Indian Institute of Technology Jodhpur
Senate

Minutes of
22nd Meeting

31 July 2020 (Friday)
03:00 pm onwards
Board Room, IIT Jodhpur

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Indian Institute of Technology Jodhpur

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Minutes of 22nd Meeting

31 July 2020 (Friday) at 03:00 pm
Board Room, IIT Jodhpur

The following members were present:		
1	Director, IIT Jodhpur	Chairman
2	H. P. Khincha, Chairman, Karnataka State Innovation Council, Bangalore	Member
3	Sanjeev Misra, Director, AIIMS, Jodhpur	Member
4	Purnima Singh, Deptt. of Humanities & Social Sciences, IIT Delhi	Member
5	Souvik Bhattacharyya, Vice Chancellor, BITS Pilani	Member
6	Jitendra Balakrishnan, CTO-Products, Sterlite Technologies	Member
7	S.R.Vadera, Professor and Head (PH)	Member
8	Surajit Ghosh, Dean (R & D), Acting Head(BB)	Member
9	Mayank Vatsa, Deptt. of CS&E	Member
10	Richa Singh, Professor & DRC Chairman (CSE)	Member
11	Pradip K. Tewari, Visiting Professor (Chemical Engineering)	Member
12	B.P. Kashyap, Professor and Head, MT	Member
13	Anil Tiwari, Head, EE	Member
14	Ankita Sharma, Head, HSS	Member
15	Gaurav Bhatnagar, Head, Mathematics	Member
16	Gaurav Harit, Head, CSE	Member
17	Ritu Gupta, Head, Chemistry	Member
18	Prodyut Ranjan Chakraborty, Head, ME	Member
19	Puneet Sharma, DRC, Chairman, Mathematics	Member
20	Hari Narayanan, DRC, Chairman, HSS	Member
21	Rakesh Kumar Sharma, Associate Dean (R&D) & DRC, Chairman, CY	Member
22	Sushmita Jha, DRC, Chairperson, BB, Coordinator, MMT Programmes	Member
23	Ashutosh Kumar Alok, DRC, Chairman, Physics	Member
24	Anand K. Plappally, DRC, Chairman, ME and Head (CETST)	Member
25	Shree Prakash Tiwari, DRC, Chairman, EE	Member
26	Appala Naidu Gandi, DRC, Chairman, MT	Member
27	Kaushal A. Desai, Associate Dean (International Relations & Outreach)	Invitee
28	Samanwita Pal, Associate Dean (Students)	Invitee
29	Somnath Ghosh, Associate Dean (Academics-PG Program)	Invitee
30	Suril V. Shah, Associate Dean (Academics-UG Programs)	Invitee
31	Deepak Kumar M. Fulwani, Associate Dean (Planning and Resources Generation) & Head, Centre for Technology Foresight & Policy	Invitee
32	Debanjan Guha Roy, Civil and Infrastructure Engineering Department	Special Invitee
33	Ranju Mohan, Civil and Infrastructure Engineering Department	Special Invitee
34	Shivan Nirne, General Secretary, Students Gymkhana	Member
35	P.G. Basak, Advisor (Administration) & Officiating Registrar	Secretary

The following members could not attend the Meeting		
1	M.P. Gupta, Professor and Head, SME	Member
2	C. Venkatesan, Professor-in-charge (Faculty)	Member
3	B. Ravindra, Associate Dean (Infrastructure)	Invitee
4	Deepak Arora, DRC, Chairman, Chemical Engineering	Member
5	UmairAnis, Joint Secretary, Academics & Career Society	Member
6	Gautam Jain, Secretary, Elected Representatives Society	Member

The following are the outcomes of the Senate Meeting:

