

# Government of West Bengal

Department of Science & Technology and Biotechnology (DSTBT)

Vigyan Chetana Bhavan, Block-DD, Plot-26/B, Sector-I

Salt Lake, Kolkata-700064

## Application Format for Science Popularization Programme

1. Programme Type (ref SN 11 of the Memorandum): **Workshop**
2. Title of the proposed Programme: **Building a responsible AI agent with Interpretability for Physicists using state of the art ML technologies** (Thrust Area/ Themes: 7. Robotics, Artificial Intelligence and Machine Learning.)
3. Target Group (Faculty, Teacher, Research Scholar, School/College/ University Student, Community): **Faculty: 20, Teacher: 05, Research Scholar: 25, College Student: 20, University Student: 40, Community: 10**
4. Duration (days): Two days ;Tentative Dates of the proposed Programme: **12/03/2026-13/03/2026**
5. Aims, Objectives and Details of the Programme (attach separate sheet, if necessary): **Attached (Annexure-A)**
6. Name, Designation, Postal Address, mobile no. and e-mail id of the (only one) Programme Co-ordinator (PC) (attach separate sheet, if necessary):  
Dr. Sonjoy Mondal, Assistant Professor, Dept. Of Physics, Sidho-Kanho-Birsha University, PO-Sainik School, Ranchi Road, Dist.-Purulia, PIN-723104, West Bengal, Email: [sanjoy-mandal@skbu.ac.in](mailto:sanjoy-mandal@skbu.ac.in), Mob.:9476255689
7. Legal status of the Institute (School/College/ University/ Institute/ Polytechnic/ITI/ Autonomous body/ registered NGO/ Trust etc.): State Aided University, Established in 2010, NAAC Accredited B+ and 2f and 12B approved by UGC.
8. Date wise detail Programme Schedule (attach separate sheet, if necessary): **Attached (Annexure-B)**
9. Collaborating Institutions/ Organizations, if any, with their specific contribution: NA
10. Expected number of participants and list of Resource Persons/ Invited Speakers:  
Expected number of participants: 120, Resource Persons/Invited Speakers: 06  
**(Annexure-C)**
11. Give details of the grant received from DSTBT in last three Financial Years, if any alongwith the date of submission of UC, Audited SoE, Report etc.: **Attached (Annexure-D)**
12. Name and address of the authority to whom the allotted amount is to be credited (if sanctioned) who will also be responsible for submitting the UC, audited SoE, Programme Completion Report, Feedback, Still and Video photographs etc. of the grant: Registrar, Sidho-Kanho-Birsha University, Ranchi Road, Post Office: Purulia Sainik School, District: Purulia, West Bengal, PIN: 723 104, Email: [registrar@skbu.ac.in](mailto:registrar@skbu.ac.in)
13. Total Estimated Expenditure (A)/ Organisation's contribution (B)/ Contribution from any other sources (C) / Grant expected from DSTBT(D): D:= ₹. 200000.00 (A: ₹ 220000.00.- B: ₹.20000.00. - C: ₹.00.00. (provide detail Budget break-up as per Annexure-I and Bank details as per Annexure-II):

**Title: Building a Responsible AI Agent with Interpretability for Physicists using State-of-the-Art ML Technologies**

- **Aims (Overarching Goals)**

The primary aims of this workshop are to equip physicists with the foundational knowledge and practical skills necessary to develop, deploy, and rigorously validate AI models that are not only high-performing but also interpretable and responsible within a physics context.

**Specifically, the workshop aims to:**

**Bridge the Gap:** Translate cutting-edge Machine Learning (ML) techniques and Responsible AI (RAI) principles into actionable methodologies specifically tailored for complex, high-stakes physics problems (e.g., experimental data analysis, simulation, and discovery).

**Foster Trust & Adoption:** Demonstrate the critical role of Interpretability (XAI) in moving AI from a "black-box" tool to a reliable partner, thereby accelerating its trustworthy adoption in fundamental research and industrial physics applications.

**Cultivate Responsible Practice:** Introduce participants to the core ethical considerations and bias mitigation strategies required to build AI agents that maintain fairness, transparency, and accountability, crucial for maintaining scientific rigor.

