CESSI, IISER Kolkata

SPARC Workshop 28 June – 02 July, 2022
Machine Learning in Solar Physics and Space Weather
www.cessi.in/aimlspaceweather

Program Details

All times are in IST (UTC + 5:30)

Day 1: 28 June

Inauguration (10:15am - 10:30am) Sourav Pal (Director, IISER Kolkata), Dibyendu Nandi (SOC Chair, IISER Kolkata)		
Time (IST)	**Title**	**Speaker / Instructor**
Morning Session; Session Chair: Dhrubaditya Mitra (NORDITA)		
10:30am – 11:15am	New physical insight into solar magnetism using machine learning	Shravan Hanasoge (TIFR)
11:15am – 12:00pm	AI/ML in Astronomy and Beyond	Ajit Kembhavi (IUCAA)
Lunch Break		
Afternoon Session; Session Chair: Arnab Basak & Sakshi Gupta (CESSI, IISER Kolkata)		
2:00pm – 4:00pm	ML lecture series 1: Foundations of data science	Sourangshu Bhattacharya (IIT Kharagpur)
4:00pm- 5:00pm	Tutorials / Hands-on session	
End of Day 1		

Day 2: 29 June

Time (IST)	**Title**	**Speaker / Instructor**
Morning Session; Session Chair: Yoshita Baruah (CESSI, IISER Kolkata)		
10:30am – 11:15am	Accelerating space weather forecasts with deep learning and interpretable A.I	Vishal Upendran (IUCAA)
11:15am – 12:00pm	Catalyzing Academic and Private Partnerships in the Use of Big Data for Human Benefit: The Frontier Development Lab	Madhulika Guhathakurta (NASA, GSFC)
12:00pm – 12:45pm	Physical Origin of Space Weather	Dibyendu Nandi (CESSI, IISER Kolkata)

	Lunch Break	
Afternoon Session; Session Chair: Arnab Basak & Sakshi Gupta (CESSI, IISER Kolkata)		
2:00pm – 4:00pm	ML lecture series 2: Data-limited scenarios and Feature Selection	Saikat Chatterjee (KTH, Stockholm)
4:00pm- 5:00pm	Tutorials / Hands-on session	Anubhab Ghosh (KTH) & Saikat Chatterjee (KTH)
	Break	
Evening Session; Session Chair: Om Gupta (CESSI, IISER Kolkata)		
7:00pm – 7:45pm	Aditya L1 Mission and the Activities of the Support Cell	Dipankar Banerjee (ARIES)
7:45pm – 8:30pm	Can we predict where magnetic active regions are going to emerge on the solar surface?	Lekshmi Biji (MPI)
	End of day 2	

Day 3: 30 June

Time (IST)	Title	Speaker / Instructor
Morning Session; Session Chair: Yoshita Baruah (CESSI, IISER Kolkata)		
10:30am – 11:15am	Big Data Analytics in Solar Activity	Piet Martens (GSU)
11:15am – 12:00pm	Identifying Flare-productive Active Regions using Machine Learning Techniques	Suvadip Sinha (CESSI, IISER Kolkata)
	Lunch Break	
Afternoon Session; Session Chair: Arnab Basak & Sakshi Gupta (CESSI, IISER Kolkata)		
2:00pm – 4:00pm	ML lecture series 3: Deep Neural Networks (DNNs)	Sourangshu Bhattacharya (IIT Kharagpur)
4:00pm- 5:00pm	Tutorials / Hands-on session	
	End of Day 3	

Day 4: 1 July

Time (IST)	Title	Speaker / Instructor
Morning Session; Session Chair: Yoshita Baruah (CESSI, IISER Kolkata)		
11:15am – 12:00pm	Imaging magnetic fields in the Sun and other stars	Srijan Bharati Das (Princeton University)
12:00pm – 12:45pm	Leveraging a Deep Learning Model to Efficiently Label Solar Flux Emergence Videos	Subhamoy Chatterjee (SWRI)
Lunch Break		
Afternoon Session; Session Chair: Arnab Basak & Sakshi Gupta (CESSI, IISER Kolkata)		
2:00pm – 4:00pm	ML lecture series 4: Sequential Data Analysis	Saikat Chatterjee (KTH)
4:00pm- 5:00pm	Tutorials / Hands-on session	Anubhab Ghosh (KTH) & Saikat Chatterjee (KTH)
Break		
Evening Session; Session Chair: Yoshita Baruah (CESSI, IISER Kolkata)		
6:15pm – 7:00pm	Using Recurrent Neural Networks to Forecast Sunspot Cycle 25	Dhrubaditya Mitra (NORDITA)
7:00pm – 7:45pm	Machine Learning Dataset with SDO Observations	Paul Wright (HEPL, Stanford University)
7:45pm – 8:30pm	Distinguishing between Flaring and Non-Flaring Active Regions	Soumitra Hazra (UMass Lowell)
Closing Remarks: Dibyendu Nandi (CESSI, IISER Kolkata)		
End of day 4		

Day 5: 2 July

(No Session)