Part A: Open Door Meeting

S.No.	*Items*

22.1	**Welcome by the Chairman** The Chairman welcomed all the members to the 22nd meeting of the Senate. The Chairman appraised the Senate regarding the online end-semester examination which was conducted for the first time at IIT Jodhpur and a brief report of the online examination was presented. The Chairman thanked the entire team involved in the online examination process including all the faculty and staff members for their cooperation and support to make it successful. The Chairman informed that the new Education Policy has been announced by Govt. of India and there are huge expectations from the new policy. The Chairman Senate cordially invited all the Senators to attend the 13th Foundation Day function on 2 August 2020. The celebration of the 13th Foundation Day of the Institute has been planned on the virtual platform in adherence to social distancing norms during the pandemic, and will be graced by following eminent personalities: a. Shri Amit Khare, Secretary, Department of Higher Education, MHRD, Government of India will be the Guest of Honor; b. Shri N. K. Singh, Chairman, 15th Finance Commission, Government of India will be the Chief Guest of the event. c. Dr. P. K. Mishra, Principal Secretary to the Hon'ble Prime Minister of India will be the Foundation Day Speaker d. Dr. R. Chidambaram, Chairman, Board of Governors, IIT Jodhpur will preside over the event. The Chairman also appraised that the Research Bulletin 2020 "TechScape: IIT Jodhpur" will be released on the occasion of 13th Foundation Day. The Chairman informed Senate about the discussion in Standing Committee of IIT Council (SCIC) of IIT Council regarding next semester's academic plan as under: 1. IITs can independently decide to start the Semester-I for AY 2010-21 from August-September 2020 except first year B.Tech; 2. All the students will be attending the classes in online mode. In case of internet connectivity issue, any central university or institutes under MHRD in the vicinity of the students, the director of that institute can be requested to allow the students to avail the services of internet and online facilities. In case this does not work out, the student in exceptional cases may return to the campus by following the COVID-19 safety standards;

	3. The new PhD students to be enrolled in AY 2010-21 are eligible for the fellowship from the date of their registration and the amount will be released after verification of their educational and other documents; 4. The students, who may not complete their degree requirements during admission due to COVID-19, will be provisionally admitted till the final degree certificate is produced. In case the student unable to produce the required documents, the registration will be cancelled; 5. It was also emphasized on the regular/pool testing of COVID-19 in the isolation facility at the campus. There should be isolation and home care facility for the students. The Chairman extended sincere thanks to the Director, AIIMS Jodhpur for arranging the testing facility at IIT Jodhpur campus in each week and after 15 days of the students' arrival in the campus. As per current plan, IIT Jodhpur may accommodate final year students on campus. One third of the total students' strength may be accommodated in the campus if the situation improves. The same will be implemented with all precautionary measures. **Online teaching and evaluation:** The Chairman also proposed that the actual classes in the next academic year may be of 20-30 minutes in duration so that the session can be interesting and engaging. Flipped classrooms will also be introduced. During the last part of the previous semester, the classroom-oriented teaching methodology was adopted in the online mode of delivery. Hence, there is a further scope of improvement with the choice of appropriate pedagogy. The Chairman also mentioned that the online mode of teaching may not be a long time alternative beyond **COVID-19** period. This is because the teaching at the institute is not only the classroom-oriented teaching, it is the combination laboratory exercises, co-curricular and extracurricular events, interactions with the faculty members with expertise in various fields and environment of research at IITJ. At this point of time we need to evolve some changes in the pedagogy. There will be a workshop to develop modalities for online teaching and evaluation. The Chairman has proposed that the Senate members may be invited to the workshop which will essentially add value to the workshop. During the briefing about the PAN IIT Survey on online teaching, the Chairman informed that 25% of the students have internet connectivity issues. The detailed plan for the modalities of online teaching will be presented in the next Senate. The evaluation process of the online examinations has to be documented properly after deliberations as the pattern may differ significantly from the existing evaluation pattern. The evaluation process including the granularity and weightage of different components of assessments may be shared with the Senate members or to be presented in the Senate.
22.1.1	**Confirmation of Minutes of the 21st Meeting of the Senate held on 7th July 2020**
	The Senate confirmed the Minutes of the 21st Meeting of the Senate, as circulated.

