

Program Schedule of RCAAI-2022

Timings mentioned are Indian Standard Time (IST) which is GMT + 5:30 hours

Date	Time	Session	Details
November 24, 2022 (Thursday) Day 1	09:30 to 10:00	Inauguration	Director, MIT Manipal; Director, NITK; HOD Mechatronics, MIT; HOD Mechanical, NITK; Inauguration by Chief Guest (Dr. G. Satheesh Reddy)
	10:00 to 11:00	Keynote Talk by Dr. G. Satheesh Reddy, Ministry of Defence, Government of India	Topic: To be Announced
	11:45 to 13:00	Parallel Sessions (4)	Session-1, Session-2, Session-3, Session-4
	13:00 to 14:00	Lunch Break	
	14:00 to 16:00	Parallel Sessions (4)	Session-5, Session-6, Session-7, Session-8
	16:30 to 17:30	Plenary Talk 1: Prof. Clement Gosselin, Laval University, Quebec City, Canada	Topic: On the design of low-impedance hybrid parallel robots for intuitive physical human-robot interaction
November 25, 2022 (Friday) Day 2	09:00 to 10:45	Parallel Sessions (4)	Session-9, Session-10, Session-11, Session-12
	11:00 to 12:00	Plenary Talk 2: Prof. Fumitoshi Matsuno, Kyoto University, Kyoto, Japan	Topic: Bio-inspired robotics and its application to rescue and recovery
	12:00 to 12:45	Lunch Break	
	12:45 to 14:15	Parallel Sessions (2)	Session-13, Session-14,
	14:30 to 15:30	Plenary Talk 3: Dr. Dhruv Chandel, MathWorks, Inc, New Delhi, India	Topic: To be Announced
	15:45 to 17:30	Parallel Sessions (2)	Session-15, Session-16
November 26, 2022 (Saturday) Day 3	10:00 to 11:00	Plenary Talk 4: Prof. Subir Kumar Saha, Indian Institute of Technology, Delhi, India	Topic: To be Announced
	11:00 to 12:00	Plenary Talk 5: Prof. P. S. Gandhi, Indian Institute of Technology, Bombay, India	Topic: To be Announced
	15:00 to 15:30	Closing Ceremony	

NOTE: Joining Link (MS Team link) of Keynote talk, Plenary talk and parallel sessions will be shared through mail.

**International Conference on Robotics, Control, Automation and Artificial Intelligence
(RCAAI 2022)**

24-26 November 2022 | Virtual Mode

Organized by

*Department of Mechatronics, Manipal Institute of Technology, Manipal Academy of Higher Education (MAHE), Manipal, India
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Parallel Sessions of Technical Tracks:

Day-1

Date and Timings	Forenoon				Afternoon			
	Session-1	Session-2	Session-3	Session-4	Session-5	Session-6	Session-7	Session-8
November 24, 2022 (Thursday) Day 1	Robotics & Intelligent Systems-I 11:45 to 13:00	Advanced Control Techniques-I 11:45 to 13:00	Industrial Automation, IoT and Cyber-Security-I 11:45 to 13:00	Circuits, Sensors and Biomedical Systems-I 11:45 to 13:00	Robotics & Intelligent Systems-II 14:00 to 16:00	Artificial Intelligence & its Applications-I 14:00 to 16:00	Machine Vision and Image Processing-I 14:00 to 16:00	Advanced Control Techniques-II 14:00 to 16:00
Paper ID	17, 20, 47, 71	43, 53, 96, 304	7, 33, 210, 255	35, 38, 65, 105	74, 92, 104,113, 136, 175, 249	15, 37, 48, 56, 57, 87	25, 27, 36, 54, 293, 134, 169	64,93,127,244, 269, 290, 291

