



COMMONWEALTH *of* LEARNING

Commonwealth Educational Media Centre for Asia



**3<sup>rd</sup> International Conference**

*on*

**ANALYTICAL &  
INTER-DISCIPLINARY RESEARCH  
(ICAIR-2025)**

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**B. SHADRACH**

COMMONWEALTH EDUCATIONAL MEDIA CENTRE FOR ASIA, COMMONWEALTH OF LEARNING

[BSHADRACH@COL.ORG](mailto:BSHADRACH@COL.ORG)

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# ANALYTICAL AND INTERDISCIPLINARY RESEARCH AT SANGAM UNIVERSITY

- 3<sup>RD</sup> IN RAJASTHAN
  - GOOD INFRASTRUCTURE AND FACILITIES
  - MULTIDISCIPLINARY IN NATURE
  - EMPHASIS ON RESEARCH
  - INDUSTRY INTERACTIONS AND PLACEMENTS
  - FOCUS ON HOLISTIC DEVELOPMENT
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# PRECONDITIONS FOR INTERDISCIPLINARY RESEARCH IN UNIVERSITIES

- **INSTITUTIONAL FACILITATION:** BREAKING SILOED APPROACH; FUNDING; EVALUATION; ADMINISTRATIVE SUPPORT
- **CULTURAL AND ATTITUDINAL STIMULI:** AVOIDING DISCIPLINARY JARGONS AND MINDSETS; RECOGNITION AND REWARD; INCENTIVISING CHANGE
- **LOGISTICAL AND PRACTICAL SUPPORT:** ALLOCATING TIME AND RESOURCES FOR RESEARCHERS; DATA INTEGRATION AND MANAGEMENT; TRAINING AND CAPACITY BUILDING; PUBLISHING
- **SOCIETAL AND CONTEXTUAL FACTORS:** RESEARCH IN LOCAL LANGUAGES; ACCESS TO RESOURCES; REMOVING BUREAUCRATIC BARRIERS

# USE OF AI IN UNIVERSITIES

- **INCREASED INTEGRATION OF GEN AI:** IMPACT ON PEDAGOGY; CONTENT CREATION AND PERSONALISATION
- **EMPASIS ON ETHICAL CONSIDERATIONS AND NEED FOR POLICY:** ADDRESSING BIASES, ACADEMIC INTEGRITY, DATA PRIVACY
- **ADMINISTRATIVE AND OPERATIONAL EFFICIENCY:** AUTOMATION OF TASKS, DATA-DRIVEN DECISION MAKING
- **FOCUS ON AI LITERACY AND WORKFORCE PREPARATION:** CURRICULUM INTEGRATION, SKILL DEVELOPMENT
- **RESEARCH AND DEVELOPMENT:** MORE IN TERMS OF AI'S IMPACT AND USE

# ROLE OF AI IN INTERDISCIPLINARY RESEARCH IN UNIVERSITIES

- **DATA INTEGRATION AND ANALYSIS:** HANDLING DIVERSE DATASETS, COMPLEX ANALYSIS
- **KNOWLEDGE DISCOVERY AND LITERATURE REVIEW:** AUTOMATED LITERATURE REVIEW, IDENTIFYING CONNECTIONS
- **ENHANCED COLLABORATION:** FACILITATING COMMUNICATION, FINDING COLLABORATORS
- **MODELLING AND SIMULATION:** COMPLEX SYSTEMS THINKING, PREDICTIVE MODELLING
- **BREAKING DOWN SILOS:** KNOWLEDGE SYNTHESIS, IDENTIFYING EMERGING TRENDS

# LATEST INTERDISCIPLINARY RESEARCH IN UNIVERSITIES

- **ENGINEERING AND SCIENCE:** COMPUTATIONAL MODELLING OF COMPLEX SYSTEMS, BIOENGINEERING AND BIOMEDICAL ENGINEERING
- **MANAGEMENT AND SOCIAL SCIENCES:** COMPUTATIONAL SOCIAL SCIENCE, LAW AND TECHNOLOGY
- **ARTS AND HUMANITIES:** DIGITAL HUMANITIES, IMPACT OF AI ON SOCIETY
- **PHARMACY AND AGRICULTURE:** PRECISION AGRICULTURE, COMPUTATIONAL DRUG DISCOVERY
- **KEY TRENDS:** SOFT COMPUTING, HARDWARE DEVELOPMENT, ETHICAL AI

# ANALYTICAL AND INTERDISCIPLINARY RESEARCH

- ANALYTICAL

- FOCUS ON ANALYSIS
- DEPENDS ON DATA
- CRITICAL THINKING
- INTERPRETATION
- GAIN DEEPER UNDERSTANDING

- INTERDISCIPLINARY

- INTEGRATION OF DISCIPLINES
- TACKLES COMPLEX PROBLEMS
- AIMS TO CREATE NEW KNOWLEDGE
- TRANSCENDS DISCIPLINARY BOUNDARIES
- HOLISTIC APPROACH TO UNDERSTANDING AND SOLVING PROBLEMS

# NEP 2020 AND INTERDISCIPLINARY RESEARCH

- NEP 2020 VISION
  - NO MORE SILOS TO DISMANTLE RIGID BOUNDARIES BETWEEN DISCIPLINES
  - MULTIDISCIPLINARY NATURE
  - HOLISTIC DEVELOPMENT WITH WELL-ROUNDED INDIVIDUALS
  - ADDRESSING REAL WORLD'S PROBLEMS
- NEP 2020 AND INTERDISCIPLINARY
  - FOSTERING INNOVATION
  - CROSS-FERTILISATION OF IDEAS
  - COMPREHENSIVE UNDERSTANDING OF PROBLEMS
  - PROBLEM-SOLVING
  - PREPARING RESEARCHERS FOR THE FUTURE

