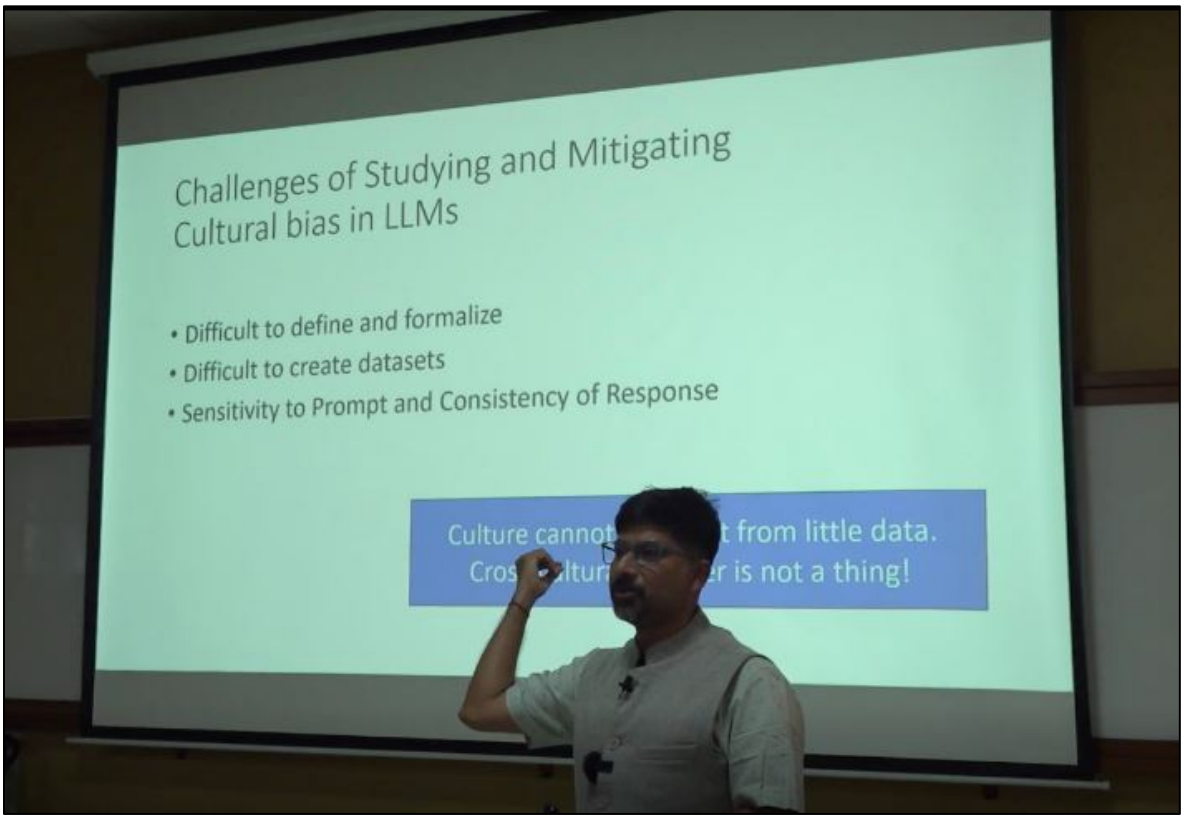
Yash Bhalgat, PhD student, Visual Geometry Group, University of Oxford
11 January 2024; Department of Computational and Data Sciences, IISc
Attendees: 45

The growing demand for immersive, interactive experiences has underscored the importance of three-dimensional (3D) data in understanding our surroundings. Traditional methods for capturing 3D data are often complex and equipment-intensive. In contrast, Yash Bhalgat's research aims to utilise unconstrained videos, such as those from augmented reality glasses, to effortlessly capture scenes and objects in their

full 3D complexity. As a first step, he described a method to incorporate epipolar geometry priors in multi-view transformer models to enable identifying objects across extreme pose variations. Next, he discussed his recent work on 3D object segmentation using two-dimensional pre-trained foundation models. Finally, he touched upon his ongoing work on object-centric dynamic scene representations.

LLMs for Everybody: How Inclusive are the LLMs Today and Why Should We Care?

Monojit Choudhury, Professor of Natural Language Processing, Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), Abu Dhabi
12 January 2024; Department of Computer Science and Automation, IISc
Attendees: 71