Day-2

Date and Timings	Forenoon				Afternoon			
	Session-9	Session-10	Session-11	Session-12	Session-13	Session-14	Session-15	Session-16
November 25, 2022 (Friday) Day 2	Machine Vision and Image Processing-II 09:00 to 10:45	Circuits, Sensors and Biomedical Systems-II 09:00 to 10:45	Robotics & Intelligent Systems-III 09:00 to 10:45	Artificial Intelligence & its Applications-II 09:00 to 10:45	Industrial Automation, IoT and Cyber-Security-II 12:45 to 14:15	Circuits, Sensors and Biomedical Systems-III 12:45 to 14:15	Artificial Intelligence & its Applications-III 15:45 to 17:30	Optimization Technique for Industrial Applications 15:45 to 17:30
Paper ID	185, 227, 253, 254, 264 , 297	28, 30, 282, 289, 300, 302	90, 216, 298, 305, 306, 180	99, 128, 130, 138, 155, 156	79, 81, 163, 294	88, 97, 121, 295	184, 194, 196, 214, 247, 299	85, 157, 262

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Day 1: 24/11/2022, Parallel Session-1, Robotics & Intelligent Systems-I

Paper Id.	Title of the paper	Authors	Time (IST)
17	An Autonomous Home Assistant Robot for Elderly Care	Vidhun V Warriar and Ganesha Udupa	11:45 to 12:00
20	Importance of knee angle and trunk lean in the detection of an abnormal walking pattern using Machine learning	Pawan Pandit, Dhruv Thummar, Khyati Verma, Gangadharan K V, Bishwaranjan Das and Yogeesh Kamat	12:00 to 12:15
47	A Data-Driven Test Scenario Generation Framework for AD/ADAS -Enabled Vehicles	Niraja Narayan Bhatta and Binoy B Nair	12:15 to 12:30
71	3-D Mapping using Multi-Agent Systems	Bhaavin K Jogeshwar, Baisravan Homchaudhuri and Sivayazi Kappagantula	12:30 to 12:45

MS Team Link: [Joining Link \(MS Team link\)](#) of parallel session will be shared through mail.

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Day 1: 24/11/2022, Parallel Session-2, Advanced Control Techniques-I

Paper Id.	Title of the paper	Authors	Time (IST)
43	Nonlinear Integral Sliding Mode Control for a Multivariable System, an Experimental Validation	Karthick S	11:45 to 12:00
53	State of the Art Sliding Mode Controller for Quadrotor Trajectory Tracking	Tinu Valsa Paul, Thirunavukkarasu Indiran, George Vadakkekara Itty, Suraj Suresh Kumar and Chirag Gupta	12:00 to 12:15
96	Trajectory Tracking with RBF Network Estimator and Dynamic Adaptive SMC Controller for Robot Manipulator	Dileep K, Mija S J and N K Arun	12:15 to 12:30
304	Fixed-Time Information Detection based Secondary Control Strategy for Low Voltage Autonomous Microgrid	Sonam Shrivastava, Bidyadhar Subudhi and Jambeswar Sahu	12:30 to 12:45

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Day 1: 24/11/2022, Parallel Session-3, Industrial Automation, IoT and Cyber-Security-I

Paper Id.	Title of the paper	Authors	Time (IST)
7	AR and IoT Integrated Machine Environment (AIIME)	Akash Shahade and Dr. Atul Andhare	11:45 to 12:00
33	IoT adoption for Botswana in the Sub Saharan Region of Africa	Sampath Kumar V, Leo John Baptist Andrews, Raymon Antony Raj, Sarathkumar D and Annamalai Alagappan	12:00 to 12:15
210	Machine learning-based industrial safety monitoring system for shop floor workers	Elangovan Muniyandy, Thowfik Ahmed and Sunil Arora	12:15 to 12:30
255	Designing of IoT Device Compatible Chaos-Based Phasor Measurement Unit Data Encryption Technique	Raj Kumar Soni, Manish Kumar Thukral and Neeraj Kanwar	12:30 to 12:45

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Day 1: 24/11/2022, Parallel Session-4, Circuits, Sensors and Biomedical Systems-I

