About NISER

The National Institute of Science Education and Research Bhubaneswar (NISER) is an autonomous institution affiliated with the Homi Bhabha National Institute (HBNI) under the Department of Atomic Energy (DAE). It is a unique institution of its kind, founded on 6th September 2007, and is committed to creating, sharing, and preserving knowledge in the fundamental sciences. It aims to cultivate a passion for scientific inquiry among India's youth.

NISER recognizes that modern scientific research is conducted in a domain without boundaries. This entails encouraging a new scientific culture where members of our community attain intellectual agility unconstrained by the limitations of past disciplinary conventions. In this perspective, the faculty members from different schools try to establish research in interdisciplinary areas, promoting scientific literacy among young learners.

NISER offers all the essential modern facilities for the overall development of its students, staff and faculty members. These include modern laboratories to acquire skills and conduct experiments; library with a plethora of books, journals, vast reading areas, and electronic resources; a computer center with high-performance computing resources and a wireless network throughout the campus; a gymnasium; and a meditation center etc. An extensive national and international collaborations of its faculty members give students at NISER an exposure to cutting-edge research across the globe.

Academics

NISER currently offers a **five-year Integrated Master's program** in Biological Sciences, Chemical Sciences, Mathematical Sciences, and Physical Sciences. It also provides an **Integrated MSc-PhD program** in these areas. In addition, the schools of Earth and Planetary Sciences, Computer Sciences, and Humanities and Social Sciences, along with the aforementioned schools, have vibrant **Doctoral programs**. The Center for Medical and Radiation Physics offers a **Master's program** in Medical and Radiological Physics.

Institute talks, workshops, seminars, and colloquia are indispensable parts of the academic structure at NISER, and students actively participate in such events.
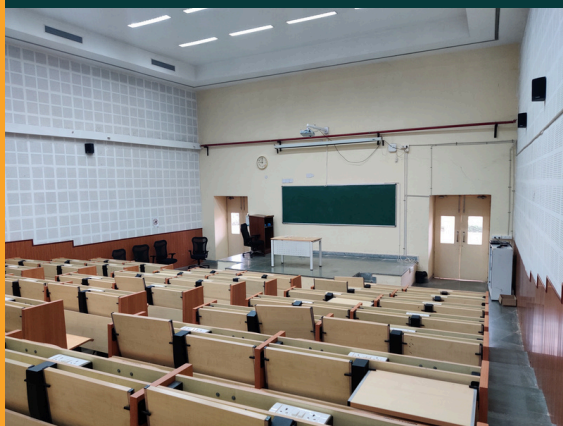
Research

Apart from the academic programs, NISER also conducts cutting-edge research in various areas of science and technology with the support of state-of-the-art facilities and infrastructure available here at the campus.

SCHOOL OF BIOLOGICAL SCIENCES: Biochemistry, Cell Biology, Molecular Biology, Genetics, Developmental Biology, Evolution, Immunology, Neuroscience, Microbiology, Plant Biology, Structural Biology, Biophysics, Systems Biology, Ecology, Bioinformatics, Virology etc.

SCHOOL OF CHEMICAL SCIENCES: Synthetic Chemistry, Catalysis, Bioorganic and Inorganic Chemistry, Supramolecular Chemistry, Fluorescence and NMR Spectroscopy, Materials and Nano-Chemistry, Theoretical and Computational Chemistry etc.

SCHOOL OF COMPUTER SCIENCES: Complexity Theory, Graph Theory, Cryptography, Computational Geometry, Computational Number Theory, Unconditionally Secure Multi-Party Computation etc.

SCHOOL OF EARTH AND PLANETARY SCIENCES: Geology, Mineralogy, Seismology, Geo-Statistics, Planetary Sciences, Earth Sciences, Astrophysics, Electron Microscopy, Atmospheric-Ocean Sciences, and Cosmochemistry etc.

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES: Business Ethics, Ethical Cynicism, Pedagogy and the Public Sphere, Architecture and Performance, Social Network Analysis, Tourism Systems, Public Policy and Management, Environmental Economics etc.