- **Objectives (Measurable Outcomes)**

Upon successful completion of this two-day workshop, participants will be able to:

**Day 1: Foundations in State-of-the-Art ML and Interpretability (XAI)**

**ML Model Proficiency:**

Implement advanced ML architectures (e.g., Transformers, Variational Autoencoders (VAEs), or Graph Neural Networks (GNNs)) relevant to typical physics data structures, such as sequences, grids, or complex relationships.

Apply best practices for data preparation, model training, hyperparameter tuning, and cross-validation on a real or simulated physics dataset.

**XAI Tool Mastery:**

Differentiate between various interpretability methods, including model-specific (e.g., weights visualization) and model-agnostic techniques (e.g., LIME and SHAP).

Calculate and Visualize local (individual prediction) and global (overall model behavior) feature importance using at least two distinct XAI methods to understand model drivers.

**Physics-Specific Interpretation:**

Connect the model's learned features (the 'how' of the prediction) back to established physical principles or domain knowledge (the 'why' of the phenomenon).

Utilize interpretability methods to debug and validate models by identifying physically implausible or spurious correlations learned from the training data.

## **Day 2: Building a Responsible AI Agent and Hands-On Application**

### **Responsible AI (RAI) Principles:**

Identify and articulate the key dimensions of Responsible AI, including fairness, transparency, accountability, and privacy, as they relate to physics research (e.g., algorithmic bias in resource allocation or publication).

Apply practical techniques for detecting and mitigating potential biases in the training data and the resulting model predictions.

### **Agent Development & Evaluation:**

Design a basic AI Agent Architecture capable of making sequential or complex physics-based decisions, incorporating interpretability metrics as a core component of the feedback loop.

Evaluate the built agent not only on traditional performance metrics (e.g., F<sub>1</sub> score, accuracy) but also on interpretability metrics (e.g., fidelity, stability) and fairness metrics (e.g., equal opportunity difference).

### **Next Steps & Resources:**

Locate and utilize key libraries, frameworks (e.g., TensorFlow, PyTorch, specialized XAI libraries), and community resources for continuous learning and Responsible AI development in their research.

Formulate an initial strategy for integrating a newly built, responsible, and interpretable AI agent into an existing research pipeline or project.

## Technical Programme Details of WBDSTBT Science Popularization Programme -2026

**Date: March 12-13, 2026**

**Venue: Sidho-Kanho-Birsha University, Purulia, West Bengal – 723104**

<b>Day 1 (12/03/2026)</b>		
<b>Registration</b>	<b>9:00 -10:30 AM</b>	
Inauguration & Speech	10:30- 11:30 AM	By Prof. (Dr.) Pabitra Kumar Chakrabarti, Honorable Vice Chancellor, SKBU, Purulia & Delegates
<b>High Tea</b>	<b>11:30 AM- 11:45</b>	
Session I Invited Talk	Time: 11:45 AM- 1:30 PM Session Chair: Prof. Jyothna K. Mondal	
Invited Talk-I	Time: 11:45 AM- 12:45 PM	Prof.(Dr,) Pulak Ghosh
Invited Talk	Time: 12:45 PM- 1:30 PM Session Chair: Prof.(Dr,) Pulak Ghosh	
Invited Talk-II	Time: 12:45 PM- 1:30 PM	Prof. Jyothna K. Mondal
<b>Lunch</b>	<b>1:30- 2:15 PM</b>	
Session II (Invited Talk)	2:15 PM- 3:00 PM Session Chair: Prof. Ujjal Mallick	
Invited Talk-III	Time: 2:15 PM- 3:00 PM	Dr. Tanushyam Chattopadhyay
Invited Talk	Time: 3:00 PM- 3:45 PM Session Chair: Prof. Jyothna K. Mondal	
Invited Talk-IV	Time: 3:00 PM- 3:45 PM	Prof. Ujjal Mallick
<b>Tea Break</b>	<b>3:45 PM- 4:00 PM</b>	
Session III (Oral presentation): OP: 01-06	4:00 PM- 5:30 PM	Session Chair: Prof. Ujjal Mallick
Poster Presentation	5:30 PM- 6:30 PM	Session Chair: Dr. Tanushyam Chattopadhyay
<b>Dinner</b>	<b>7:30 PM- 9:00 PM</b>	

