



NAMAL University, Mianwali

SHAPING THOSE WHO SHAPE
THE FUTURE



CAID: Centre for AI and BigData

Director:

Dr. Tassadaq Hussain

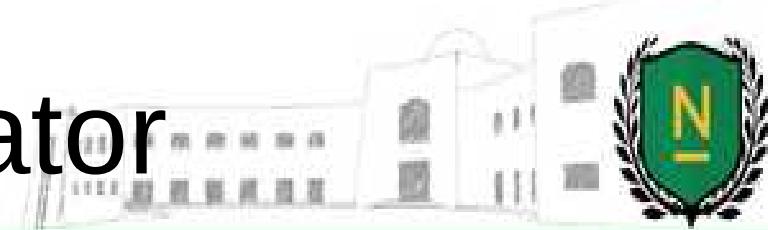
Senior Researcher:

Dr. Farrukh Qureshi





Technology Accelerator



- Commercially Viable Product **(3)**
- Fund Grant Hunting
 - „ Accepted: Pakistan Science Foundation **7.5 Million**
 - „ Submitted: HEC NRPU (Agri-Tech, CS, EE) **PKR 50+ Million**
- Services
 - „ Supercomputing System for Research and Final Year Projects
- Licensing
- Spin-Off
- Patents

Academia-Industry: Status and Gaps



1st Generation University

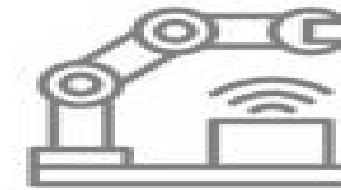
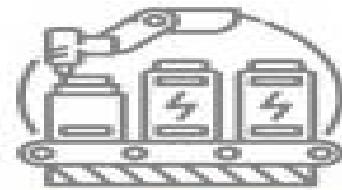
Goals:
Teaching and
Transfer of Knowledge

2nd Generation University

Goals:
Teaching +
Research and Innovation

3rd Generation University

Goals:
Teaching + Research +
Innovation as path of
industrial, economic and
social development



1st

35 - 40 %

Mechanization,
Water Power,
Steam Power

2nd

40 - 45 %

Mass
Production,
Electricity

3rd

10 - 15 %

Computer and
Automation

4th

2 - 5 %

Cyber Physical
Systems

Brick Kilns, Handlooms,
Flour Mills, Gur units,
Blacksmith shops.

Textiles, Cement,
Fertilizer, Steel,
Pharmaceuticals,
Food Processing

Assembly Lines,
Packaging, CNC
Manufacturing,
Industrial Automation

Software & IT, fintech,
healthtech, R&D labs,
smart agriculture startups



Knowledge & Idea Generation Research Foundation

- Industrially Co-Supervised Final Year Projects
- Graduate Research for Local Challenges
- Faculty Innovation Fellowships

Academic Innovation Valley



- Indigenous HPC Infrastructure
- Open Source AI Toolchains
- TRL-based Technology Grading
- Standards Compliance & Certification
- Industrial Benchmarking & Risk Analysis

Productization and Socioeconomic Deployment

- Startups and Spin-Offs
- Public Sector & SME Adoption
- Technology Transfer Agreements
- Jobs and Local Enterprise Creation

Technology Maturation Valley

TRL1
Problem Forming
Smart Solutions
Identification

TRL2
Data Digitization,
Acquisition, & Early
Analysis

TRL3
AI Solution Proof of
Concept

TRL4
Model Validation
Integrated in Lab
Settings

TRL5
Field-Ready System
Standardization,
Benchmarking

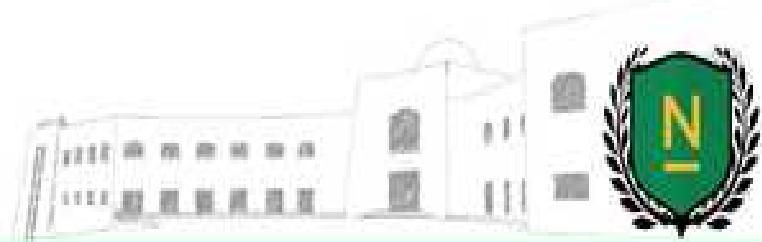
TRL6
Minimum
Viable
Product (MVP)

TRL7
CVP/Pilot
Deployment in
Operational Settings

TRL8
System with
Compliance and
Scaling Support

TRL9
Scaled Deployment
and Monetization

Impact and Deployment Valley



Demos

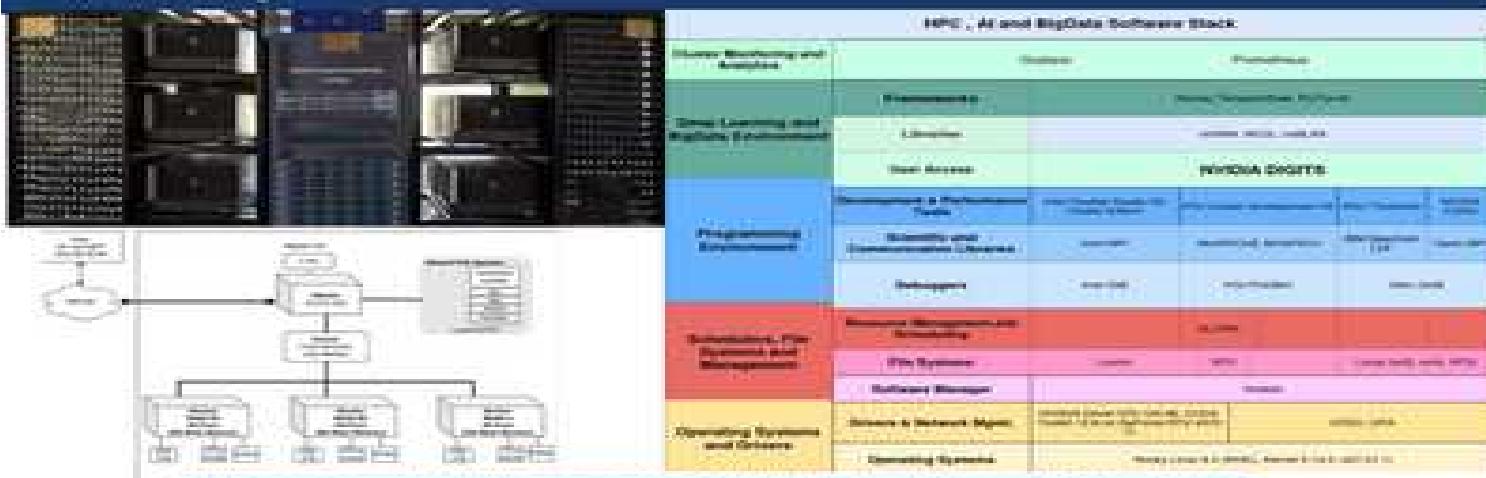
PAKSUPERCOMPUTER: SCALABLE HETEROGENEOUS SUPERCOMPUTING SYSTEM AND ELASTIC PROGRAM MODEL



Pakistan's Number One High Performance Computing Facility:

The hardware architecture includes: 20 Nodes, 1600 Processor Core, 6 Tera-Byte Main Memory, 40 TeraByte SSD, 10 Gigabit Fast Ethernet Low Latency Switch, 40 40Gbit GPU for Distributed Acceleration. The Supercomputer is build on Rocky Linux 9.4 and features an advanced software stack including RoCE-enabled networking, Lustre parallel file system, Slurm workload manager, distributed AI and parallel programming models, with Grafana and Prometheus for real-time monitoring, and Ansible for automated deployment and management.

- Offers hands-on training on HPC, parallel programming, and distributed AI models.
- Facilitates the development, testing, and deployment of large-scale parallel and distributed applications.
- Optimized for compute-intensive domains including AI, Big Data analytics, scientific simulations, and industrial automation.
- Built for scalable workloads using RoCE networking and lustre parallel file system for high-throughput data access.
- Capable of running modern AI/ML frameworks with multi-GPU, multi-node support for large-scale model training.



PAKSupercomputer HPC-as-a-Service (HPCaaS) — Resource Pricing Plans

We offer cutting-edge HPC technology as a service, including support for embedded computing, edge computing, cloud, and bare-metal high-performance systems. Our services also include software application development tailored to national industrial challenges, coupled with startup mentoring to drive innovation and commercialization.

Performance	Standard (S)	Advanced (A)	Maxed (M)
CPU	16 vCPUs	32 vCPUs	48 vCPUs
System RAM	4 GB	16 GB	48 GB
Storage (SSD)	1600 TB (1000x1600)	3200 TB	
Network	1GbE to 10 GbE	10 GbE	
Cost Per Month	Rs. 10,000/- (Rs. 1000/- Month)	Rs. 10,000/-	
Performance	Standard (S)	Advanced (A)	Maxed (M)
CPU	32 vCPUs	64 vCPUs	96 vCPUs
System RAM	16 GB	32 GB	48 GB
Storage (SSD)	3200 TB	6400 TB	
Network	1GbE to 10 GbE	10 GbE	
Cost Per Month	Rs. 20,000/- (Rs. 2000/- Month)	Rs. 20,000/-	
Performance	Standard (S)	Advanced (A)	Maxed (M)
CPU	64 vCPUs	128 vCPUs	192 vCPUs
System RAM	32 GB	64 GB	96 GB
Storage (SSD)	6400 TB	12800 TB	
Network	1GbE to 10 GbE	10 GbE	
Cost Per Month	Rs. 40,000/- (Rs. 4000/- Month)	Rs. 40,000/-	
Performance	Standard (S)	Advanced (A)	Maxed (M)
CPU	128 vCPUs	256 vCPUs	384 vCPUs
System RAM	64 GB	128 GB	192 GB
Storage (SSD)	12800 TB	25600 TB	
Network	1GbE to 10 GbE	10 GbE	
Cost Per Month	Rs. 80,000/- (Rs. 8000/- Month)	Rs. 80,000/-	

DISTRIBUTED AI CLUSTER



Scalable, Intelligent & Decentralized.

Distributed AI enables parallel, efficient processing of large data and complex tasks by leveraging multiple computing units. It enhances fault tolerance, real-time decision-making, and collaborative intelligence.