SCHOOL OF MATHEMATICAL SCIENCES: Algebraic Geometry and Number Theory, Topology, and Manifolds, Differential Equations, Harmonic Analysis, Group Theory, Probability, Cryptography, Graph Theory, Incidence Geometry, Combinatorics, Discrete Mathematics, Partial Differential Equations etc.

SCHOOL OF PHYSICAL SCIENCES: Experimental Nuclear and Particle Physics, Experimental Condensed Matter Physics, Atomic and Molecular Physics, Theoretical High Energy Physics, Statistical Physics, Theoretical Condensed Matter Physics, Quantum Information, Astrophysics and Cosmology etc.

Outreach

The NISER Outreach Programs are dedicated to enhancing the understanding of scientific concepts and principles within the community. Through diverse initiatives, it advances scientific literacy, nurtures future scientists, and strengthens connections between the scientific community and the public. These programs make scientific knowledge accessible to varied audiences, fostering a more informed and engaged society. Aimed at secondary and higher secondary students, undergraduates, and postgraduates, the initiatives expose participants to real-world research and discoveries, encouraging them to pursue careers in STEM fields. Key tools, including hands-on experiments, scientific and instrumentation demonstrations, and interactions with scientists and researchers, broaden students' perspectives beyond the classroom. Additionally, the program enhances educators' understanding of scientific concepts and effective teaching methods, equipping them with innovative pedagogical strategies to inspire students.

The main initiatives of NISER Outreach include - Educational visits to NISER, School visits to remote areas, Teachers training workshops, Popular talks, Student internships, Open Day, Science camps etc.

Popular Talk
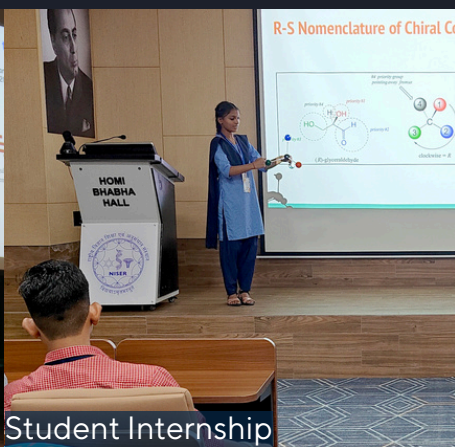
Student Internship

Educational Visit to NISER

School Visit to Remote Areas

Science Camp

Science behind the Nobel Prizes : Machine Learning

– Dr. Subhankar Mishra

Abstract:

Machine learning, a branch of artificial intelligence (AI), has been at the heart of this year's Nobel Prizes in Physics and Chemistry. Both prizes recognize how AI is transforming science and solving long-standing challenges.
In Physics, the focus is on artificial neural networks — systems inspired by the brain's structure — that enable machines to learn patterns, solve problems, and make predictions. In Chemistry, machine learning has cracked a fifty-year-old problem of predicting the complex structures of proteins, a discovery with vast potential in medicine and biology.

This talk will introduce students to the science behind machine learning, explaining how it works and how it's being used to tackle some of the most challenging problems in science and everyday life. By highlighting these Nobel Prize-winning breakthroughs, the session aims to inspire students to explore the future possibilities of AI and its impact on the world.

Science in a tiny fraction of a second

– Dr. Kush Saha

Abstract:

For us, fast-moving events are hard to see because they happen too quickly, blending into a blur. To capture something that takes place in just a trillionth of a second, we need incredibly advanced technology.

In this talk, I will explain how recent scientific breakthroughs have shown that tiny pulses of light can be used to take "snapshots" of what is happening inside atoms and molecules. These exciting discoveries allow us to explore the hidden world of ultra-fast processes, giving us a new way to understand the shortest events of nature.

■ Timeline of Events

8:30 AM - 9:30 AM	Arrival and Registration
9:30 AM - 10:00 AM	Opening Session
10:00 AM - 10:45 AM	Talk 1 (Dr. Subhankar Mishra)
10:45 AM - 11:30 AM	Talk 2 (Dr. Kush Saha)
11:30 AM - 12:00 PM	Robotics and Coding Session
12:00 PM - 01:00 PM	Lunch
01:00 PM - 05:00 PM	Demonstrations
5:00 PM - 5:30 PM	Closing Session

Glimpses of Previous Open Days

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Visit Our Website

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