<b>Day 2 (13/03/2026)</b>		
<b>Registration &amp; Breakfast</b>	<b>9:00 -10:00 AM</b>	
Session IV (Invited Talks)	10:00- 1:30PM Session Chair: Prof. Debashis De	
Invited Talk-V	Time: 10:00 AM- 11:30AM	Prof. Rajat Kumar De
<b>TeaBreak</b>	<b>11:30 AM- 11:45AM</b>	
Oral Presentation (OP-7- OP-13)	11:45 AM- 1:30 PM	Session Chair: Prof. Debashis De
<b>Lunch</b>	<b>1:30- 2:15 PM</b>	
Session V (Invited Talk)	Time: 2:15 PM- 2:45 PM Session Chair: Prof. Rajat Kumar De	
Invited Talk-VI	Time: 2:15 PM- 2:45 PM	Prof. Debashis De
Session VI Oral Presentation (OP-14-OP-19)	2:45 PM- 4:15 PM	Session Chair: Prof. Rajat Kumar De
<b>Tea Break</b>	<b>4:15PM-4:30PM</b>	
Session VIII	4:30 – 5:30 PM	Valedictory Session
<b>Dinner</b>	<b>7:30 PM- 9:00 PM</b>	

**Invited Speakers/Resource Persons:**

- 1. Prof.(Dr.) Pulak Ghosh**  
Professor, Decision Sciences and Center of Public Policy of the Indian Institute of Management Bangalore (IIMB), Fellow at Niti Aayog, GoI, Former faculty at Georgia State University, and Emory Univ, USA.
- 2. Prof. Jyothna Kumar Mondal**  
Retd. Professor, Department of CSE, Kalyani University, Ex VC, Raiganj University
- 3. Prof. Debashis De**  
Professor, Computer Science & Engg,  
Maulana Abul Kalam Azad University of Technology, West Bengal, and Endeavour fellow, UWA, Australia, CSI, SMIEEE, Fellow IETE, Fellow IEI, Quantum Computing, IoT.
- 4. Prof. Rajat Kumar De**  
Professor, Machine Intelligence Unit, ISI, Kolkata
- 5. Prof. Ujjal Mallick**, Professor, Dept. of CSE, Jadavpur University.
- 6. Dr. Tanushyam Chattopadhyay**  
Practice Head, Computer Vision of Sirius Digitech, a Multinational Joint Venture between Adani(India) and International Holding Company (UAE).



# SIDHO-KANHO-BIRSHA UNIVERSITY

Ph : 03252-202419

P.O – Purulia Sainik School, Ranchi Road, Dist-Purulia, WB - 723104

Office of the Registrar

website: www.skbu.ac.in

e-mail: registrarskbu@gmail.com/registrar@skbu.ac.in

Ref No. R/2166/SKBU/2025

Date: 15/12/2025

## Annexure-I

### Proposed Total Budget with break-ups

#### A. Total Estimated Expenditure

Sl. No.	Items required with justification and rate No.	Total Expenditure (A) (₹)
1	Honorarium to Resource Persons/ Experts	30000.00
2	Study materials, Consumables expenses	33000.00
3	Hall rent, if any	NIL
4	Publicity materials	5000.00
5	Travel expenses	15000.00
6	T.A. to the external Resource Persons/ Experts	25000.00
7	Documentation expenses including audio-visual	8000.00
8	Light refreshments	100000.00
9	Auditors' fee	2000.00
10	Other expenses, if any (please specify)MISC	2000.00
Grand Total Expenditure (*):		220000.00

Please mention:

B. Institution/ Organization Contribution\* in ₹ 20000.00

C. Contribution from any other sources (with name & Address) in ₹ NIL

D. Grant expected from DSTBT ( ) = (A-B-C)= 220000.00-20000.00= 200000.00

Signature of Authorised Personnel with seal

Registrar (Officiating)  
Sidho-Kanho-Birsha University  
Purulia-723104

If C= 0 Undertaking: This organization/ institution is not receiving any kind of financial assistance from any other sources

Signature of Authorised Personnel with seal

\*At least 10% of the total budget contribution from the Institute/Organization is desirable