22.1.2 Report on Action Taken on decisions of the 21 st Meeting of the Senate held on 7th July 2020

The report is presented below on action taken by the Institute on the decisions of the *Senate* made at its 21st Meeting of the Senate held on 7 July 2020:

Item	Discussion Item	Action Taken
21.2.1	Proposal for 2nd year onward curriculum for existing B.Tech. Programmes	In Progress
21.2.2	Proposal for curriculum for new B.Tech. Programme in Chemical Engineering	In Progress
21.2.3	Proposed curriculum for new M.Sc. in Digital Humanities Programme to be started from AY 2020-21	In Progress
21.2.4	Proposed Process for Admission of PG Students to IIT Jodhpur for the Academic Year 2020-21	In Progress (Approved part)
21.2.5	Proposal for deferring the minimum performance requirements for continuation in the programme and continuation of fellowship/assistantship for the ongoing semester for M.Tech.,M.Tech.-Ph.D. and Ph.D. students.	In Progress (The Senate noted that after finalisation of grading, the detail of the students couldn't fulfilling the criteria will be taken into consideration and decision will be taken accordingly.
21.2.6	Conduct of comprehensive examinations for Ph.D. and M.Tech.-Ph.D. students in online mode for the ongoing academic year.	In Progress
21.2.7	Change of degree format from two sided to one sided as per the decision of 10th Special BoG held on 16.12.2019	Deferred to 22nd Meeting
21.2.8	Proposals of new/revised elective/core courses proposed to be offered by the Departments of Electrical Engineering, Humanities and Social Sciences, Physics	In Progress

22.2 Discussion Items

22.2.1 Proposed plan for Academic Year 2020-21

The proposal has been discussed in the 7th ECS in its meeting held on 23 July 2020 and ECS recommended the proposal to the Senate. The Senate discussed the following proposal in breadth:

- Next academic year will begin on 1st September 2020. Orientation will be done in the last week of August.
- Instruction for the entire academic year would be in online mode.
- The academic year will be divided into three trimesters, each trimester of three months, as shown in table given below

	Duration	Remark
Trimester I	1st September- 30 November 2020	Courses with theory only or theory portion of theory with lab courses
Trimester II	1st December 2020- 28 February 2021	Courses with theory and practical
Trimester III	1 March - 30 May 2021	Courses with theory and practical
Reserved Month for laboratory	1- 30 June 2021	Conduction of Lab courses if it is not possible to conduct lab courses in Trimesters II and III.

- Each trimester would have 10 teaching weeks with 50 teaching days.
- A three credit theory course will have an engagement of 4 lectures per week. Actual contact sessions may be less than 4 hours.
- Departments will plan scheduling of courses such that the theory portion of a course or theory only courses are mainly covered in trimester I. Whereas courses with theory and practical components will be covered in trimesters II and III.
- A course will have 60% continuous evaluation component during the trimester and 40% major examination component which will be conducted in the 11th week.
- Students will have 10 days break post-examinations and before starting of the next trimester.
- Grading will be completed by the end of 12th week and online registration will be held in the second half of the 13th week.
- Total number of credits to be registered by students can be the total number of regular yearly credits divided by three. The same criterion will be used for overload as well, e.g, UG students eligible for overload can register for a maximum of 50/3~=17 credits per trimester.
- First year theory courses will run through Trimester II and III as students have mainly 4 theory courses per Semester.
- Non-graded PG courses will be scheduled in Trimester I and Trimester II
- Departments need to plan a schedule of bringing students for laboratory courses in batches during Trimester II and III.
- Fee will be taken trimester wise in three equal instalments.

The Senate after detailed deliberation approved the proposal.