Paper Id.	Title of the paper	Authors	Time (IST)
35	Single Phase Grid Connected 5-Level Switched Capacitor Inverter Using PLECS Tool	Khaja Izharuddin, Kowstubha Palle, A Bhanuchandar and Gumalapuram Gopal	11:45 to 12:00
38	Cell Balancing Techniques for Hybrid Energy Storage System in Load Support Applications	Chandrakanth K, Udaya Bhasker Manthati and Arunkumar C R	12:00 to 12:15
65	Optimized Glucose Control in Human Body using Automated Insulin Pump System	Shailu Sachan and Dr Pankaj Swarnkar	12:15 to 12:30
105	Improvement in Torque and Power Performance of an Elliptical Savonious Wind Turbine using Numerical and Experimental Analysis	Avinash Thakre and Pratik Durge	12:30 to 12:45

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Day 1: 24/11/2022, Parallel Session-5, Robotics & Intelligent Systems-II

Paper Id.	Title of the paper	Authors	Time (IST)
74	Design of Robotic Platform for ADAS Testing	Arun Goyal, Shital Chiddarwar and Aditya Bastapure	14:00 to 14:15
92	A Comparative Study of A*, RRT, and RRT* Algorithm for Path Planning in 2D Warehouse Configuration Space	Aditya Bastapure, Shital Chiddarwar and Arun Goyal	14:15 to 14:30
104	Improving Payload Capacity of an ABB SCARA Robot by Optimization of Blended Polynomial Trajectories	Kaustav Ghar, Bhaskar Guin, Nipu Modak and Tarun Kanti Naskar	14:30 to 14:45
113	ROS-based Evaluation of SLAM algorithms and Autonomous Navigation for a Mecanum Wheeled Robot	Pranav Vikirtan Dhayanithi and Mohanraj T	14:45 to 15:00
136	Design of a novel tree-type robot for pipeline repair	Santosh Kumar and Basireddy Sandeep Reddy	15:00 to 15:15
175	Simulated Evaluation of Navigation System for Multi-Quadrotor Coordination in Search and Rescue	Rayyan Rafikh and Jeane D'Souza	15:15 to 15:30
249	Energy based Approach for Robot Trajectory Selection in Task Space	Ankur Jaiswal, Abhishek Jha, Golak Bihari Mahanta, Neelanjan Bhattacharjee and Sanjay Kumar Sharma	15:30 to 15:45

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Day 1: 24/11/2022, Parallel Session-6, Artificial Intelligence & its Applications-I

Paper Id.	Title of the paper	Authors	Time (IST)
15	Job Scheduling on Parallel Machines with Precedence Constraints using Mathematical Formulation and Genetic Algorithm	Sachin Karadgi and P S Hiremath	14:00 to 14:15
37	Application of Quantum Based K-Nearest Neighbors Algorithm in Optical Fiber Classification	Ramesh H B and Kaustav Bhowmick	14:15 to 14:30
48	Application of Artificial Neural Network for successful prediction of lower limb dynamics and improvement in the mathematical representation of knee dynamics in human locomotion	Sithara Sunny, Sivanandan K S, Arun Parameswaran, Baiju T and Shyamasunder Bhat	14:30 to 14:45
56	SNAVI: A Smart Navigation Assistant for Visually Impaired	Adwitiya Mukhopadhyay and Madhu R Seervi	14:45 to 15:00
57	Pruning and Quantization for Deeper Artificial Intelligence (AI) Model Optimization	Suryabhan Singh, Saundharya Thejaswini Settu, Brijesh Kumar Karna and Pethuru Raj Chelliah	15:00 to 15:15
87	Sign Language Detection Using Action-Detection System	Rohit Sanjay, Raja Muthalagu and Pranav M Pawar	15:15 to 15:30

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Day 1: 24/11/2022, Parallel Session-7, Machine Vision and Image Processing-I