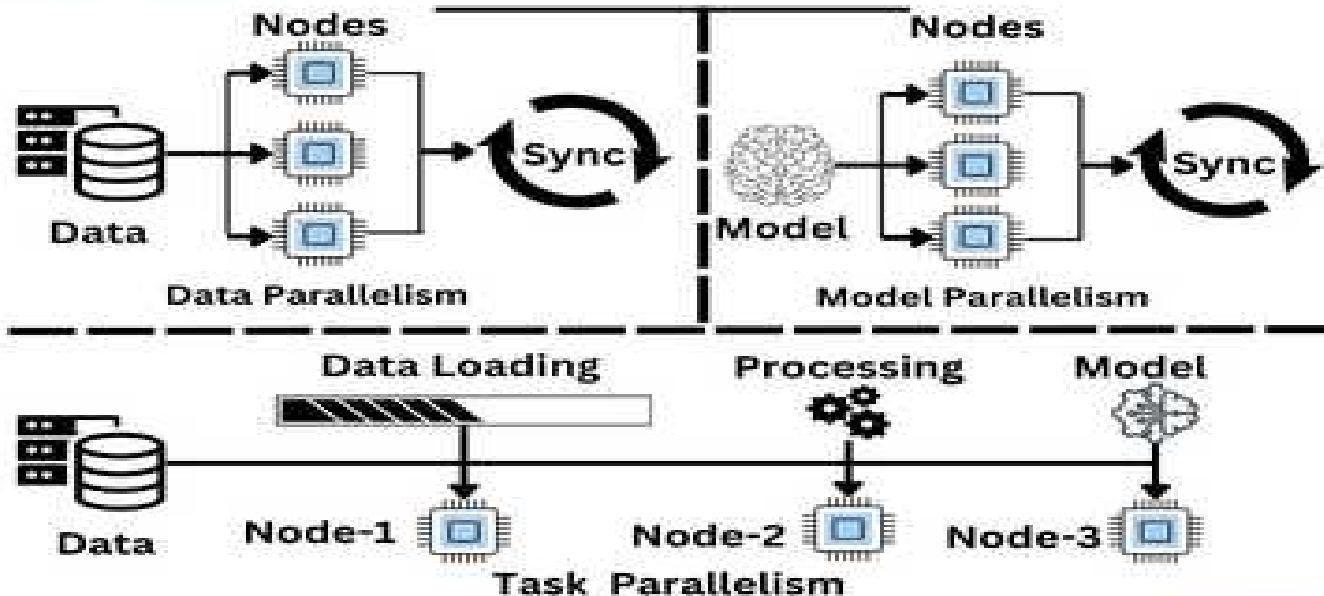
Importance

Global data generation surpassed 120 zettabytes in 2023, with projections doubling by 2025, demanding AI-driven solutions for real-time processing. With AI workloads exceeding 1 exaFLOP daily, the ever-increasing need for Distributed-AI is crucial to managing complex computations and unlocking actionable insights.

Salient Features

- Multi-node cluster with NVIDIA A100 GPUs, each delivering 40 TFLOPs FP32, 7680 CUDA cores, and 12GB GDDR6X memory.
- NVLink-enabled high-bandwidth communication for seamless multi-node processing.
- Supports large-scale computer vision models and LLMs with optimized memory and computational resource handling.
- Enables multi-level distributed computing with full support for PyTorch and TensorFlow.

Flow Diagram



HPC CHIP DESIGN CLUSTER

A Free, Open-Source Software Stack Cluster for Digital System Design

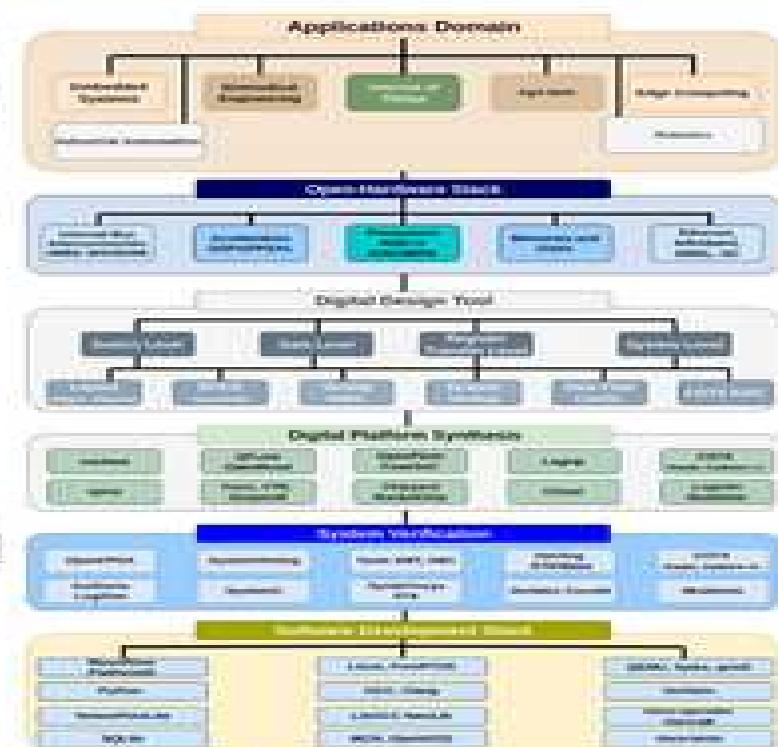
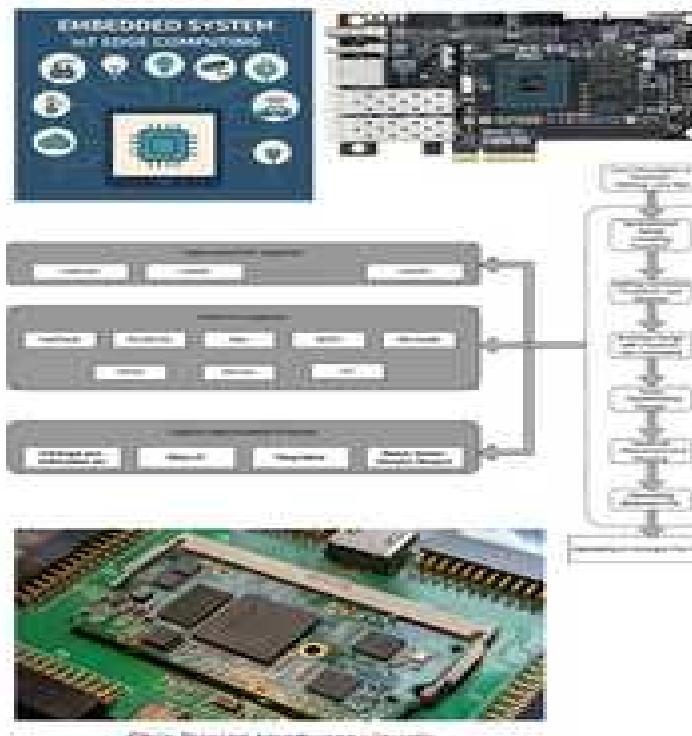


Importance

HPC Chip Design Cluster provides free, open-source software stack-based for digital system design, programming and verification. It enables chip design, verification, simulation, and programming using high-performance computing (HPC) and cloud platforms with global accessibility. Provides cost-effective solution for innovation in processor architectures, embedded systems, digital system design, verification and prototyping.

Salient Features

- Free, open-source software stack for **embedded system programming, digital system design, computer architecture, FPGA and VLSI chip design, verification, and simulation**.
- Supports RISC-V, FPGA frameworks, and cloud-based platforms for efficient development.
- Uses HPC clusters to support multi-user collaboration and resource optimization.
- Structured workflow includes modeling, verification, synthesis, and FPGA deployment.
- Promotes scalable and cost-effective digital system development while reducing reliance on proprietary tools.



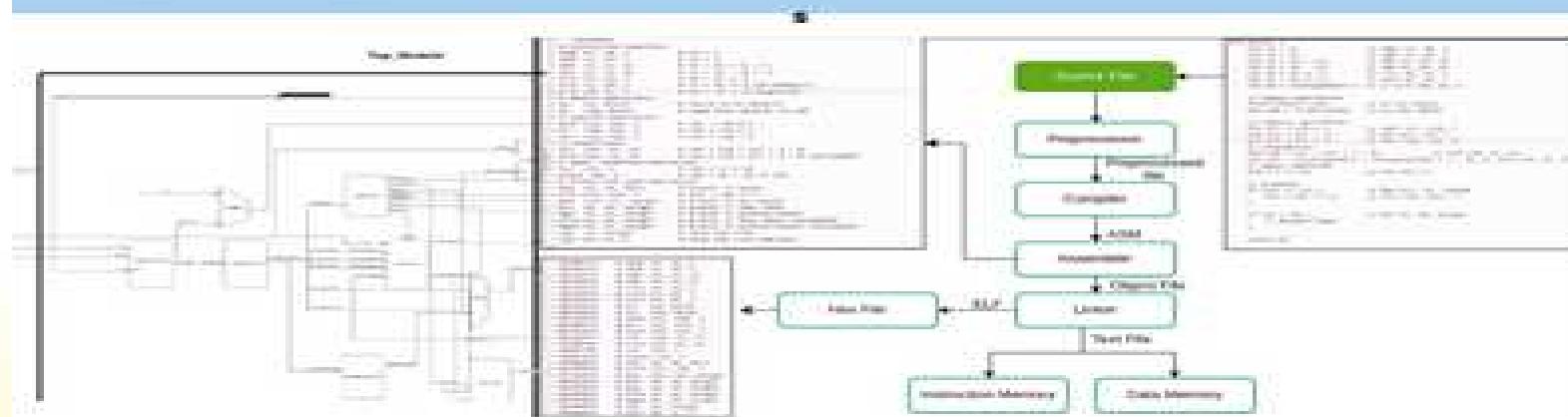
FPGA BASED RISCV PROCESSOR AND GCC PROGRAMMING TOOLCHAIN



Developed on an FPGA-based System-on-Chip (SoC) platform named Namal SoC Architecture, featuring a low-power, low-cost RISC-V-based baseline processor core. This architecture is optimized for resource-constrained embedded applications, offering a practical and scalable solution for real-world industrial use cases.

The Namal SoC integrates a custom RISC-V32I processor core, surrounded by a configurable interconnect bus, on-chip memory, and peripheral control logic, making it highly suitable for application-specific customization. The system is fully programmable using the standard GCC toolchain, allowing seamless integration with existing embedded software workflows. It supports portability across a wide range of FPGAs, from entry-level to mid-tier platforms, which helps in reducing both development cost and time-to-market.

- Processor Core:** Lightweight RISC-V32I ISA compliant core with modular enhancements for performance and power optimization.
- Bus Architecture:** Processor Local Bus (PLB) and high-speed interconnects for DMA, serial IO, and memory-mapped peripherals.
- Memory:** On-chip SRAM with future support for external DRAM interfaces.
- FPGA Portability:** Compatible with various Open FPGA families including Tang, ICE40, Xilinx, Intel.
- Toolchain Support:** GCC and RISC-V ecosystem compatible; standard linker scripts and startup code provided.
- Debug and Monitoring:** JTAG-based debug support, performance counters, and testbench simulation environment.



Feature	Status	Explanation
Integer Operations	Supported	Fully supported as RISC-V
Floating-Point (FPU)	Partly Supported	Software Supported
Atomic Operations	Partly Supported	Not Fully Supported
Threading	Limited	Not Fully Supported

CV ANALYZER

An Intelligent Application for Automated Resume Analysis and Ranking Using Multi-Model Semantic Processing



Importance

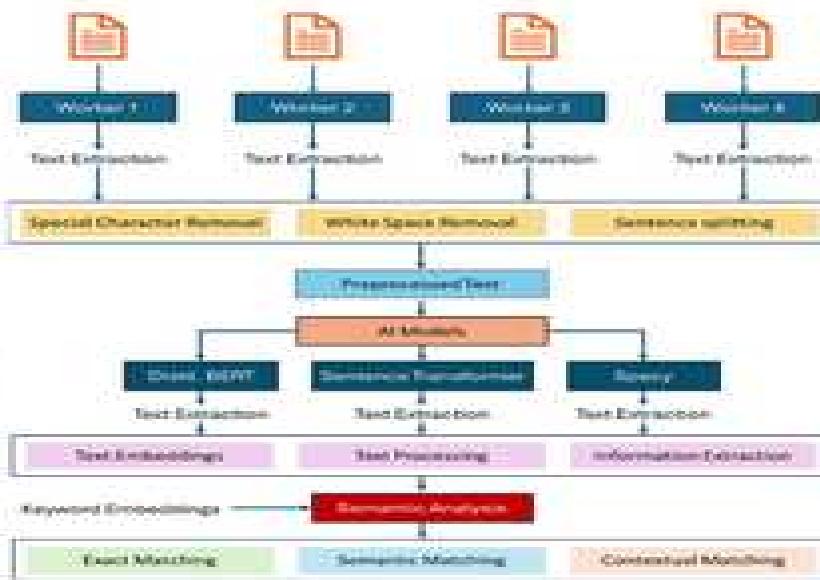
CV Analyzer revolutionizes the recruitment process by automating resume screening and evaluation. Its significance lies in reducing hiring time by up to 70% while ensuring qualified candidates aren't overlooked, enabling HR professionals to focus on more strategic aspects of recruitment rather than manual screening.