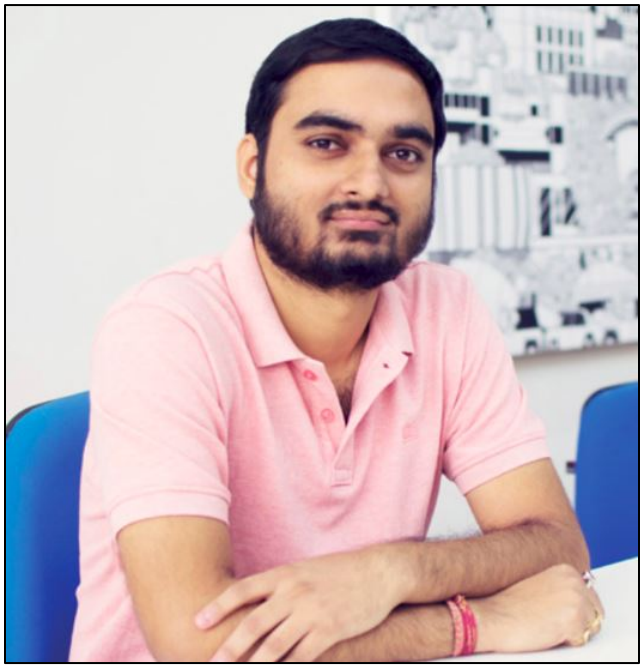


Large language models (LLMs) have revolutionised the field of natural language processing (NLP) and natural human–computer interactions. They hold a lot of promise, but are these promises equitable across countries, languages, and other demographic groups? Research from Monojit Choudhury's group as well as from around the world is constantly revealing that LLMs are biased in terms of their language processing abilities in most but a few of the world's languages, cultural awareness (or lack thereof), and value alignment. In this talk, Choudhury highlighted some of his group's recent findings around value alignment bias in the models and argued why we need models that can reason generically across moral values and cultural conventions.

He also discussed some of the opportunities for students at the postgraduate, PhD, and postdoctoral levels at the newly-founded Mohamed bin Zayed University of Artificial Intelligence in Abu Dhabi

Teaching LLMs the Value of Cooperation

Tanmoy Chakraborty, Associate Professor of Electrical Engineering and Associate Faculty Member, Yardi School of AI, Indian Institute of Technology Delhi.
2 February 2024; Department of Computer Science and Automation, IISc
Attendees: 20



Large language models, despite their astounding reasoning abilities, are not faithful problem solvers. While their abilities are strongly correlated with scale, even humongous models like GPT-3.5 or GPT-4 can become inconsistent reasoners. Recent advances in verbose prompting techniques like chain-of-thought try to elicit step-by-step decomposition so that the model can solve a sequence of simpler problems to finally reach the goal. Augmenting external tools like web search or calculators have also been proposed to offload deterministic tasks. However, foundational language models learn neither problem decomposition nor tool usage.

In this talk, Tanmoy Chakraborty presented potent solutions towards offloading reasoning subtasks in the case of mathematical problem solving: how does one teach an auxiliary (and potentially frugal) language model to coordinate with black-box solvers, symbolic or language model-based, to successfully answer mathematical problems? This talk focussed on successfully teaching language models to perform reasoning from non-human feedback and how rewards beyond just the correctness of the final answer are essential for better learning.

Domain Adaptation for Fair and Robust Computer Vision

Tarun Kalluri, PhD student, Visual Computing Group, UC San Diego
26 February 2024; Department of Computational and Data Sciences, IISc
Attendees: 47

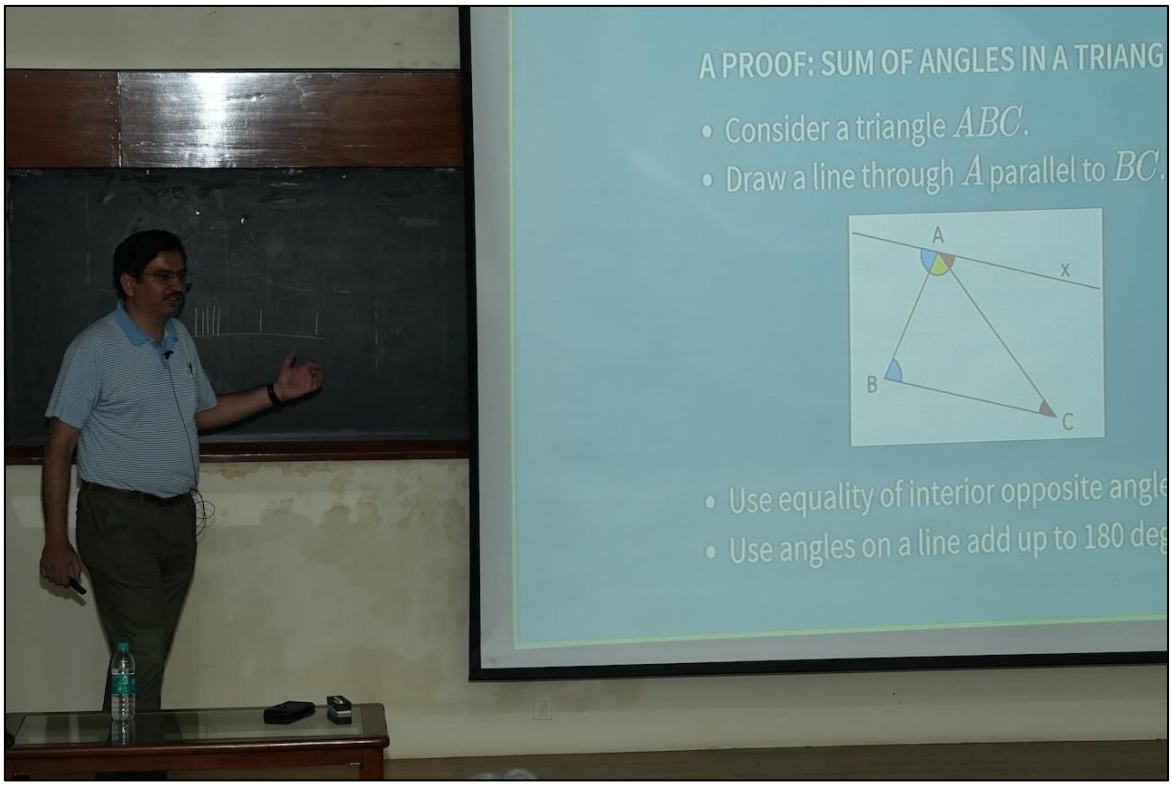
While recent progress significantly advances the state-of-the-art in computer vision across several tasks, the poor ability of these models to generalise to domains and categories under-represented in the training set remains a problem, posing a direct challenge to fair and inclusive computer vision. In his talk, Tarun Kalluri talked about his recent efforts towards improving generalisability and robustness in computer vision using domain adaptation. First, he spoke about work on scaling domain adaptation to large scale datasets using metric learning. Next, he introduced a new dataset effort called GeoNet aimed at benchmarking and developing novel algorithms towards geographical robustness in various vision tasks. Finally, he talked about the latest research, studying the role of language supervision to improve adaptation of visual models to new domains.