22.2.2 **Proposal of starting of School of Artificial Intelligence and Data Science (AIDE)**

The 5th ECS strongly recommended for the consideration of the Board of Governors and subsequently to the Senate for approval. The Board of Governors considered the proposal in its meeting held on 22nd BOG held on 8 June 2020 and sent it to the Senate for concurrence. The proposal was presented by Associate Dean (Academics-PG). During the discussion the Senate noted the following:

	• The financial implications in 5-10 years has to be worked out; • The salary of the school is to be borne by the institute and remaining expenditure is to be borne by the School from their funds,received from alumni, industry and other sources; The Senate welcomed this unique proposal by the IIT Jodhpur and thanked the director for the visionary leadership to setup this school. The detailed proposal is placed at ***Annexure-1.*** The Senate discussed and approved the proposal.
22.2.3	**Proposed curriculum for B.Tech. in Civil and Infrastructure Engineering to be started from AY 2020-21**
	The concept note along with the detailed curriculum was presented. The same was discussed at length. The unique features were highlighted with a clear vision of the programme. It was emphasized that the new aspects of curriculum will address all the key demands and challenges of the next generation Civil and Infrastructure Engineering and processes to place the programme uniquely. The suggestions given by the members are to be incorporated. The proposal was deliberated in detail and approved by Senate. The Senate has empowered Chairman Senate to incorporate the suggestions in consultation with the department.
22.2.4	**Curriculum for IIT Jodhpur-AIIMS Jodhpur Joint Programs (Masters, Masters-PhD Dual Degree) in Medical Technologies**
	The Coordinator, Medical Technologies programme presented the concept note with the detailed curriculum. The same was discussed at length. The programme was presented as one of its kind. It was emphasized that the curriculum has been designed to encourage translational research/product development in healthcare technologies and produce entrepreneurs in the medical technologies. It was clarified that the degree will be a joint degree of IITJ and AIIMS Jodhpur and qualification for the admissions was approved earlier. The procedure for effective coordination and implementation has to be defined. Fellowship will be available for the product development phase also. PhD regulations will enable inclusion of translational work as part of the thesis. During the discussion the Senate noted the following: 1. International experts, entrepreneurs and alumni of bio-design programs (from across the world) will be involved in mandatory seminar course of the programme (as suggested by external experts reviewing the curriculum). 2. Hands-on experience can be a part of the training for entrepreneurial conversion The Senate discussed the proposal in details and approved the proposal.
22.2.5	**Change of degree format from two sided to one sided as per the decision of 10th Special BoG held on 16.12.2019.**
	The 21stSenate suggested some modifications on the single sided degree format. Accordingly, the modified degree format has been presented to the Senate. The Senate discussed in details and suggested the following modifications: 1. the hologram to be placed little above

	2. the barcode should be two dimensional; 3. there should be water mark on the paper 4. QR code may be placed in place of barcode if possible 5. Hindi translation may be verified by the language experts. The Senate deferred this proposal to the next meeting for incorporating the suggested changes.
22.2.6	**Proposed curriculum for newM.Tech., M.Tech.-Ph.D. in Materials Engineering programmes to be started from AY 2020-21**
	The Chairman DRC of Metallurgical & Materials Engineering presented the concept note and detailed curriculum as an extra agenda item with the permission of the Chairman. The Senate deliberated the proposal in details. The members suggested sharing the concept note and curriculum with additional experts from Tata Steel, IIT Madras and other foreign institutions for inputs. Accordingly, the comments from the experts may be incorporated in the curriculum. The Senates approved the curriculum and empowered the Chairman Senate to incorporate any further modifications in the curriculum based on any comments received from the experts.

The meeting ended with thanks to all the Senate members.