Salient Features

- Utilizes advanced language processing with AI models like DistilBERT, Sentence Transformer, and Spacy.
- Implements a three-tier matching system (exact, semantic, and contextual) for accurate resume analysis.
- Features text preprocessing and extraction for efficient data processing.
- Provides a user-friendly dashboard with visual analytics for easy result interpretation.
- Enhances resume screening efficiency with AI-driven automation.

Working Flow



CRICKET ANALYZER

A Smart Camera-Based System for Accurate Ball Speed Detection in Cricket

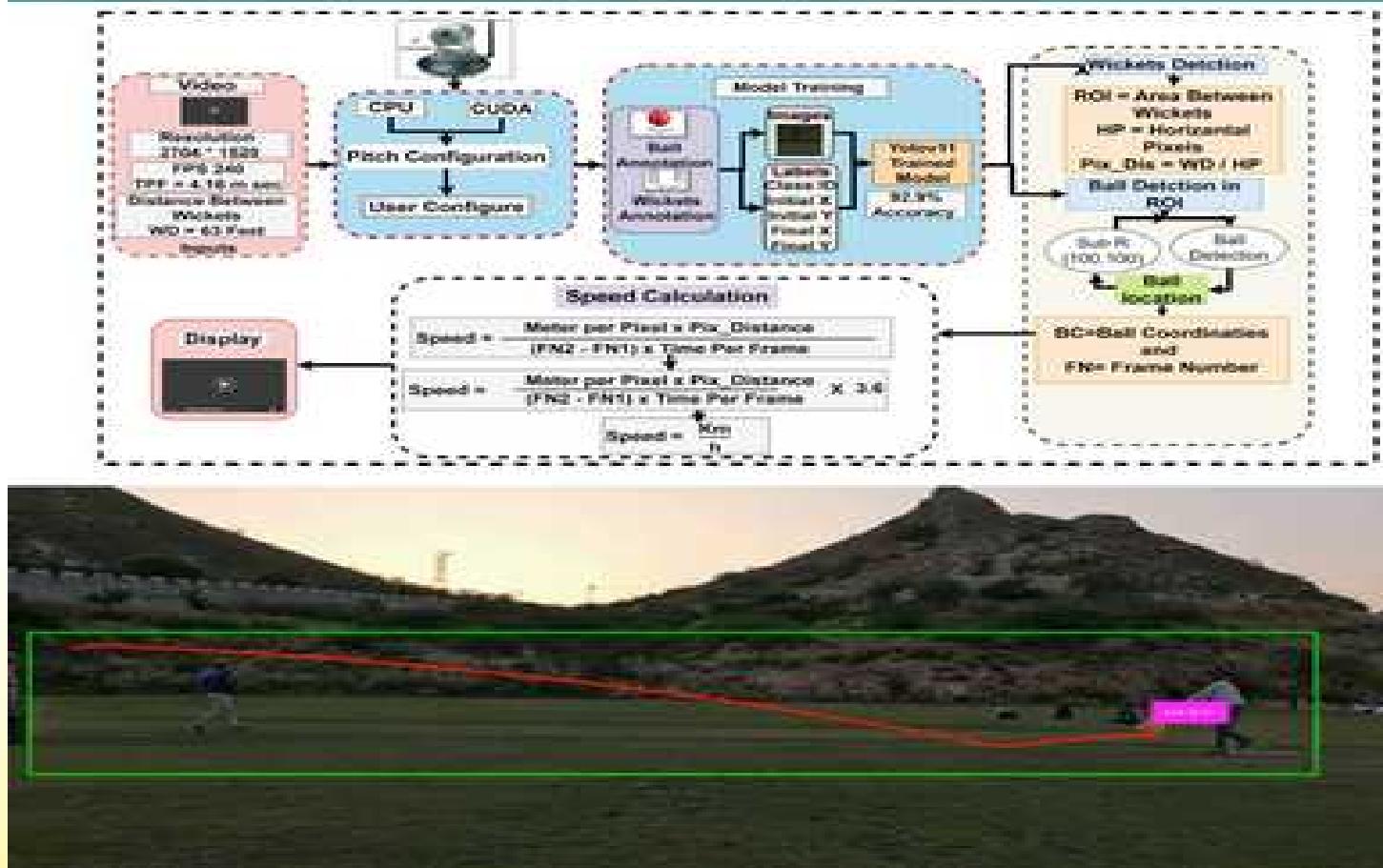


Importance:

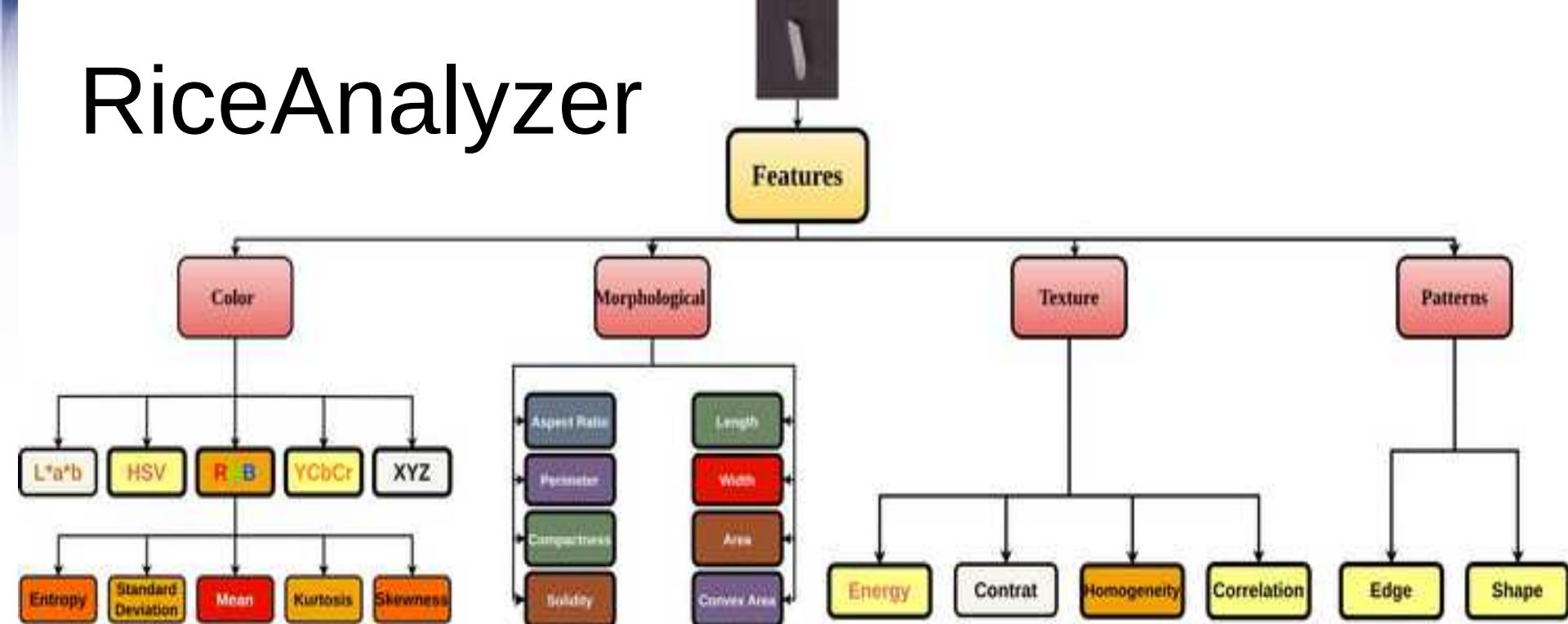
Cricket Analyzer provides an AI-powered, real-time solution for accurate ball speed detection, replacing costly radar-based systems with a more affordable and flexible. By leveraging YOLOv11 and high-resolution video input, it ensures precise ball tracking and analysis, making it a valuable tool for professional and amateur cricket. Its integration with a supercomputing-cluster enhances processing speed, enabling scalable and efficient sports analytics.

Salient Features:

- Uses a camera-based system instead of expensive radar for speed detection.
- Employs YOLOv11 for real-time ball detection and speed calculation.
- Runs on Pak supercomputing cluster, ensuring high performance.
- Provides a cost-effective and scalable solution for sports analytics.
- Enhances flexibility and accuracy in cricket ball speed measurement.



RiceAnalyzer

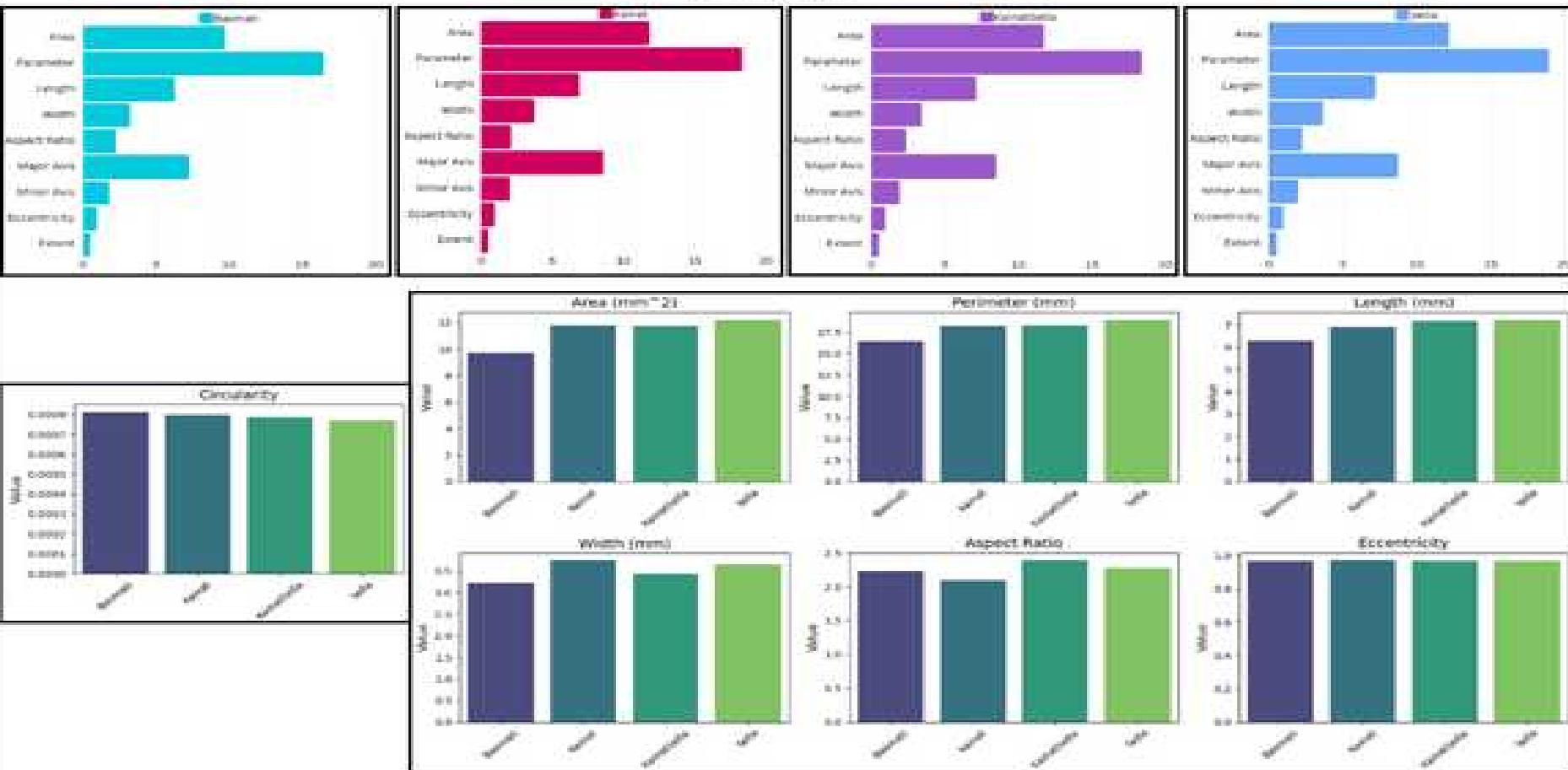


2. RiceAnalyzer (<http://119.156.30.94:8503>):

Deep learning based application for rice classification using Morphological and structural Data Engineering