AlphaGeometry and Friends: AI for Mathematics

Siddhartha Gadgil, Professor, Department of Mathematics, IISc

26 February 2024; Faculty Hall, IISc

Attendees: 120



Recently, researchers at Google developed a system, AlphaGeometry, which can solve geometry problems from the International Mathematical Olympiad (IMO) at close to Gold Medal level. This was based on algorithmic (i.e., rule based) deduction together with a language model (Generative AI) to generate auxiliary constructions. To train the language model, 'synthetic data' was generated.

This work follows what are becoming common patterns for the use of artificial intelligence in mathematics, in particular using Generative AI to obtain useful candidates paired with deductive systems, including interactive theorem provers (ITPs), to check correctness, complete proofs, and evaluate results. Essentially, Generative AI is used for 'intuitive' aspects of reasoning and algorithms/symbolic AI/ITPs are used for the 'logical' aspects of reasoning.

In this talk, Siddhartha Gadgil began by discussing AlphaGeometry. He then discussed a few other systems for AI for mathematics, including 'FunSearch' which proved a result giving an improved bound for the so-called CapSet problem. He also discussed the design of possible systems for going beyond the present systems and experiments with GPT-4 showing its powers and its limitations relevant to this quest.

Making an Impact? A Tale of Two Projects

Kevin Leyton-Brown, Professor of Computer Science and a Distinguished University Scholar at the University of British Columbia

18 March 2024; Department of Computational and Data Sciences, IISc

Attendees: 34

How can AI researchers leverage their specialised knowledge to make a social impact? The notion is beguiling but the reality is complicated. Kevin Leyton-Brown's talk contrasted two strategies that are often employed—loosely described as write a paper and be an entrepreneur—gained via two, very different projects in electronic market design. The first project focussed on developing new theoretical ideas for incentivising local food pantries to honestly report demand to a centralised food bank. The second project was more practical; it aimed to design an electronic market for agricultural commodities in Uganda that could operate over low-end SMS phones. After discussing technical innovations, lessons learned, and lingering disappointments from both projects, the talk concluded with some overall thoughts about strategies that researchers might employ in pursuit of successful 'AI for Social Impact projects' and how these can be taught in our courses.

Efficient Language Model Inference using Statistical Tools

Ananda Theertha Suresh, Research Scientist at Google Research, New York
18 March 2024; Department of Computer Science and Automation, IISc
Attendees: 38

Autoregressive sampling from large language models has led to state-of-the-art results in several natural language tasks. However, autoregressive sampling generates tokens one at a time making it slow, and even prohibitive in certain tasks. One way to speed up sampling is speculative decoding: use a small model to sample a draft (block or sequence of tokens), and then score all tokens in the draft by the large language model in parallel. A subset of the tokens in the draft are accepted (and the rest rejected) based on a statistical method to guarantee that the final output follows the distribution of the large model.

In this talk, Ananda Theertha Suresh provided a principled understanding of speculative decoding through the lens of distribution coupling and optimal transport theory. This new formulation enables an improvement in speculative decoding in two ways: first, he proposed an optimal draft acceptance algorithm that provides additional wall-clock speedup without incurring additional computation cost. Next, he asked if the latency can be improved further with extra parallel computations? He answered this question affirmatively by showing that if we have multiple drafts from the small model, we can use them to improve the speedup further albeit using extra parallel computations. He provided theoretical guarantees on the proposed algorithms and characterised the expected speedup. He further empirically demonstrated the practicality of the new algorithms on standard datasets.