Paper Id.	Title of the paper	Authors	Time (IST)
25	Fuzzy Set Based Multimodal Medical Image Fusion with Teaching Learning Based Optimization	T Tirupal, R Supriya, P Uma Devi and B Sunitha	14:00 to 14:15
27	Multimodal Medical Image Fusion Using the Sugeno Fuzzy Inference System	T Tirupal, Shanavaj K, Venusri M, Susmitha D and Sireesha G	14:15 to 14:30
36	Malaria Parasite Detection and Outbreak Warning System using Deep Learning	Areefa, Sivarama Krishna Koneru, Kota Pragathi and Koyyada Rishitha	14:30 to 14:45
54	Implementation of Deep learning Models for Skin Cancer Classification	Devashish Joshi	14:45 to 15:00
293	COVID-19 Disease classification using Deep Learning Architectures	Devashish Joshi, Ruchi Patel, Ashutosh Joshi and Deepak Maretha	15:00 to 15:15
134	Real-time Lane Recognition in Dynamic Environment for Intelligent Ground Vehicles	Shambhavi Sinha, Piyush Modi and Ankit Jha	15:15 to 15:30
169	Pan-sharpening of Multispectral Images Through the Inverse Problem Model With Non-convex Sparse Regularization	Rajesh Gogineni, Y Ramakrishna, P Veeraswamy and Jannu Chaitanya	15:30 to 15:45

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Day 1: 24/11/2022, Parallel Session-8, Advanced Control Techniques-II

Paper Id.	Title of the paper	Authors	Time (IST)
64	Reference spectrum tracking for circadian entrainment	Veena Mathew, Pavithra R, Ciji Pearl Kurian and Srividya R	14:00 to 14:15
93	Design and Implementation of Fuzzy Logic based Intelligent Controller for PV System	Harshavardhana Reddy K, Sachin Sharma, Charan Kumar N, Chandan N Reddy N Reddy, Madesh Naidu I and Akshay N	14:15 to 14:30
127	Pitch Channel Trajectory Tracking Control of an AUV	Ravishankar Desai and Narayan Manjarekar	14:30 to 14:45
244	Simplified Current Control Method for FOC of Permanent Magnet Synchronous Motor	Amit Mallikarjun Masuti, Sachin Angadi, A B Raju and Sahana Kalligudd	14:45 to 15:00
269	Design and Analysis of Combined Braking System Using Delay Valve for Automobiles	C Dineshkumar, A S Selvakumar, P D Jeyakumar, Solomon Jenoris Muthiya, Nadanakumar Vinayagam, Balachandar Krishnamurthy, Joshuva Arockia Dhanraj and Christu Paul R	15:00 to 15:15
290	Approximation of Standalone Boost-Converter Enabled Hybrid Solar-Photovoltaic Controller System	Umesh Kumar Yadav, V P Meena and V P Singh	15:15 to 15:30
291	Error Minimization Based Order Diminution of Inter connected Wind Turbine Generator	Umesh Kumar Yadav, V P Meena and V P Singh	15:30 to 15:45

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Day 2: 25/11/2022, Parallel Session-9, Machine Vision and Image Processing-II

Paper Id.	Title of the paper	Authors	Time (IST)
185	SIRR: Semantically Infused Recipe Recommendation Model Using Ontology Focused Machine Intelligence	Mrinal Anand, Gerard Deepak, Sheeba Priyadarshini J and Santhana Vijayan Arumugam	09:00 to 09:15
227	Depth Estimation and Optical-Flow Based Object Tracking for Assisting Mobility of Visually Challenged	Shripad Bhatlawande	09:15 to 09:30
253	Comparison of various Machine Learning and Deep Learning classifiers for the classification of Defective Photovoltaic cells	Maithreyan G and Vinodh Venkatesh Gumaste	09:30 to 09:45
254	Compressively Sensed Plant images for Diagnosis of Diseases	Nimmy Ann Mathew, Megha P Krishna and Renu Jose	09:45 to 10:00
264	Two-Fold Extended Residual Network Based Super Resolution For Potato Plant Leaf Disease Detection	Pujari Venkata Yeswanth, Rachit Khandelwal and Deivalakshmi Subbian	10:00 to 10:15
297	Online Voting System Based on Face Recognition and QR Code	Deepika Nair K C and Mamatha I	10:15 to 10:30

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Day 2: 25/11/2022, Parallel Session-10, Circuits, Sensors and Biomedical Systems-II