Mean Morphological Differences For Different Grain Types



Grain Type	Area	Perimeter	Length	Width	Aspect Ratio	Major Axis	Minor Axis	Circularity	Extent
Basmati	9.7214	16.4577	6.267	3.219	2.23	7.272	1.82	0.00081	0.529
Kainat	11.815	18.308	6.889	3.737	2.097	8.593	2.007	0.000797	-0.499
Kainat-Sella	11.742	18.353	7.148	3.442	2.388	8.493	1.968	0.000784	0.520
Sella	12.18	18.924	7.193	3.646	2.279	8.702	1.9677	0.000768	0.510

Measurement Unit : Milli-meters(mm)



RICE ANALYZER

AI-Powered Rice Classification System



IMPORTANCE

The Rice Analyzer addresses critical challenges in Pakistan's rice export market by providing accurate classification of Basmati rice varieties. Its significance lies in preventing variety mixing, ensuring export quality standards, and strengthening Pakistan's position in the global rice market through an accessible cloud platform that achieves 95.13% accuracy in variety identification.

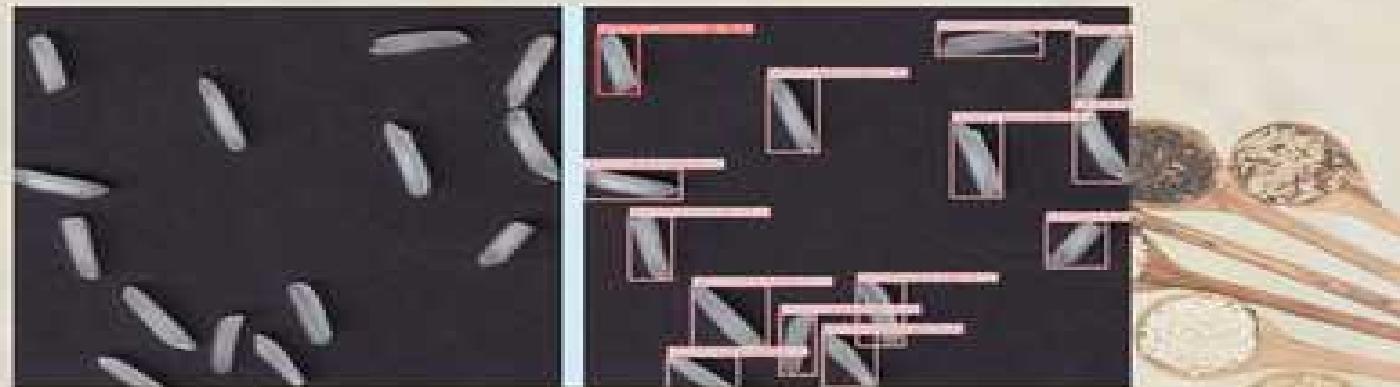
SALIENT FEATURES

Rice Analyzer uses a computer vision model that captures detailed characteristics of rice grains. The application analyzes four key aspects of each grain:

- Physical measurements (length, width, shape)
- Surface texture and structure
- Color properties (intensity, shade variations)
- Distinctive patterns unique to each variety

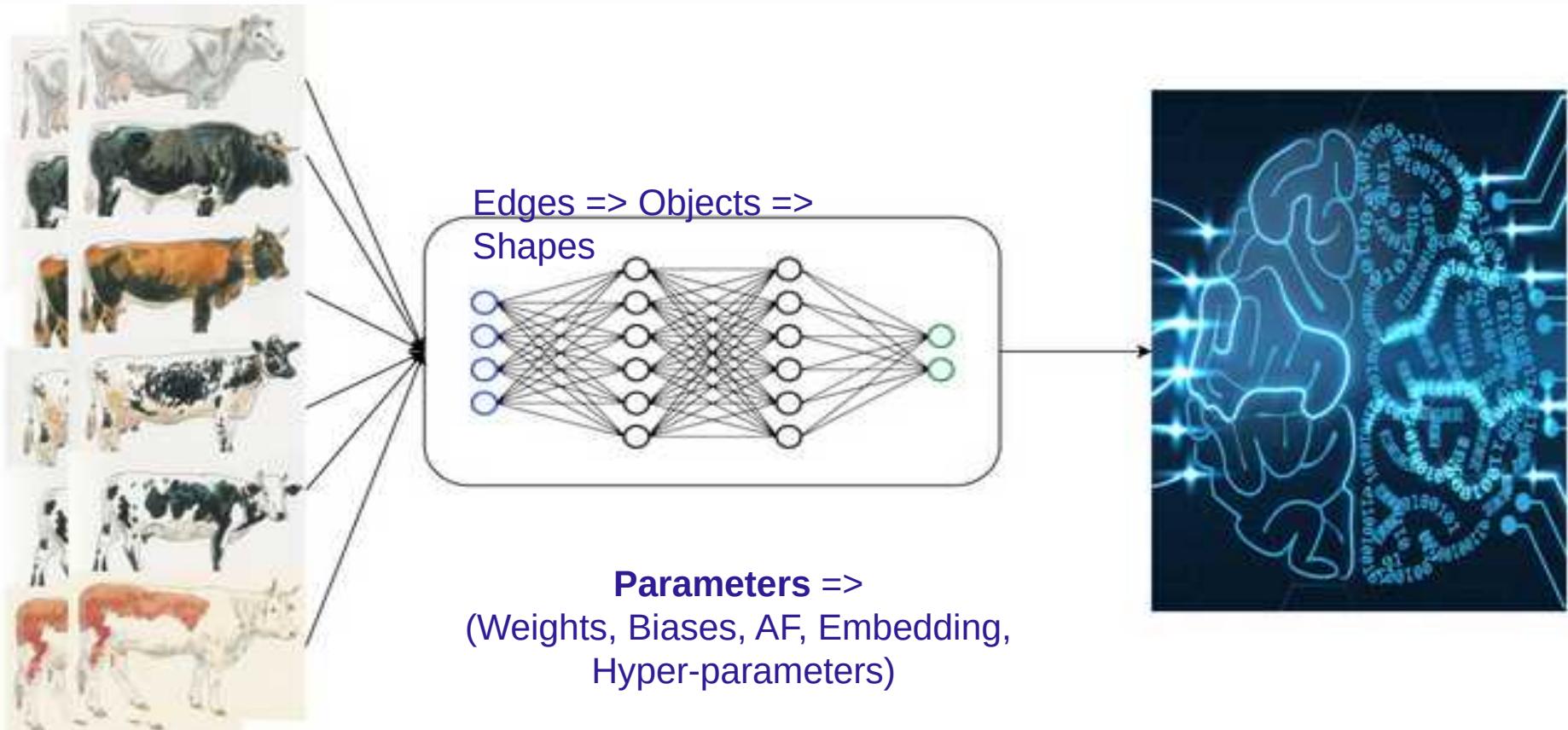
These features help differentiate between Basmati 2000, Sella 1509, Kainat 1121, and Sella Basmati 1121 varieties with exceptional precision.

VISUALS



Breed Classification using Deep Learning and Visual Images

(Labeled) Outputs (y) = $F(x)$ (AI Model) \Rightarrow Program



COW ANALYZER

Visual Features Based Smart Breed Identification Application



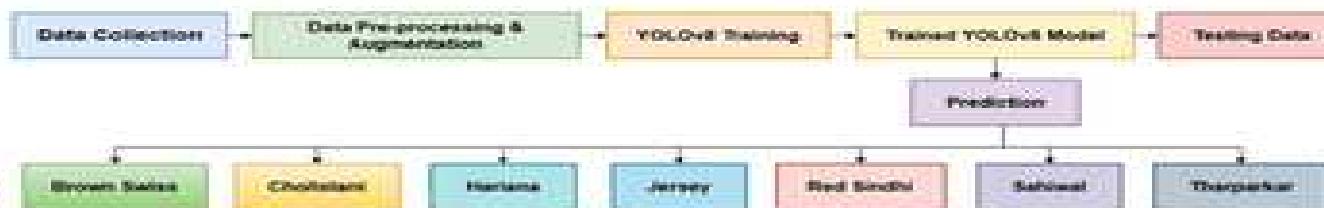
Importance:

Pakistan's economy and food security heavily depend on livestock, contributing 60.1% to agricultural value addition and 10.5% to GDP [1]. A 1% increase in dairy output boosts agricultural GDP by 0.36%, highlighting the sector's critical role. To enhance livestock management, a fast, accurate, and AI-powered solution is needed to visually classify Pakistani cattle breeds. This will improve breed identification, optimize productivity, and support sustainable growth in the livestock industry.

Salient Features:

- CowAnalyzer performs feature engineering on 10 Pakistani cow breeds.
- It utilizes a large vision model to identify phototypical features of each breed.
- The application is deployed on the PakSupercomputing cloud and is accessible via both mobile and web applications.
- It accurately classifies 10 cow breeds with an accuracy of 79%.

Working Flow



FootAnalytics

An Intelligent Digital System For Foot-Weight Distribution Analysis.