# MULTIDISCIPLINARY AND INTERDISCIPLINARY RESEARCH

- MULTIDISCIPLINARY

- INVOLVES EXPERTS FROM DIFFERENT DISCIPLINES
- EXPERTS WORK WITHIN THEIR DISCIPLINES
- LIMITED INTERACTION OR INTEGRATION OF METHODS AND THEORIES
- HEALTHCARE TEAM OF DOCTORS, NURSES AND PHYSIOTHERAPISTS

- INTERDISCIPLINARY

- INTEGRATING KNOWLEDGE AND METHODS OF DIFFERENT DISCIPLINES
- EXPERTS WORK COLLABORATIVELY, BLENDING APPROACHES AND PERSPECTIVES
- CREATE SYNTHESISED AND NEW KNOWLEDGE AND UNDERSTANDING
- BIOLOGISTS, COMPUTER SCIENTISTS AND ENGINEERS PRODUCING BIOMEDICAL DEVICE

# INTERDISCIPLINARY RESEARCH PER SE

- ENVIRONMENTAL SCIENCES
  - CLIMATE CHANGE RESEARCH INVOLVES SCIENTISTS (CLIMATOLOGISTS, BIOLOGISTS, CHEMISTS), ENGINEERS (FOR SUSTAINABLE TECHNOLOGIES) AND SOCIAL SCIENTISTS (IMPACT ON COMMUNITIES)
  - RIVER ECOSYSTEM RESEARCH INVOLVES HYDROLOGISTS, ECOLOGISTS, SOCIAL SCIENTISTS TO UNDERSTAND COMPLEX INTERACTIONS BETWEEN WATER RESOURCES, BIODIVERSITY AND HUMANS
- HEALTHCARE AND BIOTECHNOLOGY
  - BIOINFORMATICS COMBINES BIOLOGY, COMPUTER SCIENCE AND DATA ANALYSIS TO DEVELOP NEW MEDICAL TREATMENTS
  - PUBLIC HEALTH RESEARCH DEALS WITH MEDICAL PROFESSIONALS, EPIDEMIOLOGISTS, SOCIAL SCIENTISTS AND DATA ANALYSTS
  - MEDICAL DEVICES RESEARCH REQUIRES ENGINEERS, MATERIAL SCIENTISTS AND MEDICAL PROFESSIONALS

# INTERDISCIPLINARY RESEARCH IN RAJASTHAN

- WATER RESOURCES MANAGEMENT
  - COMBINING HYDROLOGY, SOCIAL SCIENCE AND TRADITIONAL KNOWLEDGE
  - ART AND CULTURE OF WATER MANAGEMENT
- DESERTIFICATION AND LAND USE
  - INTEGRATING ECOLOGY, AGRICULTURE AND ECONOMICS
  - COMBINING REMOTE SENSING AND SOCIOLOGICAL STUDIES
- HERITAGE CONSERVATION AND TOURISM
  - COMBINING ARCHAEOLOGY, HISTORY AND TOURISM MANAGEMENT

# INTERDISCIPLINARY RESEARCH IN RAJASTHAN

- PUBLIC HEALTH AND NUTRITION
  - COMBINING MEDICAL SCIENCES, NUTRITION AND SOCIAL WORK
  - STUDYING THE EFFECTS OF CLIMATE CHANGE ON HEALTH OF LOCAL POPULATIONS
- RENEWABLE ENERGY AND RURAL DEVELOPMENT
  - COMBINING ENGINEERING, ECONOMICS AND SOCIAL SCIENCE

MANY MORE SUCH EXAMPLES CAN BE DRAWN TO ADDRESS UNIQUE CHALLENGES POSING RAJASTHAN AND HOW INTERDISCIPLINARY RESEARCH CAN HELP SOLVE PROBLEMS

# AI IN TEXTILES

- **ENHANCED MANUFACTURING AND QUALITY CONTROL:** DEFECT DETECTION, PROCESS OPTIMISATION, PREDICTIVE MAINTENANCE
- **INNOVATION IN DESIGN AND DEVELOPMENT:** AUTOMATED DESIGN AND PATTERN MAKING, COLOUR MATCHING, SMART TEXTILES
- **SUPPLY CHAIN OPTIMISATION:** DEMAND FORECASTING, LOGISTICS AND DISTRIBUTION
- **SUSTAINABILITY:** WASTE REDUCTION, RESOURCE EFFICIENCY
- **KEY IMPACTS:** INCREASED EFFICIENCY AND PRODUCTIVITY, IMPROVED PRODUCT QUALITY, REDUCED WASTE AND ENVIRONMENTAL IMPACT, FASTER TIME TO MARKET FOR NEW DESIGN, PERSONALISED PRODUCTS

# INTEGRATION OF AI IN INTERDISCIPLINARY RESEARCH IN TEXTILES

- **MATERIAL SCIENCE AND AI:**
- **ENVIRONMENTAL SCIENCE AND AI**
- **COMPUTER SCIENCE AND TEXTILE DESIGN**
- **BIOTECHNOLOGY AND TEXTILE ENGINEERING**
- **SOCIAL SCIENCES AND TEXTILE CONSUMPTION**
  
- **DATA ANALYSIS, MODELLING AND SIMULATION, KNOWLEDGE DISCOVERY,**