Events

A variety of events are being organised, utilising various modes of interaction such as lectures, discussions, and panel discussions, to disseminate information, encourage discussions among peer groups, and to highlight the work of experts in various fields.

Three Lectures on Optimisation and Data Science

Venkat Chandrasekaran, Professor, Department of Computing and Mathematical Sciences & Electrical Engineering, California Institute of Technology, USA
5, 7, 8 February 2024; Department of Computer Science and Automation, IISc
Attendees: 95, 97, 52

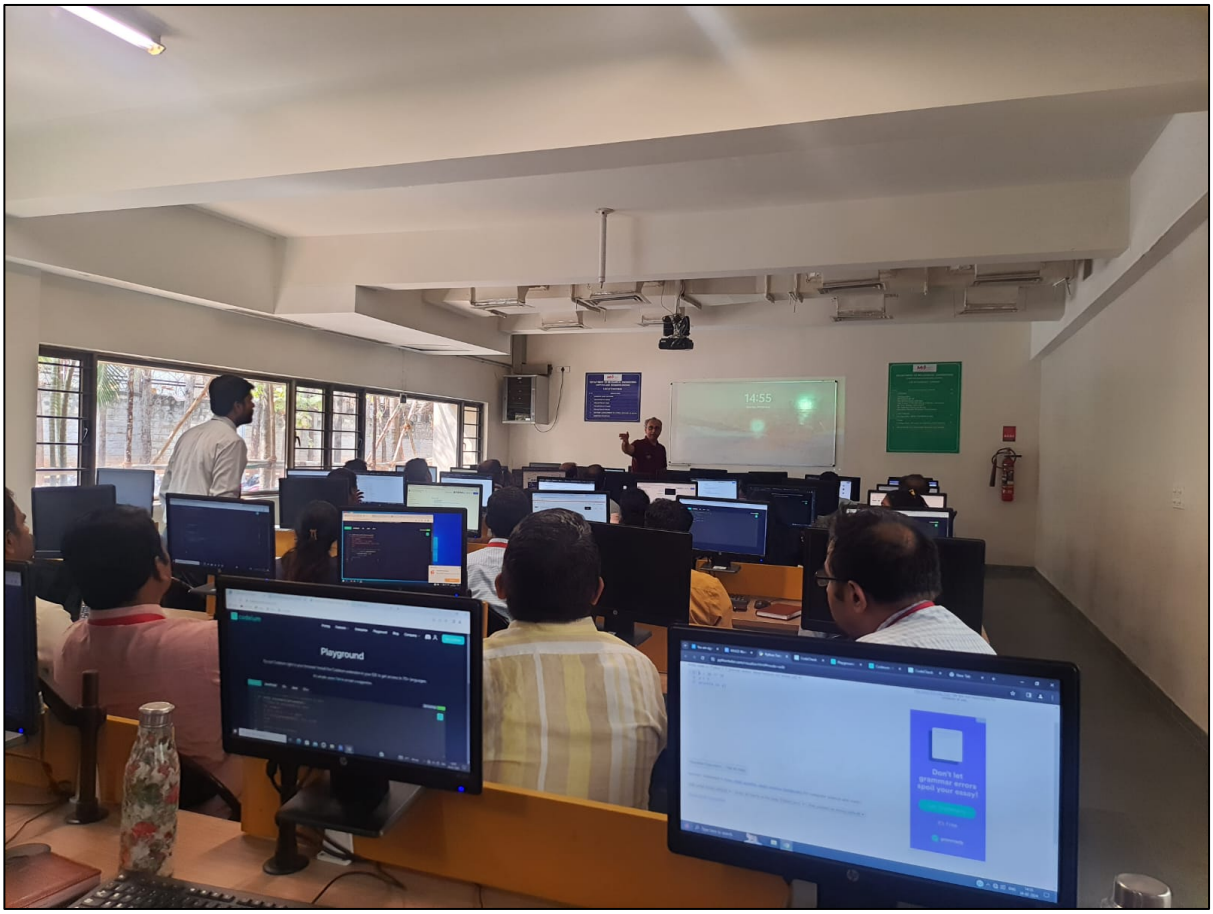
Venkat Chandrasekaran gave three lectures on optimisation and data science. His first lecture was on 'Optimisation and Convexity', the second on 'Convex Graph Invariants and Their Applications', and the third on 'Fitting Convex Sets to Data'. The lectures were attended by many students from IISc.

Courses and training sessions

To enhance the knowledge base and build skills of different target groups, courses and training sessions are organised for students and faculty (schools and colleges).