Registrar (Officiating)  
Sidho-Kanho-Birsha University  
Purulia-723104



# Sidho-Kanho-Birsha University

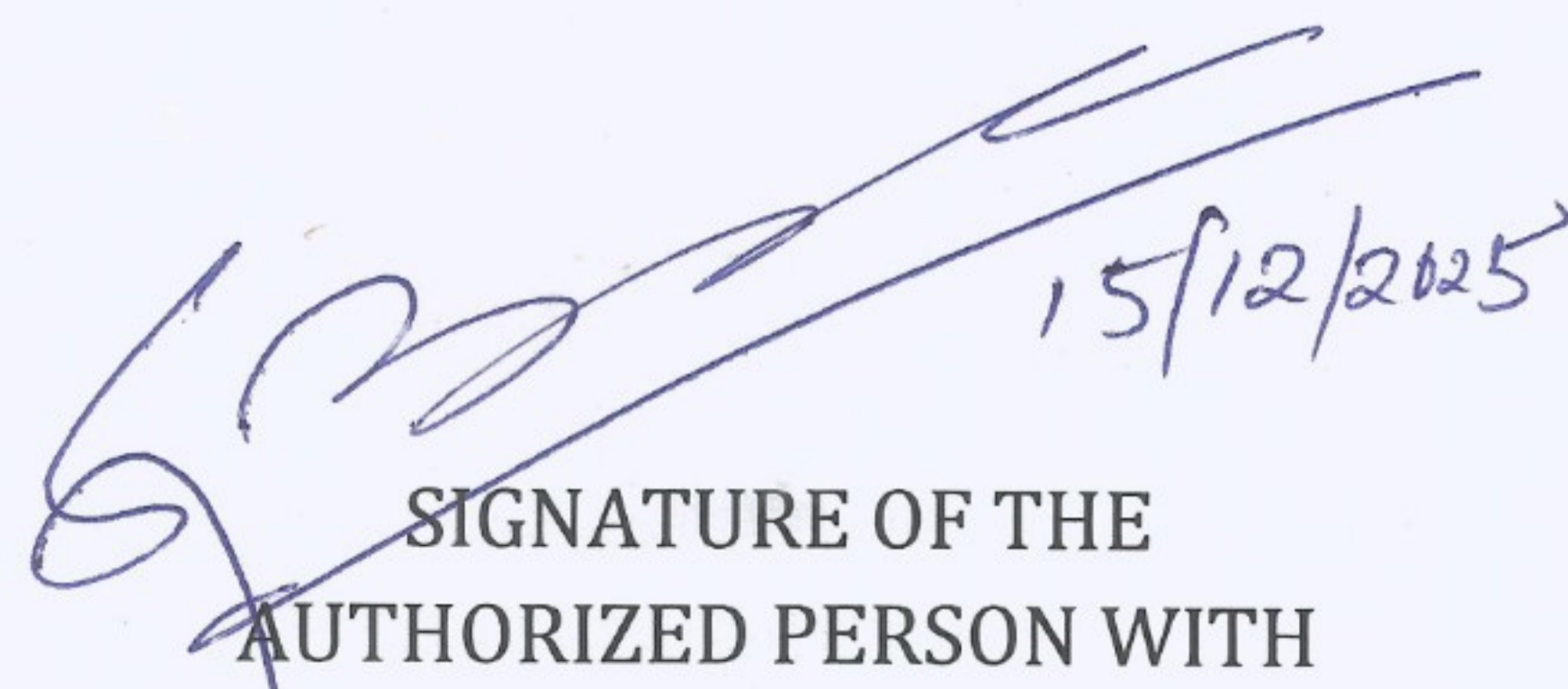
Ranchi Road, P.O.- Sainik School,  
District - Purulia, PIN - 723104, W.B.  
Phone : 8954999958, Website-www.skbu.ac.in

## Annexure- II

### Bank details of the applicant organization

NAME OF THE ORGANIZATION	SIDHO-KANHO BIRSHA UNIVERSITY
ACCOUNT NUMBER AND NAME OF THE ACCOUNT HOLDER	1102104000175463
	SIDHO-KANHO BIRSHA UNIVERSITY, SEMINAR ACCOUNT
TYPE OF ACCOUNT	SAVINGS
NAME OF THE BANK	IDBI
NAME OF THE BRANCH WITH BRANCH ADDRESS	IDBI, Purulia Branch, DESHBANDHU ROAD, PURULIA-723101
IFSC CODE OF THE BRANCH	IBKL0001102
MOBILE NUMBER OF THE PROGRAM CO ORDINATOR	9476255689
PAN/TAN OF THE ACCOUNT HOLDER	PAN NO: AAALS2440J
	TAN NO: CALS26315C