Secretary, Senate

Approved

10/8

Chairman, Senate IIT Jodhpur

Annexure-1

Proposal

School on
Artificial Intelligence and Data SciencE
(AIDE)

By
Indian Institute of Technology Jodhpur

School of
Artificial Intelligence and Data sciencE (AIDE School)

Objectives

Indian Institute of Technology Jodhpur proposes to setup School of **AIDE** with the following objectives:

(i) To be the leader in Artificial Intelligence and Data Science research in all three dimensions: theoretical research, industry facing application research, and locally relevant research for socio-economic growth

(ii) To be the leader in Artificial Intelligence and Data Science education at all three levels: undergraduate, post graduate, and doctoral

(iii) To be the leader in technology development and entrepreneurship in the broad field of Artificial Intelligence and Data Science.

Scope of the School of AIDE

School of AIDE will focus on

I. Research
II. Education
III. Innovation and Entrepreneurship

Research agenda of the school will have three focal points

***A.* Fundamental Research**

The school will promote research on foundational aspects of data science, artificial intelligence and related fields. The school will be expected to play a significant role in contributing fundamental mathematical theories for data sciences, computational models for basic sciences, quantum computing for AI, framework for artificial general intelligence, new paradigms of machine learning and at a more basic level, theories on science of intelligence.

***B.* Industry Facing Research**

The school will carry out industry facing research in different domains such as computer vision, natural language understanding, human machine interface, cyber-physical systems, internet of things, bioinformatics, security, social computing and robotics, as well as cross-disciplinary application areas such as medicine/healthcare, agriculture, environment, energy, infrastructure, materials intelligence, industry 4.0, financial technology, computational economics and others.

***C.* Locally Relevant Research**

Rajasthan, as a state, has several large scale applications of Data Science and Artificial Intelligence for uplifting the local communities. For example, how AIDE can help in agriculture in the arid region? How AIDE can assist in ground water research management? How AIDE can help in preserving and flourishing local art and culture? The AIDE School will undertake interdisciplinary research projects that will be locally connected and socially relevant.

The school will concentrate on the following educational activities:

A. Undergraduate Programmes

The school will actively participate in: (i) BTech program in AI and DS. It will support relevant under-graduate courses, minor and specialization programmes for different B.Tech and MSc. programmes of IIT J. It can also formulate and run offline/face-to-face programmes for under graduate students.

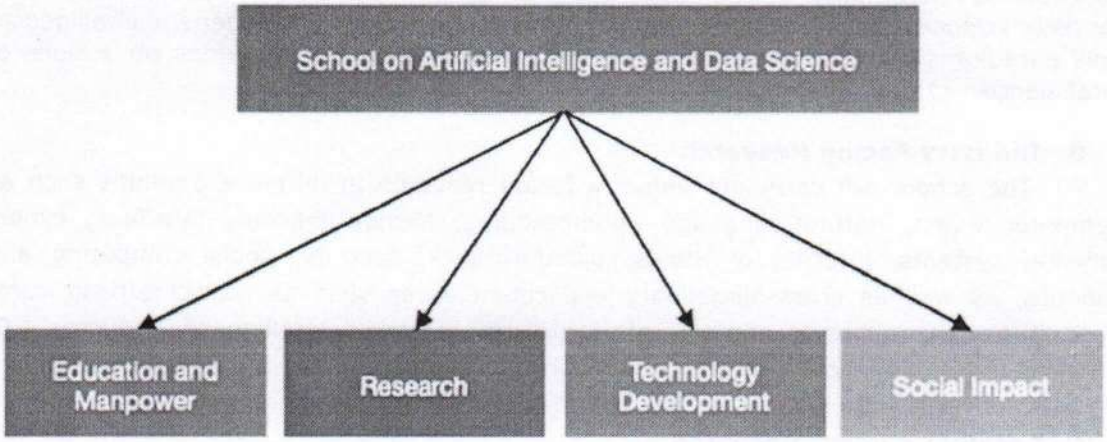
B. Postgraduate Programmes

The school will actively support MTech, MTech-PhD and PhD programs in AI and Data and Computational Science and relevant courses and projects of other post-graduate programmes of IIT J. The school can also have its own specialized post-graduate programmes.