Faculty Training in 'Leveraging Computing using Generative AI'

Viraj Kumar, Visiting Professor, KIAC
24 February 2024; MVJ College of Engineering
Participants: 46



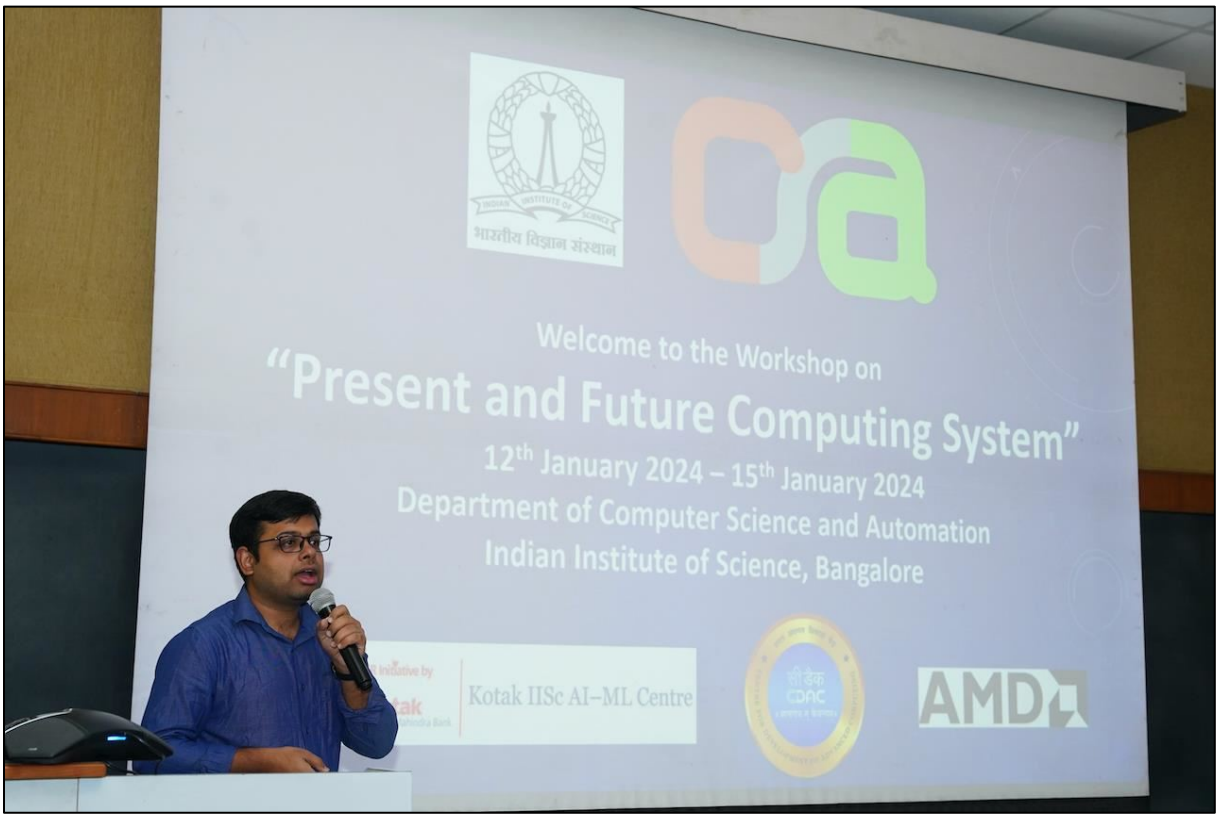
As a follow-up initiative of KIAC's discussion with officials from the All India Council for Technical Education on 30 January 2024, the Centre explored the possibility of conducting faculty training programmes in 'Computing for Non-CS Faculty'. The workshop at MVJ College of Engineering was a pilot study to test the feasibility of and enthusiasm for this idea.

Workshops

The Kotak IISc AI–ML Centre extends financial and organisational support to faculty members of IISc to organise and conduct workshops on a wide range of themes such as artificial intelligence in oral cancer, robotics and space exploration, responsible computing, learning theory, tensor computation and machine learning, and quantitative finance. Four workshops were supported in this quarter.