DATE:15/12/2025

  
15/12/2025  
SIGNATURE OF THE  
AUTHORIZED PERSON WITH  
SEAL  
Finance Officer  
Sidho-Kanho-Birsha University  
Purulia

## Annexure-D

Sl. No. 11

List of projects funded by: DSTBT, Govt of West Bengal (last three years)

Project Title	PI Name	Ref No. (Sanction letter)	Sanction Date	Total Cost (Lakh)	Status/UC Submitted
Development of a Robust 1D Photonic Crystal Sensor for High-Temperature Environments	Ardhendu Sekhar Patra	596(Sanc.)/STBT-11012(26)/1/2024-ST SEC	20-08-2024	12	Ongoing (2027) / November 2025
Development of Metal Oxide-Plasmonic metal nanocomposites for efficient broadband photodetector and visible photocatalyst	Rajib Nath	352 (Sanc.)/STBT-11012 (30)/2/2024-ST-SEC, Date: 24/06/2024	24-06-2024	14.5	Ongoing (2027)/ November 2025
Quantum mechanical studies on the catalytic activities of monomeric and polymeric transition metal salts.	Sonjoy Mondal	First Sanctioned G. O. No.& Date: 68(Sanc.)/ST/P/S&T/15 G-7/2 And Second Sanctioned G.O. No: 296(Sanc.)/STBT-11012(25)/5/2021-ST SEC	03-01-2019 & 05/07/2021	1.5	Completed(2022)/ 22/07/2022

**Check List (put tick) of attachments to be submitted with the application**

- Proposed Total Budget with break-up (Annexure-I) and Bank Details (Annexure-II) in Institute/ Organization's letter head: **YES/NO**
- For registered NGO/ Trust, filled in Application Format recommended by the appropriate Recommending Authority, viz., Jt.BDO/ BDO/ SDO/ DM/ Executive Officer- Municipality/ Commissioner-Municipal Corporation as the case may be (where the programme is actually going to be held): **YES/NO**
- For registered NGO/ Trust, attested copies of the registration certificate, latest renewal certificate, Memorandum and Rules & Regulations of the Organization, last three years Audited Statement of Accounts, Annual Reports etc., List of recommended beneficiaries: **YES/NO**

**DECLARATION**

Certified that the details furnished in the filled in format are correct to the best of our knowledge & belief and that the amount of financial assistance, if sanctioned, will be utilized for the purpose for which it is granted within the time as prescribed by DSTBT. We also undertake to abide by the General Guidelines and Terms & Condition prescribed by DSTBT and provide due coverage to DSTBT during the Programme and publications/ print and electronic media made from the Programme in future. We also declare that within one month after completion of the Programme we shall submit the Utilisation Certificate (UC), Audited Statement of Expenditure (Audited-SoE), Programme Completion Report, Feedbacks from the Participants, still and video photographs etc.

Signature: *Sanjay Mondal*

Date: *15/12/2025*

Name of Programme Coordinator:

Designation: *Assistant Professor*

Address: *SKBU*

*Dr. Sanjay Mondal*  
Assistant Professor, Dept. of Physic.  
Sidho-Kanho-Birsha University  
Purulia Sahibik School, Purulia

(Office Seal)

Signature: *[Signature]*

Date:

Name of Head of the Institution: *Dr. Gurdas Mondal*

Designation: **Registrar (Officiating)**

Address: *Sidho-Kanho-Birsha University*  
*Ranchi Road, P.O. Sahibik School, Purulia*  
*Pm-723 104*

**RECOMMENDATION**

(only for registered NGO/ Trust)

Certified that the said Organisation is reputed in this field and I/ we recommend the said proposal for getting grant-in-aid from DSTBT, Govt of West Bengal for the benefit of the local College/ University Students/ Community etc.

Signature:

Date:

Name of Recommending Authority:

Designation:

Address:

(Office Seal)