C. Continuing Education Programmes

The School will also focus on re-skilling and up-skilling programs at different levels such as Certificate programs, Diploma, and Executive MTech Programs (for working professionals) for working professionals in on-line/face-to-face mode.

The school will actively promote innovation and entrepreneurship.
School will support translational research at all levels – UG, PG, Ph.D. Once a technology is developed by the faculty and research students, with the help of Innovation Council (for Undergraduates), IITJ Technology Incubation and Start-up Centre, and the proposed IITJ Technology Park, the School will facilitate the entrepreneurial pursuits to ensure the reachability of the research outcomes to general population locally in Rajasthan, within India as well as internationally. It will actively participate and coordinate building up of the innovation ecosystem around AI & DS at IIT Jodhpur.



Expected Outcomes: The AIDE School will strive to attain National and International recognition within five years with the following expectations:

- *Manpower*: In the steady state, the proposed AIDE School will support yearly graduate 100 BTech students along with 100 joint MTech-PhD students. The school will also have executive programs where about 1500 students will obtain certificates, diploma, or executive degrees every year.
- *Research*: Once fully functional, the school will yearly publish 40-50 papers in top quality venues (journals and conferences) in the broad area of Artificial Intelligence, and Machine Learning, Data Science, and Data Engineering.

- *Technology*: The school will partner with the Technology Innovation and Start up Center of IIT Jodhpur to translate research done by faculty members to technologies.
- *Social Impact*: The school will collaborate with local organizations in the state and country such as AIIMS, other academic institutes, line ministry and industry to address their specific challenges.

AIDE School Unique Propositions: Under the board umbrella of *"AI for everything"*, AIDE School's unique propositions are:

- Scientific innovations: Enabling scientific innovations pertaining to local and global research problems.
- Industry facing: Close collaboration with industry will encourage translational research touching the lives of billions.
- Educational hub: Unique educational programs, including reskilling and continuing educational activities along with traditional undergraduate and graduate programs.
- Diverse background: Faculty in AIDE School will be in the cross-sectional areas of AI and Data Science such that they can contribute to the transdisciplinary research agenda.
- Inclusive collaborative structure: Fostering collaborative opportunities towards education, research, and innovation in AI and Data Science across all the departments of IIT Jodhpur and partner organizations.

Organisation of the School

IIT Jodhpur is heavily investing in faculty hiring in the domain of Artificial Intelligence, Machine Learning, Data Science, and allied areas. The institute has over 35 young and energetic faculty members in different departments and there are four Professors focusing in these domains. These faculty members have published numerous papers in top journals and conferences, and have over 25,000 citations (cumulative). In the proposed AIDE School, it is envisioned to have core faculty members and affiliated faculty (from different departments of IITJ). The core faculty members, in general, will be leading research initiatives in AI&DS in collaboration with affiliated faculty, which would cut across multiple disciplines. Further, it is planned to regularly invite faculty members of international repute for short/long term visits to foster collaborative research ecosystem at IIT Jodhpur.

The presence of such a school will provide significant opportunities to faculty and students to pursue interdisciplinary research involving AI and DS. While academic departments like Computer Science and Engineering and Electrical Engineering can accommodate faculty in core CSE/EE areas, the AIDE School can promote hiring faculty with interdisciplinary background as well working in non-traditional AI/DS areas.