Present and Future Computing Systems

12–15 January 2024, IISc
Participants: 79

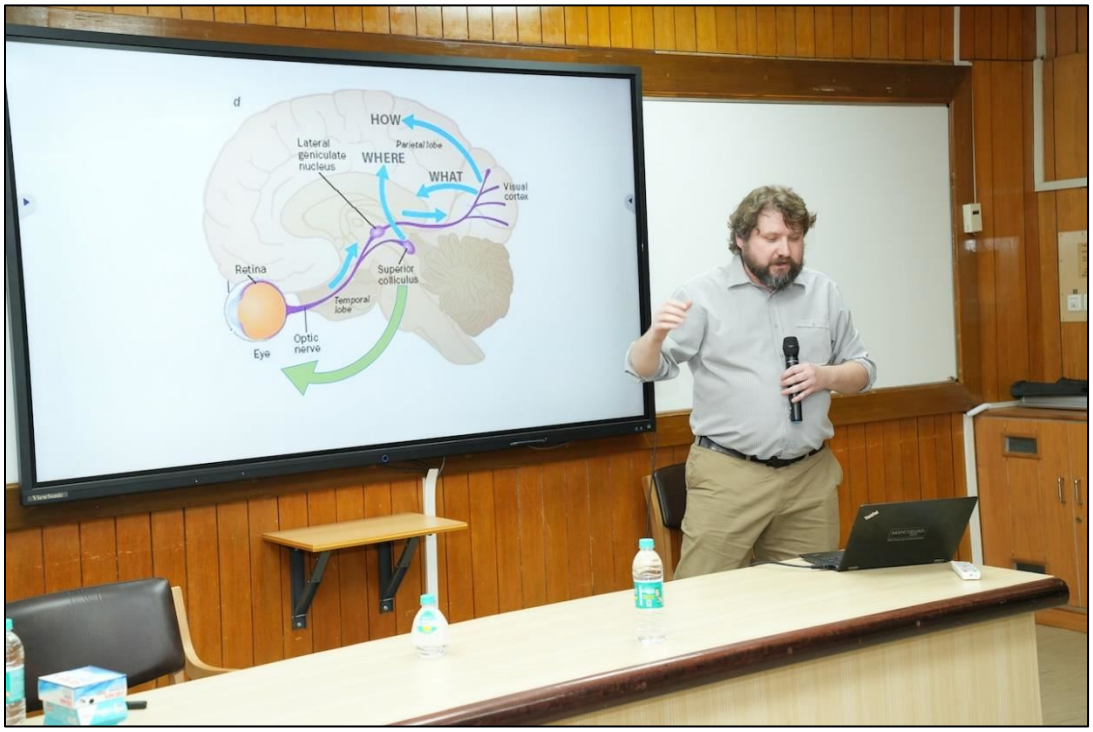


Computing systems (e.g., mobile phones, desktops, laptops) are integrated parts of our lives nowadays. While we want our computing systems to be cheap, we also want them to be fast and energy efficient. Moreover, we also want our computing systems to be safe and secure so that we can use them without risking our privacy. Several new applications have emerged recently that are being extensively executed on different computing systems. Specifically, the emergence of machine learning applications (e.g., deep neural networks and ChatGPT) has called for more efficient and more secure computing systems than ever before. In this workshop, several scholars with extensive research experience in the domain of computing systems talked about various aspects of present computing systems as well as how future computing systems will look like. Attendees got a unique opportunity to interact with professionals from leading

industries in this domain. Moreover, a team from C-DAC provided a hands-on demonstration of DIR–V VEGA Processor, which is India's indigenous microcontroller development board.

Neuromorphic Sensing and Computing Architecture for Next-Gen AI Hardware

19–20 January 2024,
IISc Participants: 85



The workshop was a hub for exploring neuromorphic engineering and brain-inspired systems shaping artificial intelligence hardware. Scholars, researchers, and industry leaders delved into discussions on large-scale neuromorphic computing through talks and tutorial sessions. Both theory and practical applications reshaping artificial intelligence hardware were covered from algorithm to hardware design with practical demonstrations.

The different talks delivered were on (i) Neuromorphic Sensing and Computing at the International Centre for Neuromorphic Systems, (ii) Continual Learning Systems with Neural Plasticity, (iii) A Sampling Theoretic Framework for Neuromorphic Sensing, (iv) Quantum Tunneling, Synaptic Intelligence and Learning-in-Memory, (v) On-Sensor Computer Vision with Pixel-Parallel Processor Arrays, (vi) A distributional approach to Datafree pruning, and (vii) Processing in interconnect inspired by dendritic computation. The tutorial on the second day delved into an in-depth look at the SCAMP chip architecture, instruction set, microarchitecture and circuit implementation, followed by its programming and familiarisation on the simulator and GUI.

The workshop on neuromorphic engineering and brain-inspired systems brought together scholars, researchers, and industry leaders for a fruitful exploration of the future of AI hardware. Through a series of talks, tutorials, and practical demonstrations, participants delved into the theoretical foundations and real-world applications of large-scale neuromorphic computing. The second day offered a practical component through a tutorial on the SCAMP chip architecture. Overall, the workshop fostered a collaborative environment for exploring the exciting possibilities of neuromorphic engineering. By bridging theory and practice, the event equipped participants with the knowledge and tools to shape the future of AI hardware.

Recent Trends in Quantitative Finance

13 February 2024, IISc
Participants: 90

The first edition of the workshop on 'Recent Trends in Quantitative Finance' (RTQF 2024) was conducted on 13 February 2024. The mini-symposium aimed to bring together academicians, industry experts, and research scholars working on quantitative methods in finance. The talks by the experts touched upon the exciting developments in the field.