Paper Id.	Title of the paper	Authors	Time (IST)
28	Next generation MEMS sensors and systems for Non-invasive medical diagnosis	Hithesh Gatty	09:00 to 09:15
30	Microfabricated biosensor for detection of disease biomarkers based on streaming current method	Hithesh Gatty, Jan Linnros and Apurba Dev	09:15 to 09:30
282	Self Recurrent Neural Network based Event Triggered Mobile Object Tracking Strategy for Sensor Network	Vishwalata Bagal	09:30 to 09:45
289	A Novel Harvesting and Data Collection using UAV with beamforming in heterogeneous Wireless Sensor Clustered Networks	Subaselvi S	09:45 to 10:00
300	DESIGN AND ANALYSIS OF A MULTIPLEXER USING DOMINO CMOS LOGIC	Shaivya Shukla, Onika Parmar, Amit Rajput and Zeesha Mishra	10:00 to 10:15
302	Leakage power reduction in CMOS inverter at 16nm technology	Yahuti Sahu, Amit Singh Rajput, Zeesha Mishra and Onika Parmar	10:15 to 10:30

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Day 2: 25/11/2022, Parallel Session-11, Robotics & Intelligent Systems-III

Paper Id.	Title of the paper	Authors	Time (IST)
216	Fractional Order Polynomial Generation for Path Tracking of Delta Robot through Specific Point	Dheeresh Upadhyay, Sandeep Pandey and Rajesh Kumar Upadhyay	09:00 to 09:15
298	A novel collision avoidance system for two-wheeler vehicles with an automatic gradual brake mechanism	Ulasi Vivek Reddy and Abhishek M Thote	09:15 to 09:30
305	Development of a Digital Twin Interface for a Collaborative Robot	Ayan Naskar, Pranav P and P Vivekananda Shanmuganathan	09:30 to 09:45
306	Landmark Detection for Auto Landing of Quadcopter using YOLOv5	Deeptej, Shilpa Suresh, Jeane Marina D'Souza, and Asha C S	09:45 to 10:00
90	LUNOKHOD - A WAREHOUSE I-ROBOT	Karthik Gogisetty, Ashwath Raj Capur, Ishita Pandey and Praneet Atul Dighe	10:00 to 10:15
180	Comparative Empirical Analysis of Biomimetic Curvy Legged Bipedal Robot with Linear Legged Bipedal Robot	M Abhishek, A Ramkumar and R Raffik	10:15 to 10:30

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Day 2: 25/11/2022, Parallel Session-12, Artificial Intelligence & its Applications-II

Paper Id.	Title of the paper	Authors	Time (IST)
99	Deep Learning based Models for Annual Rainfall Forecasting: An Empirical Study on Tamil Nadu	Vanitha V, Sathishkumar M, Vishal L and Srivatsan S	09:00 to 09:15
128	Hybrid Deep Learning Models for Segmentation of Atherosclerotic Plaque in B-mode Carotid Ultrasound Image	Pankaj Jain and Neeraj Sharma	09:15 to 09:30
130	Analysis of Weather Forecasting and Prediction using Neural Networks	Manish Choubisa, Manish Dubey, Dr Surendra Kumar Yadav and Harshita Virwani	09:30 to 09:45
138	A Systematic Review on Latest Approaches of Automated Sleep Staging System using Machine Intelligence Techniques	Santosh Satapathy, Hari Kishan Kondaveeti and Debabrata Swain	09:45 to 10:00
155	HyResPR: Hybridized Framework for Recommendation of Research Paper Using Semantically Driven Machine Learning Models	Saketh Maddineni, Gerard Deepak and Praveen S V	10:00 to 10:15
156	Development of Real-Time Fault Diagnosis Technique for the Newly Manufactured Gearbox	Prasad Kane	10:15 to 10:30

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Day 2: 25/11/2022, Parallel Session-13, Industrial Automation, IoT and Cyber-Security-II