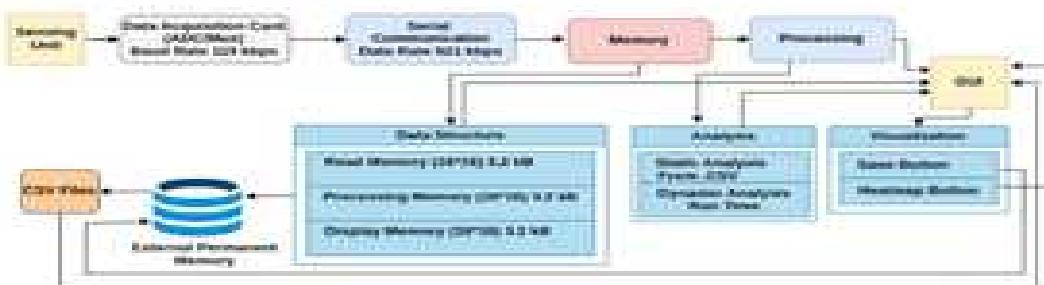
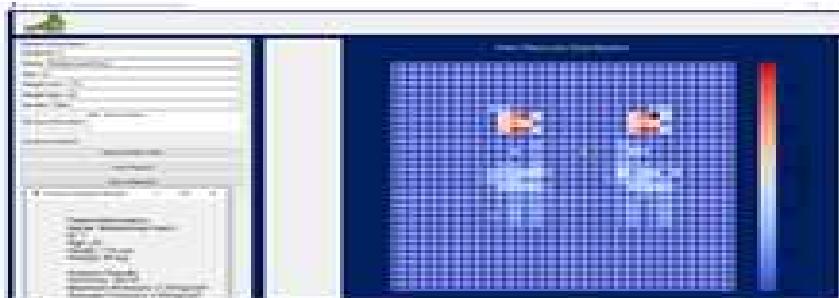


Importance:

Maintaining proper foot weight distribution is essential for health, posture, and recovery. Uneven weight distribution can cause pain, walking problems, and injuries. This research presents a smart system that uses sensors to measure pressure across the foot. The collected data is analyzed to detect health issues like osteoporosis and prosthetic misalignment. The system aims to improve diagnostics and preventive care effectively.

Salient Features:

- Utilizes PSR sensors in a matrix to capture foot pressure data.
- Converts pressure readings into digital signals via a data acquisition module.
- Processes data using statistical and machine learning techniques for analysis.
- Displays results on a user-friendly interface for easy interpretation.
- Assists in identifying health issues and supporting rehabilitation.



VIRTUAL REALITY BASED TELE-REHABILITATION SYSTEM



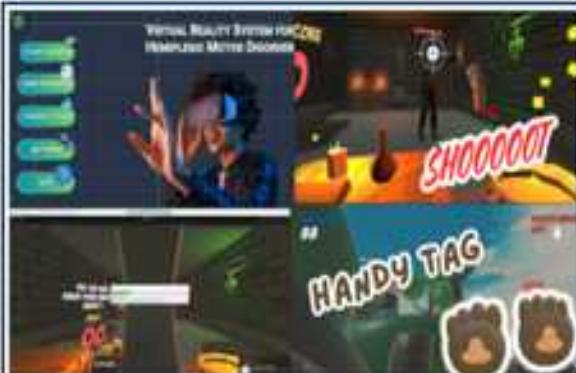
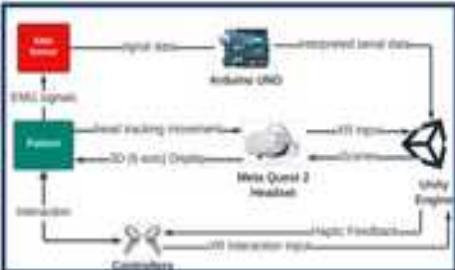
Importance:

Hemiplegia, a neurological condition caused by stroke, severely impacts motor function. This study explores the potential of Virtual Reality (VR) technology to improve rehabilitation outcomes for patients. The patients participated in rehabilitation sessions using the developed VR tele-rehabilitation.

Salient Features:

- Integrates biofeedback sensors for real-time performance monitoring.
 - Utilizes VR-based exercises to improve patient engagement and recovery.
 - Gives improvement in upper limb motor function for hemiplegic patients.
 - Provides an innovative and interactive approach for tele-rehabilitation therapy.
 - Advances the effectiveness of traditional rehabilitation methods.

Visuals



Use of Rehabilitation System



FACE RECOGNITION APPLICATION



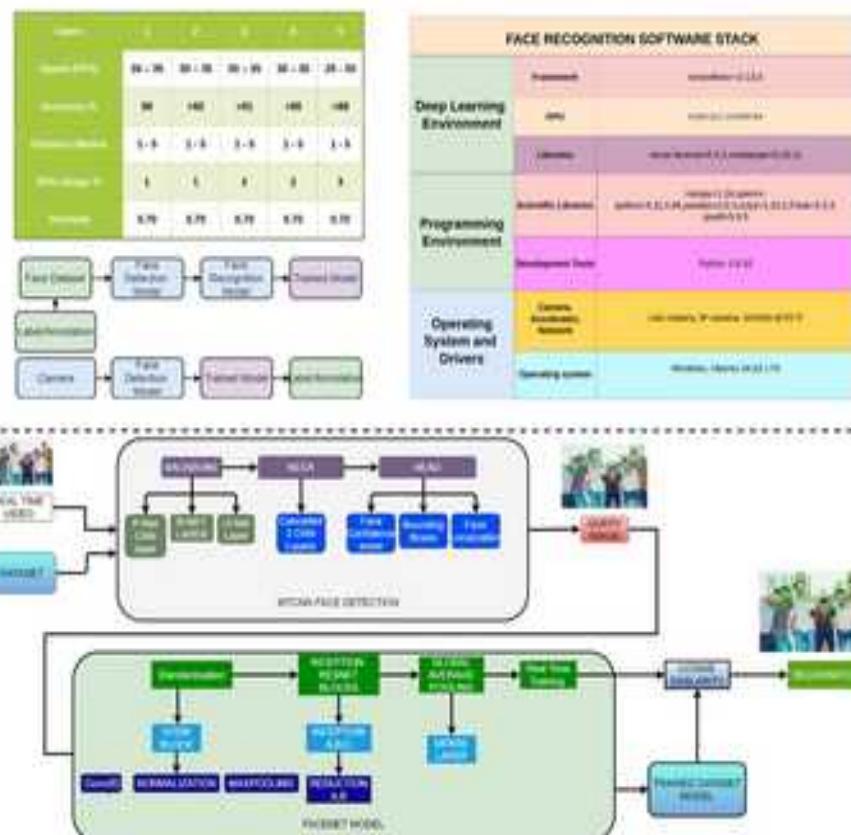
Robust Face Recognition System for Identity Verification

Importance

Face recognition is a powerful technology used for identity verification and secure access control. It enables real-time, contactless authentication, making processes such as attendance tracking faster and more efficient. With growing use in surveillance, smart devices, and automated attendance systems, it plays a vital role in modern AI applications.

Solient Features

- Accurate Face Recognition using FaceNet for deep feature-based identity verification.
 - Real-Time Attendance System that logs entries automatically through facial recognition.
 - Edge and Cloud Deployment support for flexible, scalable implementation.
 - Multi-Face Detection and recognition in live video streams for group scenarios.



AI-POWERED HUMAN-COMPUTER INTERFACE FOR PSYCHOPHYSIOLOGICAL MONITORING AND REHABILITATION

Real-Time Psychophysiological Analysis System.

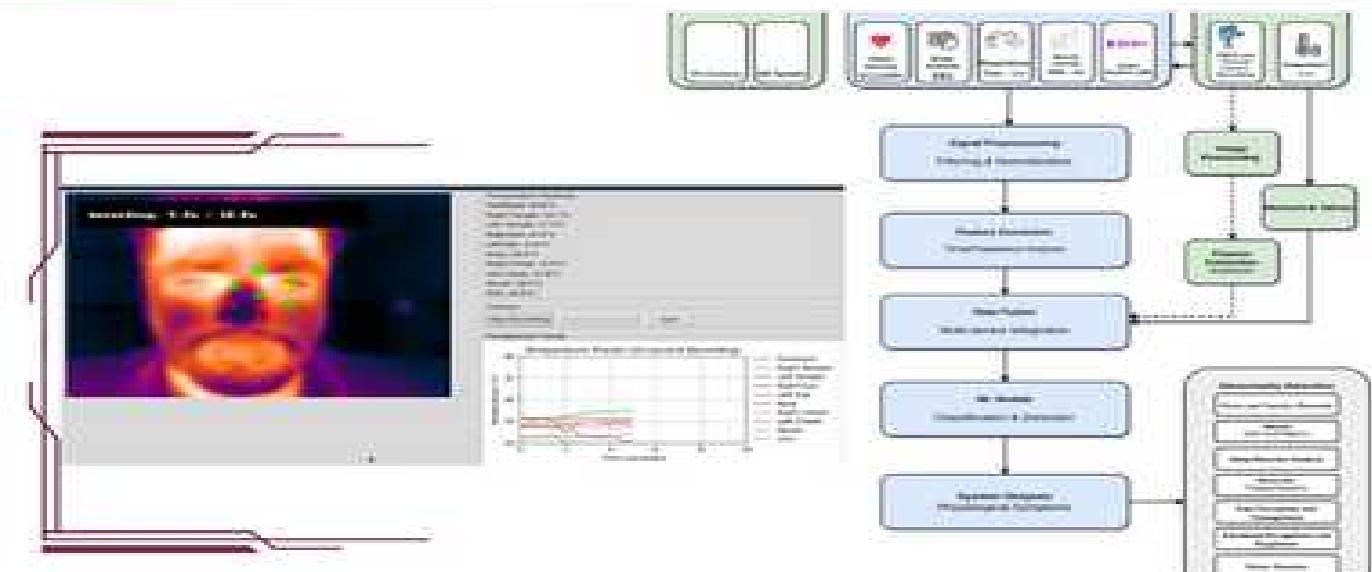


Introduction

This project develops an AI-driven system for real-time psychophysiological symptom analysis using multi-sensor data. It integrates inputs from ECG, EEG, EMG, respiratory sensors, audio/video, and a thermal camera for comprehensive monitoring. Advanced signal processing and feature extraction enable accurate detection of stress and related symptoms. Machine learning models classify emotional and physiological states with high precision. The scalable system supports early diagnosis and personalized health management.

Salient Feature

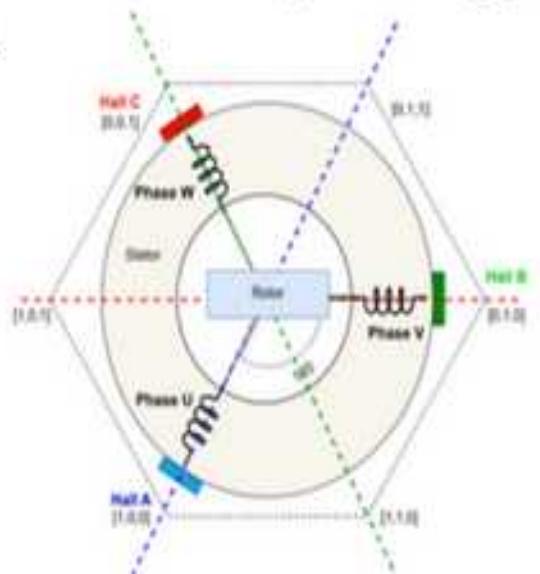
- Combines ECG, EEG, EMG, respiratory sensors, thermal camera, and video/audio to analyze physiological and psychological states.
- Utilizes thermal imaging to detect emotional and stress-related changes through facial temperature variations.
- Employs advanced machine learning models to accurately classify and detect psychophysiological symptoms in real-time.
- Provides continuous, non-invasive monitoring with immediate insights into emotional and physical well-being.
- Designed to detect a wide range of psychophysiological conditions, adaptable to various health and wellness applications.