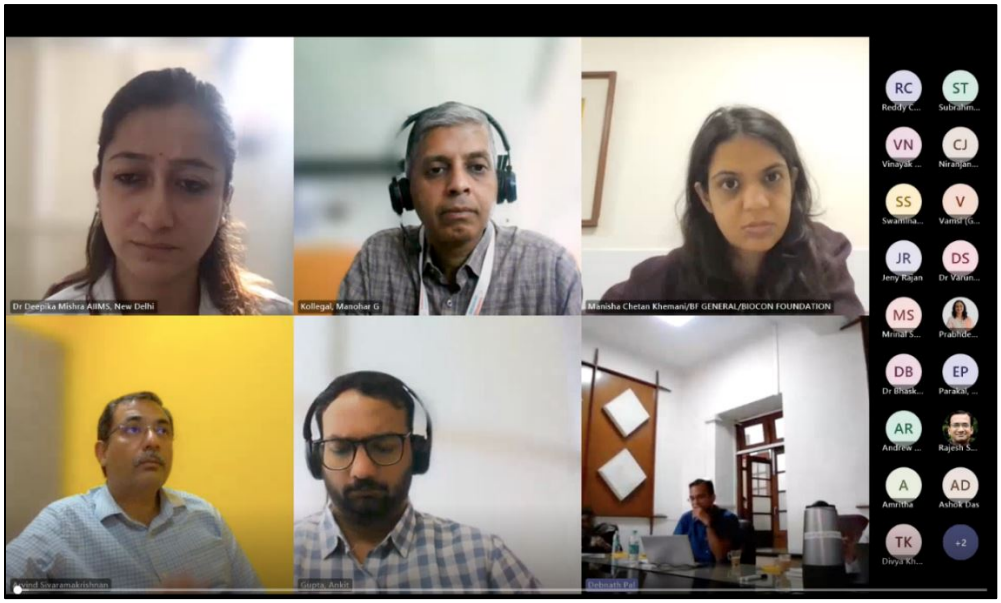
Cornelis Oosterlee (Utrecht University) presented the inaugural talk on 'Deep time-inconsistent Portfolio Optimization with Stocks and Options', while Sankarshan Basu (IIM Bangalore) spoke on application of quantitative techniques in finance. Arjun Beri (Wells Fargo) gave an overview of the challenges in counterparty credit risk modelling and discussed some methodological solutions employed in the industry to tackle such problems. Anshul Jain (SSGA) talked about leveraging Gen AI techniques for investments and provided an outline of the work happening at his organisation.

Srikanth Iyer (IISc) talked about his work 'Asymmetric Super-Heston-rough Volatility Model with Zumbach effect as a Scaling Limit of Quadratic Hawkes Processes'. Arjun K M (J P Morgan) explained the need to ensure that any AI (artificial intelligence) & ML (machine learning) model used in decision-making follows the principles of fairness, ethics, accountability, explainability, privacy, security, and governance. Aditya Nittoor (SigmaQuant) talked about 'Estimation and Minimization of Execution Cost for Quoting Strategies'.

Non-Parametric estimation of multi-dimensional Marked Hawkes processes was the theme of the talk by Sobin Joseph (IISc). The last talk for the day was delivered by Sumanjay Dutta (IISc) on low sample factor modelling for asset pricing.

AI–CoE Stage 1 PoC: Workshop to Finalise Oral Cancer Study Design

21 February 2024, Hybrid mode (IISc, Online)
Participants: 44



This workshop was the second to be conducted in IISc in the context of the call from the Ministry of Education for consortium-based proposals from higher education institutions on Artificial Intelligence (AI) for Healthcare. The first workshop was held on 7 December 2023, which was also supported by KIAC.

The current workshop was primarily to discuss the objectives, implementation challenges, capabilities of the consortium partners, and arrive at a suitable design for the implementation of the proof-of-concept, which is an oral cancer screening tool. The classifications for the remote specialist as well as the histopathologist, based on the guidelines of the World Health Organisation, were discussed. The data sharing policies for Phase 1 were discussed.

Two sharpened objectives were arrived at. The first one was to assess whether the oral cancer screening tool could match the remote specialist in identifying high-risk participants. The second objective was to gather data to assess whether AI-enabled cytology could assist the histopathologist. The study designs for enabling the above assessments and the partner sites where the trials would be conducted were discussed.

It is now known that the IISc-led consortium is one of the four selected for support during the proof-of-concept Phase 1. The funding will be given by the Ministry of Education.

SUPPORT

- Scholarships for IISc students
- PhD top-up scholarship
- Scholarships for MTech and PhD students from the empowered category
- Internships
- Predoctoral fellowships
- Postdoctoral fellowships
- International visiting chair professorships
- Attending leading international AI conferences

Kotak scholarship

Scholarships for IISc students

Kotak scholarship

The Kotak Scholarship is awarded to the woman student with the highest JEE Advanced Rank joining the undergraduate BTech (Mathematics and Computing) programme at IISc. This scholarship covers the tuition fees and other fees for the entire programme. Sasmita Harini S received the award for the academic year 2022–23, and Shivey Ravi Guttal received the award for the academic year 2023–24. The scholarships for Sasmita and Shivey were continued.

PhD top-up scholarship

The KIAC PhD top-up scholarship is a 100% top-up fellowship from KIAC. This award is for registered PhD students of IISc who fulfill specified criteria.