Paper Id.	Title of the paper	Authors	Time (IST)
79	FPGA Implementation of SLIM an Ultra-Lightweight Block Cipher for IoT Applications	Shashank Chandraka, Siddharth Dewangan, Zeesha Mishra and Bibhudendra Acharya	12:45 to 13:00
81	Area Optimized Serial Architecture of PRINT Cipher for Resource-Constrained Devices	Manisha Kumari, Pulkit Singh and Bibhudendra Acharya	13:00 to 13:15
163	Development of affordable smart and secure multilayer locker system for domestic aSpplications	Naveen Shenoy, Ranjith Singh, Vineeth Rai K, Pratham Rao M and Gurusidayya H	13:15 to 13:30
294	IoT and ML-based personalised healthcare system for heart patients	Sreeram Warriar, Vinay Kumar Jadoun, Ankur Jaiswal, Aashish Kumar Bohre and Pallavee Jaiswal	13:30 to 13:45

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Day 2: 25/11/2022, Parallel Session-14, Circuits, Sensors and Biomedical Systems-III

Paper Id.	Title of the paper	Authors	Time (IST)
88	Estimation of breast tumor parameters by random forest method with the help of temperature data on the surface of the numerical breast model	Gonuguntla Venkatapathy, Rahul V M and N Gnanasekaran	12:45 to 13:00
97	Validation of Material Models for PDMS Material by Finite Element Analysis	Chinmay Vilas Potphode, Avinash A Thakre and Swapnil Mani Tripathi	13:00 to 13:15
121	EXPLANABLE CAD SYSTEM FOR EARLY DETECTION OF DIABETIC EYE DISEASES: A REVIEW	Rajashree Nayak, Pallabi Das and Dr. Nilanjan Dey	13:15 to 13:30
295	Early Prediction of Sudden Cardiac Death Using Optimal Heart Rate Variability Features Based on Mutual Information based Feature Selection	Shaik Karimulla and Dipti Patra	13:30 to 13:45

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Day 2: 25/11/2022, Parallel Session-15, Artificial Intelligence & its Applications-III

Paper Id.	Title of the paper	Authors	Time (IST)
184	TPredDis: Most Informative Tweet Prediction for Disasters using Semantic Intelligence and Learning Hybridizations	Arulmozhi Varman, Gerard Deepak, Santhana Vijayan Arumugam and Sheeba Priyadarshini J	15:45 to 16:00
194	Histopathological Colorectal Cancer Image Classification by using Inception V4 CNN Model	Rakesh Patnaik, Premanshu Sekhara Rath, Sasmita Padhy and Sachikanta Dash	16:00 to 16:15
196	A Novel Approach for Online Fault Detection, Classification and Localization in 3-Phase Long Transmission Line using DNN	Anjan Kumar Sahoo and Sudhansu Kumar Samal	16:15 to 16:30
214	Machine Learning Models for Prediction of Nutritional Psychology, Fast- Food Consumption Rate and its Impact on Student's Physical and Mental Health	Parth Rainchwar	16:30 to 16:45
247	Real-time GPU-accelerated Driver Assistance System	Pooja Ravi and Aditya Shukla	16:45 to 17:00
299	A Unified System for Crop Yield Prediction, Crop Recommendation, and Crop Disease Detection	Arpitha Varghese and Mamatha I	17:00 to 17:15
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Day 2: 25/11/2022, Parallel Session-16, Optimization Technique for Industrial Applications

Paper Id.	Title of the paper	Authors	Time (IST)
85	MULTI BODY DYNAMICS SIMULATIONS OF SPACECRAFT DOCKING BY MONTE CARLO TECHNIQUE	V Sri Pavan Ravichand, Vijay Shankar Rai, M Venkata Ramana, Anoop Kumar Srivastava, Abhinandan Kapoor, B Lakshmi Narayana, B P Nagaraj and H N Suresha Kumar	15:45 to 16:00
157	Performance Analysis of ExpressJS and Fastify in NestJS	Praagna Prasad and Usha Padma	16:00 to 16:15
262	A Neural Network based approach to find solutions to diffusion equations	Sampath Routu	16:15 to 16:30

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