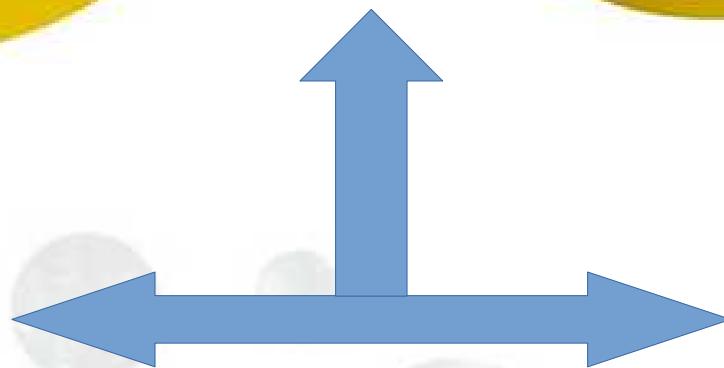
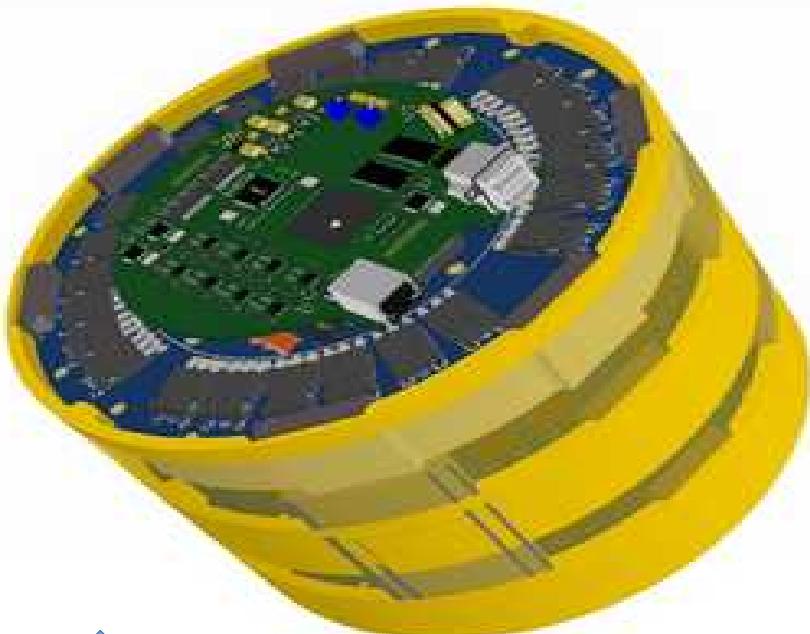
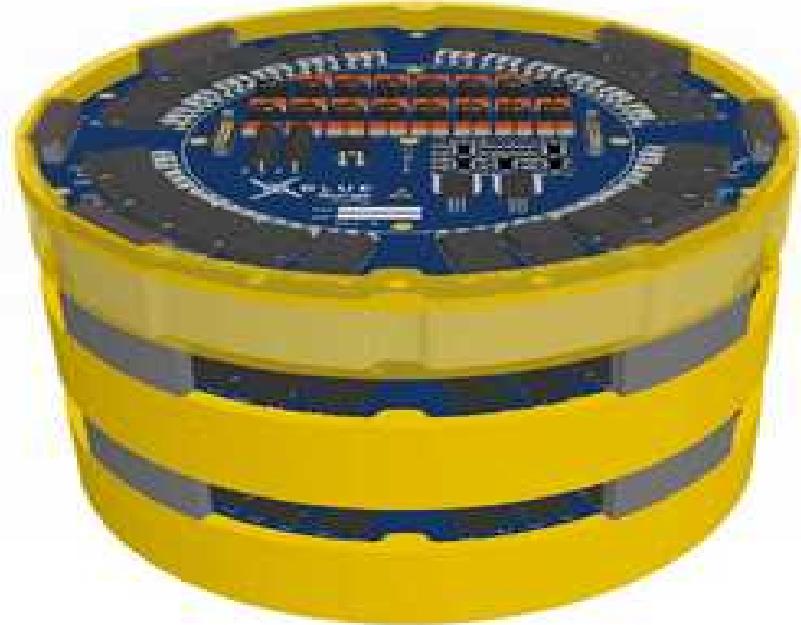


BLDC Smart Motor Controller

The smart BLDC motor controller is a versatile and robust solution designed for electric vehicles, supporting a wide voltage range (48V to 120V) and handling currents up to 500A. It offers scalable power output from 10KW to 50KW with modular drive card stacking and dual motor control for advanced applications. Key features include regenerative braking, multiple driving modes (brake, cruise, and speed selection), and integrated protections against overcurrent, over-temperature, and voltage fluctuations. With a user-friendly design, it provides USB and RJ45 interfaces for programming and diagnostics, along with an onboard cooling system for efficient thermal management. Its compact, rugged design ensures high performance and reliability.



Energy Efficient Motor Controller

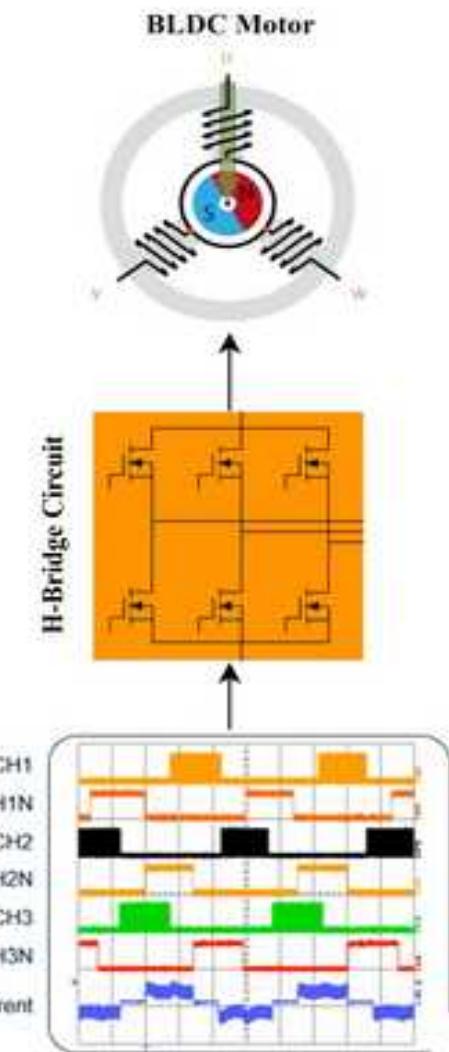
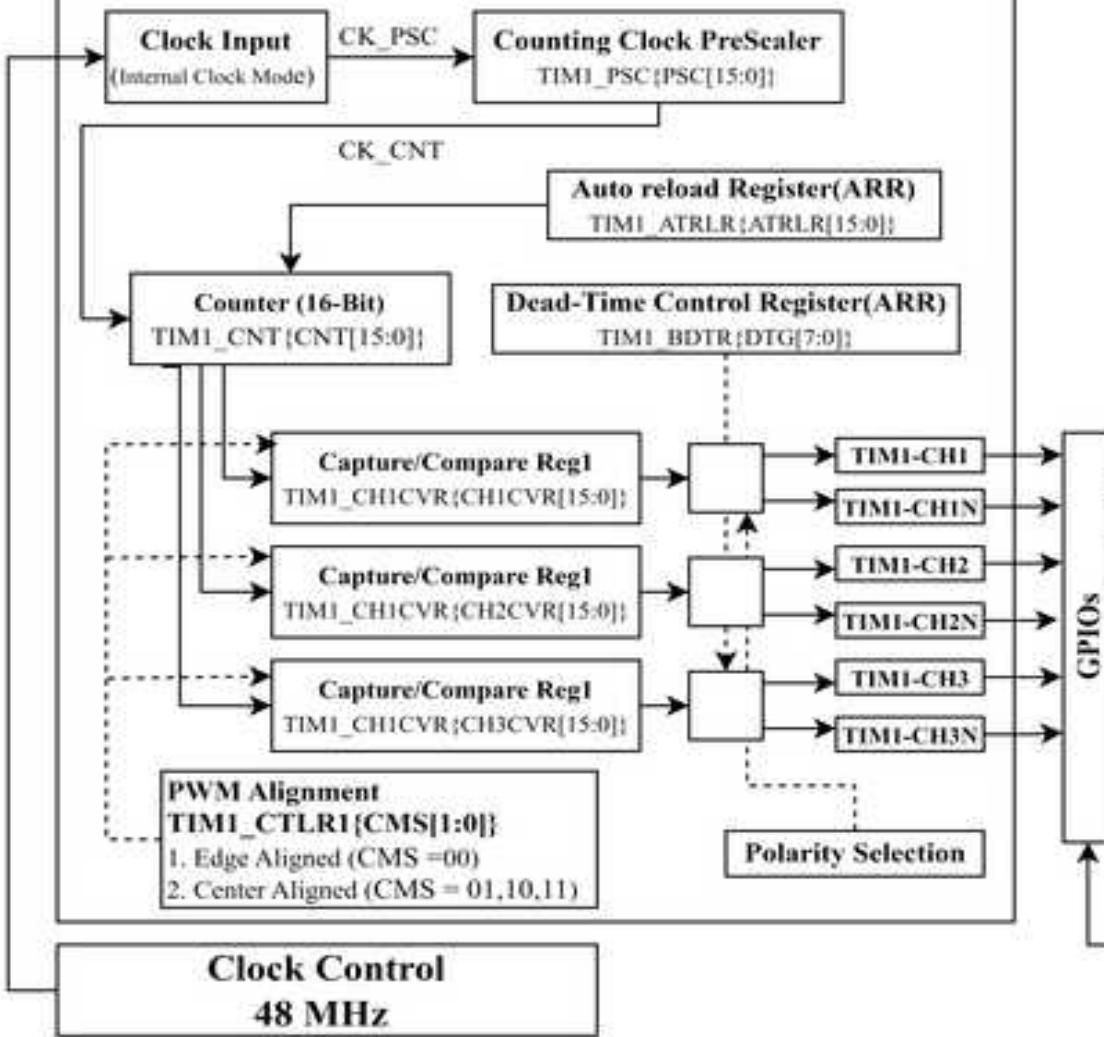


CH32V003 MCU

Advanced-Control Timer

(16-bit auto-reload timer, TIM1)

4 Channels with Complementary Outputs and Dead Time Control



Control Signals
Start
Stop
Speed
Brake



AN ENERGY EFFICIENT & LOW-COST RISC-V BASED BLDC MOTOR CONTROLLER

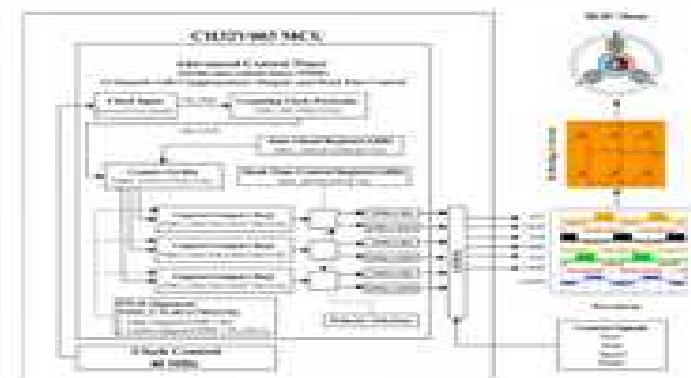
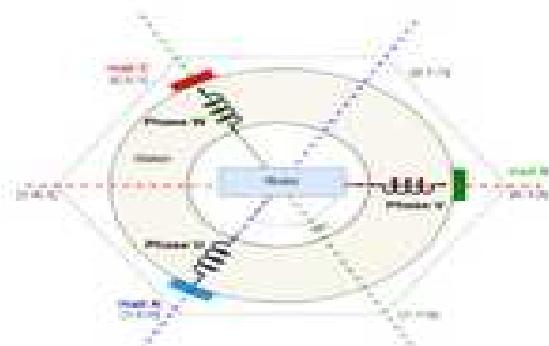
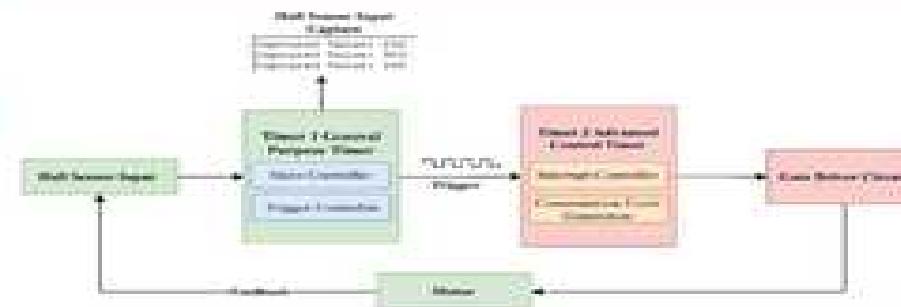


IMPORTANCE

BLDC motors are widely used for their high efficiency, reliability, and lesser maintenance issues, but existing controllers struggle to provide balance in power consumption, control features, and cost-effectiveness. This study develops an energy-efficient BLDC motor controller using a RISC-V processor with low-level control speed and position feedback, optimizing power usage while maintaining precise motor control.