AIDE-Drishti Lounge: Interconnect with iHub Drishti Foundation

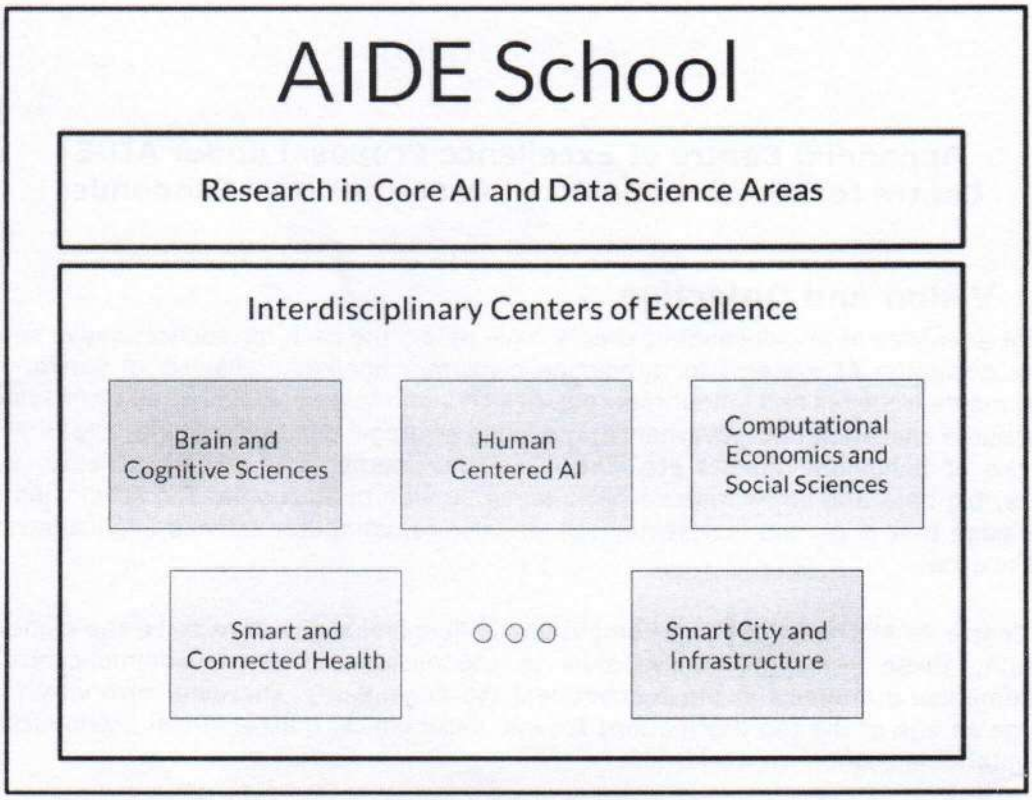
The School will have a close collaboration with iHub Drishti, the Technology and Innovation Hub on Computer Vision and ARVR at IIT Jodhpur. "AIDE-Drishti Lounge" will be designed to foster close collaboration among the researchers from the two entities and to enable joint projects and industry linkages. Since iHub Drishti is a Section 8 company, this special mechanism will help the two entities to grow together towards a sustainable future. AIDE-

Drishti Lounge will also enable joint educational (skilling and reskilling) programs along with organizing workshops and symposiums. Any sponsored and consultancy project to IITJ requiring involvement of iHub Drishti Foundation will be managed by the School.

Center of Excellence in Emerging Areas of AIDE:

The AIDE School will have multiple Centers of Excellence (CoE) in different emerging areas. While majority of the CoEs will be externally funded, some of the CoEs may initially be established by IIT Jodhpur. These centres will have autonomy in terms of its academics, research and outreach activities. Centres can have their own growth plan with basic support from the institute. These CoE's will have dynamic birth and death process based on their performance and growth. An initial list of tentative CoEs and their focus areas are as follows:

1. **Brain and Cognitive Sciences:** The CoE on BCS will focus on interdisciplinary research uncovering the functioning of different levels of brain and mind. Different areas such as language, vision, emotion, interaction, perception, sensing, and memory will be explored.
2. **Human Centered AI:** The CoE on HCAI will drive research in AI technologies focusing on human-in-the-loop, impacting human, and augmenting human capabilities. Research threads such as Secure AI, Ambient AI, and Environmental Intelligence will be targeted.
3. **Mathematical and Computational Economics:** Among the most sought after research areas of AI and Data Science is Economics. The CoE will focus on interdisciplinary research in analytical and applied areas of economics, mathematics, data science and machine learning.
4. **Smart and Connected Health:** The CoE on SCH will focus on connecting AI and Data Science with health technologies towards building next generation medical healthcare systems. The transdisciplinary Center will also closely connect with medical institutions in India and abroad towards fostering collaborative research and deployments of proposed technologies.
5. **Smart City and Infrastructure:** The CoE on SCI will focus on the interplay between urban development, infrastructure planning, AI, and Data Science. Focused research areas will include smart infrastructure planning, data driven intelligent construction methods and materials, intelligent infrastructure monitoring and maintenance, and environmental sustainability.