The scholarship for Shubhankar Gupta, a PhD student from the Department of Aerospace Engineering, was continued.

Scholarships for MTech and PhD students from the empowered category

Fifty six MTech students and 12 PhD students from the empowered category were given scholarships.

Internships

The one-year KIAC internships are for students pursuing any relevant branch of Engineering. The call was released on 25 September 2023, and four interns are on board.

TUSHAR OJHA

SAI HARSHA MUPPARAJU

NAVANEETH SIVAKUMAR

ADITYA GANDHAMAL

Predoctoral fellowships

The one-year predoctoral fellowships are for students who have recently completed their undergraduate/postgraduate degree in any relevant branch of Engineering and would like to pursue research in artificial intelligence–machine learning. The call was released on 25 September 2023, and seven predoctoral fellows are on board.

AYMAN UN NISA

RANKIT KACHROO

SAKSHAM BHUTANI

VENKATESH T

SUNNY BHATI

ASHISH RAMAYEE ASHOKAN

JINAL VYAS

Postdoctoral fellowships

The postdoctoral fellowships are offered to candidates who have recently completed their doctorates and wish to pursue cutting-edge research in artificial intelligence. He/she should have a good research record evidenced by publications in top-tier premier conferences (such as A* ranked conferences) in artificial intelligence/machine learning.

The call was released on 5 October 2023, and some applications have been received. The selection of candidates will be done, if found suitable.

International visiting chair professorships

The international visiting chair professorships are offered to distinguished researchers every year to enable them to visit IISc for a minimum period of three weeks each, to engage in research interactions with IISc faculty members and graduate students. The candidate is expected to be working in core AI-ML related areas and publishing impactful works in top AI-ML venues.

The call was released on 1 December 2023, and applications have been received. The selection of candidates will be done, if found suitable.

Attending leading international AI conferences

The objective of this initiative is to encourage and support researchers (faculty members and students from IISc) to attend premier conferences related to artificial intelligence and to publish their work in leading venues.

The support can be used for registration, travel, hotel stay, and per diem. The presented papers are displayed on the KIAC website along with the photo of the beneficiary. KIAC supported one faculty member in this quarter.

Aditya Gopalan, Associate Professor, Department of Electrical Communication Engineering, Indian Institute of Science, Bengaluru

Title of tutorial: Do you Prefer Learning with Preferences: Foundations of Human Aligned Prediction Models with Relative Feedback

Thirty-seventh Annual Conference on Neural Information Processing Systems (NeurIPS 2023)

COLLABORATIONS

KIAC has been actively involved in establishing collaborations with academia/industry with the aim of working together on projects of mutual interest, utilising the expertise of both the parties.

KIAC–AICTE Discussion on Faculty Development Programmes

30 January 2024, IISc
Participants: 4

A discussion was organised to find ways in which KIAC and the All India Council for Technical Education (AICTE) can collaborate on conducting high-quality faculty development programmes at scale. The target was engineering faculty in non-computing disciplines. The aim was to enable faculty members to develop innovative teaching methodologies, establish collaborative research projects, and contribute significantly to the advancement of their respective fields.

The detailed discussion between delegates from KIAC and AICTE dealt with an overview of IISc's faculty training initiatives and available resources, at both the Bengaluru campus and the Challakere campus, KIAC's objectives and its expertise in training faculty to leverage artificial intelligence for pedagogy and assessment, and AICTE's schemes for faculty training.

IISc will be coordinating with AICTE on the AICTE-QIP-PG Certificate Program in 11 emerging areas, namely, artificial intelligence, machine learning, blockchain, semiconductor, Internet of Things, robotics, quantum computing, data science, cyber security, 3D printing and design, and virtual reality. A detailed proposal is to be finalised soon.

KMBL Technical Meeting

20 February 2024, IISc
Participants: 16

The goal of this meeting between representatives from IISc and KMBL, Bengaluru was to go beyond the ambit of corporate social responsibility (CSR) and explore the myriad ways in which IISc and KMBL can collaborate on areas of common interest in the arena of applications of artificial intelligence in the finance/banking sector. The objective was also to engage IISc students as interns with KMBL as part of their BTech/MTech/PhD internship/industry projects.

OUTREACH

Social Media:

The talks and events organised by the Kotak IISc AI-ML Centre are open to the public, and they can attend upon prior permission. The information is posted on KIAC's social media handles and the webpage. A summary of these events and also of the workshops organised/funded by the Centre are available on the KIAC webpage. The recordings of lectures are uploaded on the KIAC YouTube channel for the benefit of those interested but unable to attend the events in person. Recently, interviews were conducted with two women faculty members of IISc, Soma Biswas and Vaanathi Sundaresan, who do cutting-edge research in artificial intelligence. These conversations were in the context of the International Women's Day (8 March 2024) and uploaded on the YouTube channel with the aim of inspiring young women to pursue a career in STEM.