SALIENT FEATURES

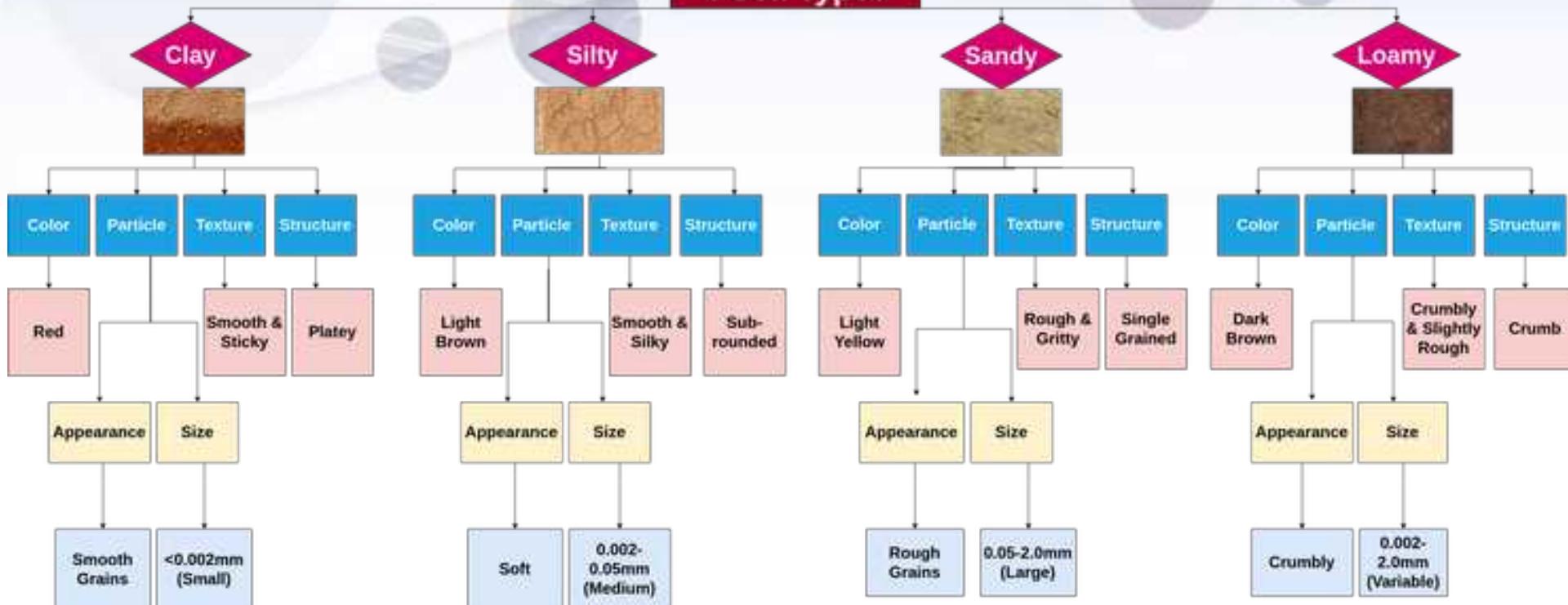
- Utilizes a low-cost 48MHz RISC-V processor for improved energy efficiency, affordability, and advanced motor control.
- Optimized power consumption while maintaining precise speed and torque control.
- Implements low-level programmed control algorithms for better performance.
- Evaluates based on power efficiency, speed control accuracy, and torque response.
- Outperforms existing programmed motor controllers, ensuring reliable and efficient motor operation.



SoilAnalyzer

Data Architecture

4 Soil Types



3. SOIL ANALYZER ([HTTP://119.156.30.83:8503](http://119.156.30.83:8503)):

Soil texture analysis using visual features and advanced computer vision techniques





SOIL ANALYZER

A Smart Visual Features based Soil Classification System

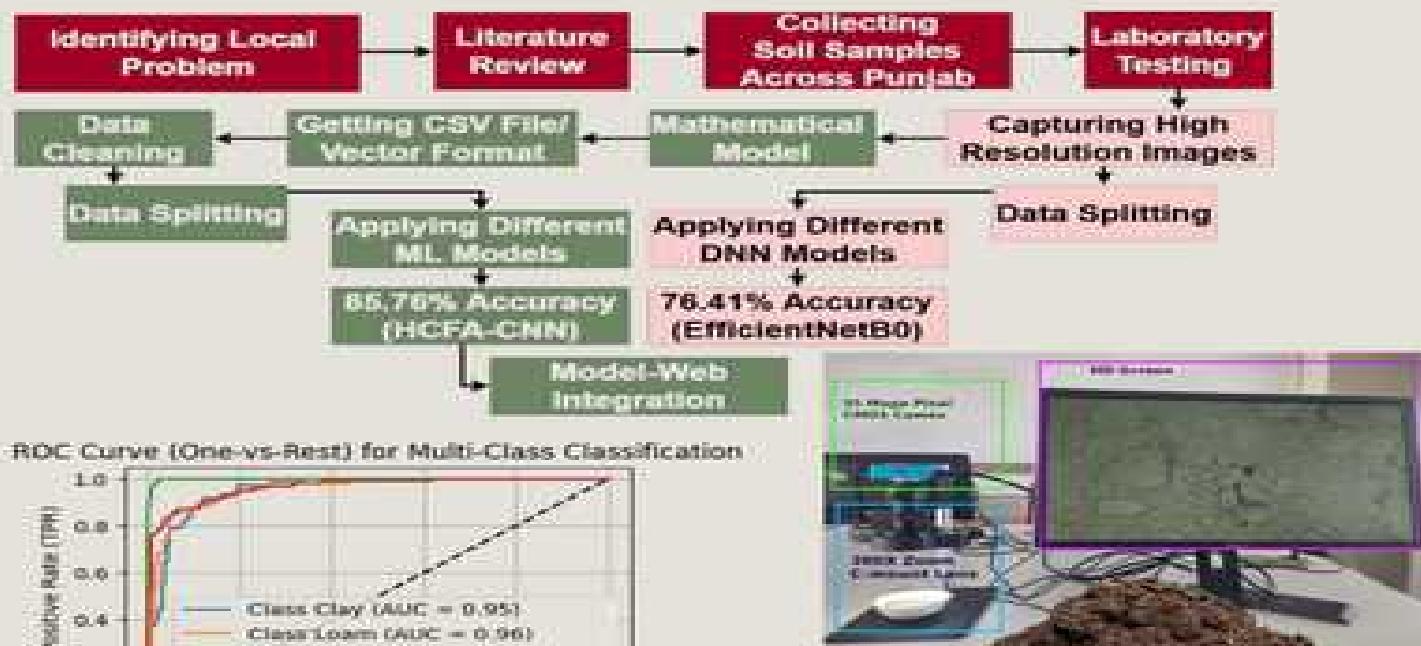


IMPORTANCE

Accurate and timely soil analysis is vital for sustainable agriculture in Pakistan. Traditional lab methods are costly and slow, limiting large-scale assessments. Soil Analyzer leverages mathematical model, machine learning and computer vision for fast, cost-effective soil classification.

SALIENT FEATURES

- Utilizes visual-micro-features based mathematical model, machine learning and computer vision for rapid soil classification.
 - Employs Hand-Crafted Feature Augmented Convolutional Neural Network (HCFANN) to analyze soil morphology, structure, texture and color.
 - Achieves 95.78% classification accuracy, reducing dependency on expensive lab tests.
 - Provides a cost-effective, scalable and efficient solution for soil assessment.
 - Supports multi-user access and automated analysis, improving agricultural decision-making.



SugarcaneAnalyzer

Mobile Environment



Captured raw image

Image Preprocessing
Resizing, Normalization

Temporary storage for processed images

Sugarcane variety



Prediction Result:
CP 77-400

Displays prediction results (e.g., Sugarcane variety)

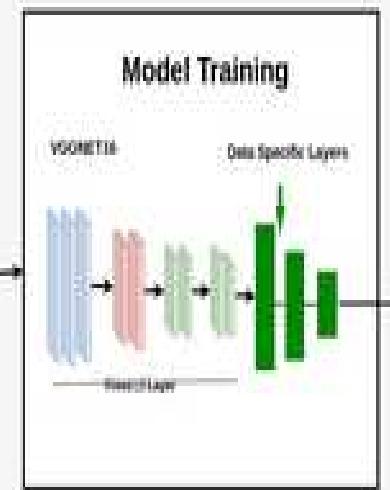
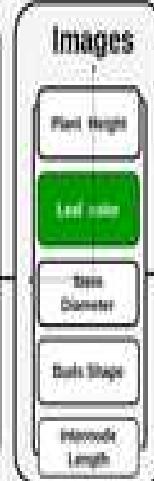
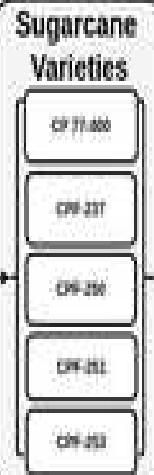