AIDE School
Research in Core AI and Data Science Areas
Interdisciplinary Centers of Excellence
Brain and Cognitive Sciences
Human Centered AI
Computational Economics and Social Sciences
Smart and Connected Health
○ ○ ○
Smart City and Infrastructure

Appendix: Centre of Excellence Proposal under AIDE
Centre for Mathematical and Computational Economics

1 Vision and Objective

Recent advances in microeconomic theory have paved the path for applications in several fields: designing AI systems for predicting consumer behavior, analysis of networks on social media websites and labour markets, design and implementation of efficient systems of resource allocation and governance, modeling strategic decision making, experimental analysis of behavioral agents etc. The latest developments in decision theory, game theory, big data and computational techniques provide opportunities for developing new knowledge that is at the intersection of economics, computer science applications and data science.

The Centre for Mathematical and Computational Economics envisions to be the pioneer in exploring these intersections and aims to become the leading academic centre for mathematical economics in the subcontinent (to begin with). The long term vision is to emerge as one of the top destinations for microeconomics, mathematical economics and computational economics worldwide.

The above will be achieved by incubating promising research ideas and ensuring their apt execution through a highly qualified team of faculty members, industry collaborators, Ph.D. scholars and research assistants. The centre will initiate flagship undergraduate and postgraduate courses that will enable young minds to develop advanced skills and provide exposure to open research questions. This will prepare the students for careers in both industry and academia, since the thrust areas of the centre are in demand across different sectors.

The centre will actively organise regular **seminar series, conferences and workshops**. Scholars from top-tier international institutes will be frequently invited for research visits and seminars in order to foster a healthy and ambitious research environment.

As a part of the centre's outreach program, a forum for early career re- searchers (recent graduates and young assistant professors) will be developed that can provide important but often neglected academic resource: a support system of mentors, peers and collaborators with open communication on issues that have become a necessity for a successful career in research such as viability of research topics and new ideas, new techniques and methodologies, job market pressures faced by early career researchers, publications, etc.

Research Areas

The centre will focus on research areas that have significant applications in various disciplines such as computer science, development of algorithms as well as social sciences. The thrust will be on mathematical and quantitative approaches to finding solutions to economic problems. Specifically, the centre will focus on the following specialized fields:

1. Game Theory
2. Decision Theory
3. Convex optimization in economics
4. Machine learning, computational economics and algorithms
5. Network economics
6. Mechanism Design and implementation

7. Evolutionary dynamics
8. Industrial economics
9. Matching algorithms
10. Experimental Economics

2 Courses and Teaching

The centre will launch a **minor programme** in **"Mathematical and Computational Economics"** aimed at the B.Tech students. This programme will equip thestudents with advanced technical knowledge in the latest areas of research in microeconomic theory game theory, mechanism design, decision theory with a focus on intersections with big data and applications in AI.

The centre also aims to develop and launch an ambitious Ph.D. programme that will attract the best students from Engineering, Mathematics as well as Economics background.

3 Academia-Industry Collaboration

The centre aims to foster a strong linkage with industry, especially various research labs such as IBM research, Yahoo research, Microsoft research, TCS research etc. The focus areas will be network games, e-auctions, block-chain analysis, e-retailing and consumer behavior, e-governance mechanisms and algorithms. The centre will actively pursue funding opportunities from the industry.