Image Upload via
HTTP post request

Flask API
<http://10.0.0.153:8504>



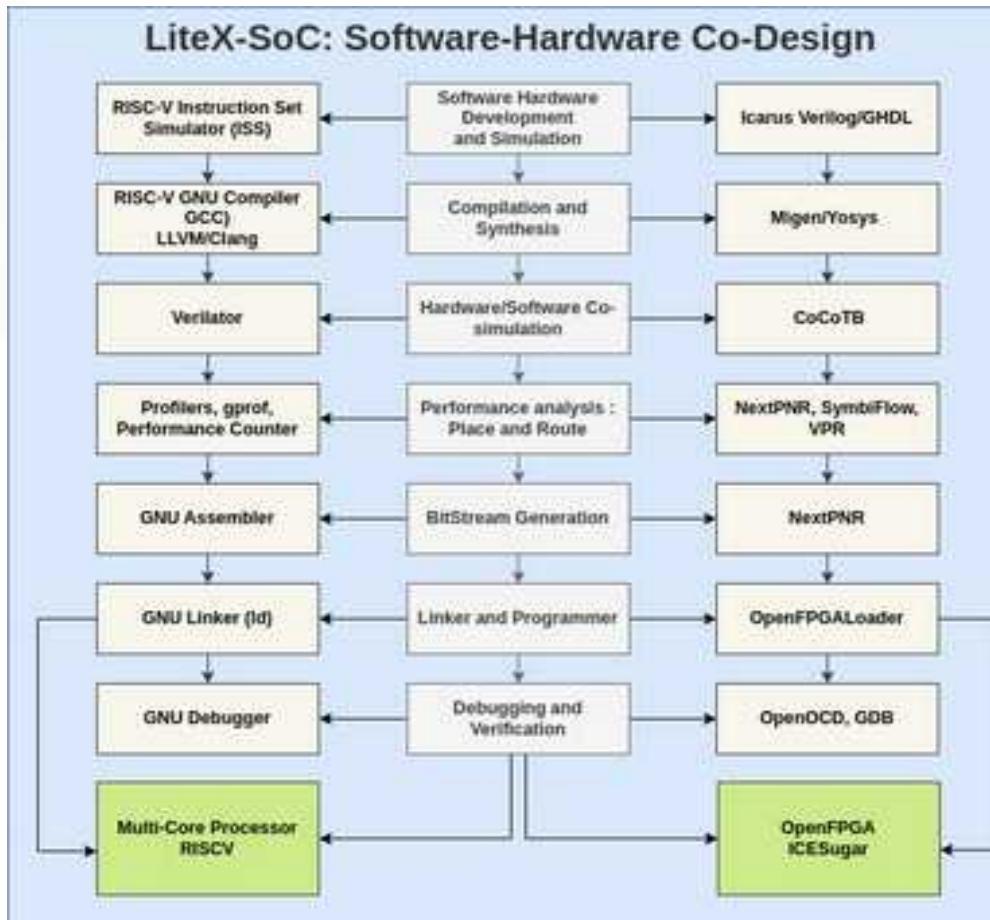
Classification
Result

Result Processed
by TFLite model

HPC 10.0.0.153

Hardware Software Co-Design

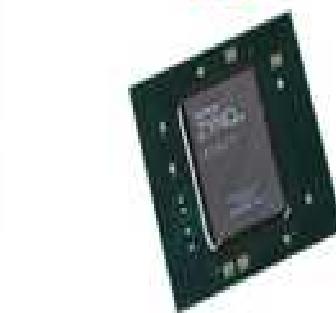
This project focuses on the hardware-software co-design of a specialized system that integrates open-source processor architectures, hardware, and software tools. The system uses a RISC-V processor for managing and controlling application processes, while FPGA accelerators handle compute-intensive real-time tasks. The RISC-V processor is programmed using GCC compilers and toolchains, while FPGA programming and porting are accomplished with open-source design compilers. The final system integrates OpenFPGA hardware and commercially available RISC-V cores for a complete, efficient, and customizable implementation tailored to the specific application needs.





FPGA Based Seed Sorting

The seed sorting machine is designed to perform real-time sorting with exceptional speed and precision. Capable of operating at 120 FPS while processing 4K HD video, the system leverages FPGA technology to eliminate wire delays and memory read/write latency. By utilizing bit-level parallelism, it ensures efficient, high-speed performance, making it ideal for demanding sorting applications.





Way Forward

- Local Problem Identification
- End User (Industry, Community)
- Data Engineering
- Requirements
 - ~~ Software Development
 - ~~ Hardware Resources
 - ~~ Launching
- Agreements



Applications Requirements:

– Counting operations in the model:

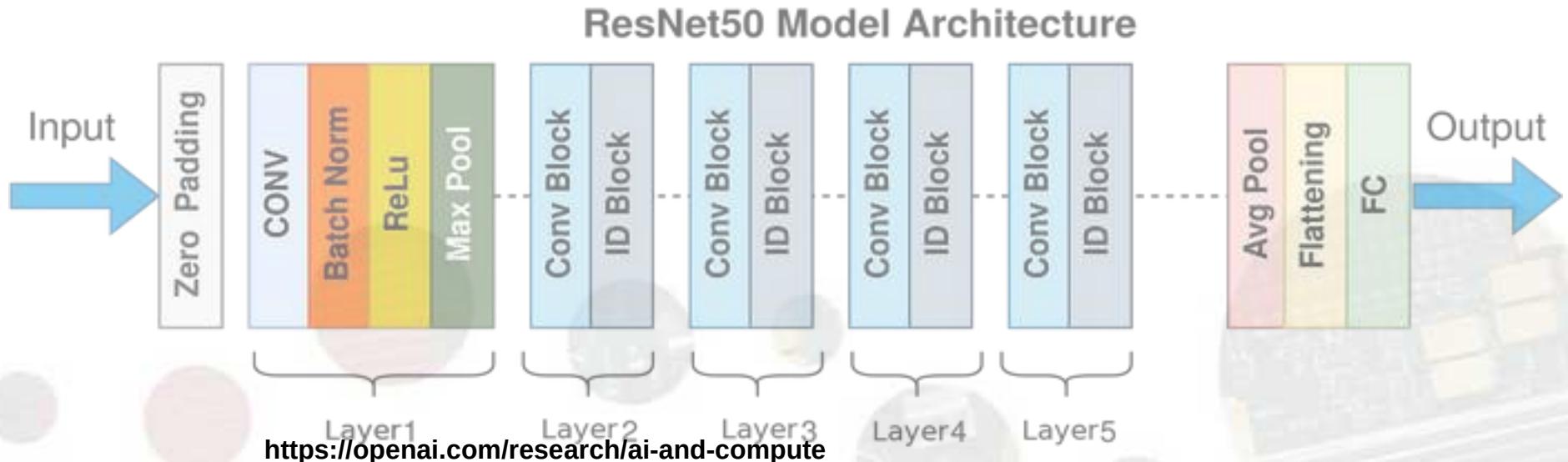
(add-multiplies per forward pass) * (2 FLOPs - add-multiply) * (3 for forward and backward pass) * (number of examples in dataset) *
(number of epochs)

$$= (11.4 * 10^9) * 2 * 3 * (1.2 * 10^6 \text{ images}) * 128 \text{ (=> Resnet-151 model)}$$

$$= 1.050624 \times 10^{19} = 10 \text{ EFLOPS}$$

$$= 10,000 \text{ PFLOPS} / (24 \times 60 \times 60) = 0.1157 \text{ PFLOP-days}$$

= 115 TFLOPS/day (Cost?, Power?, Maintenance? CE?)



AI Applications Requirements:

– Counting operations in the model:

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- $= (11.4 * 10^9) * 2 * 3 * (1.2 * 10^6 \text{ images}) * 128$ (\Rightarrow Resnet-151 model)
- $= 10,000 \text{ PF} = 0.1157 \text{ PFLOPS-days} = 115 \text{ TFLOPS/day}$

– FLOPS/Byte:

- $10,000 \text{ PFLOPS} / ((224 * 224 * 4 * 3) * 1.2\text{M} * 128\text{e})$
- $= 108\text{KFLOPS/Byte}$

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Machine Time:

- Number of GPUs * (TFLOPS of RTX4070TI) * days trained * estimated utilization
- $= 2 * (41.58 * \text{TFLOPS}) * 1 * 0.33 = 2.366496 \text{ EFLOPS-Day}$

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- $= 11.83248 \text{ EFLOPS- 5days or 5 Machines @ 1Day}$

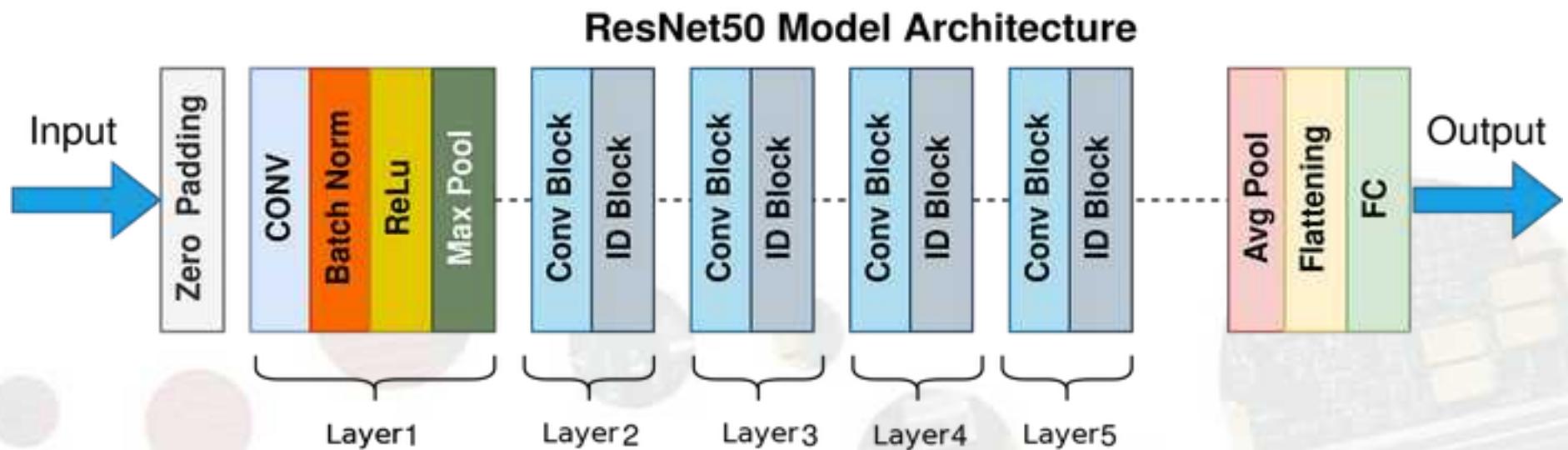
Scalable Performance / Accuracy

- **Parallelism**

- Data
- Model

- **Training**

- Sync, Async
- Strategy



Equity Based (Joint Ventures)



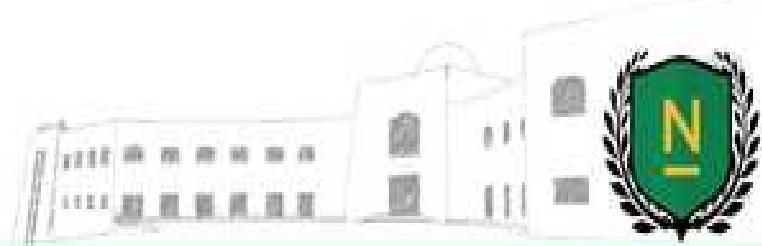
- Motivation for Faculty
- Structured Growth
- Institutional Support for Academic Projects

Outcome Type	Principal Investigator + Industry*	CAID	Explanation
POC	100%	0	FYP Support, Research Publication as per Namal Research Policy
MVP	93%	7 %	RA and Tech Support from CAID
CVP	PI+ Industry + Sharing	10 %	Developer and Commercialization Support from Industry

Agreement Based (Contract Execution)



Agreement	Type	Namal CAID	Outcome
Licensing	PI and Industry	Upto 30% share. If Project is generated from MVP	One time revenue
Independent Support	Renting Co-working space, HPC Resource Utilization and services	Renting Cost Hardware and Work Space	Renting Hardware Resource and Local Space Local Hiring
Independent Consultancy	Consultancy and Independent Expertise	Upto 20% share In case Hardware Resource are shared	HPC Resource Sharing and Technical Services

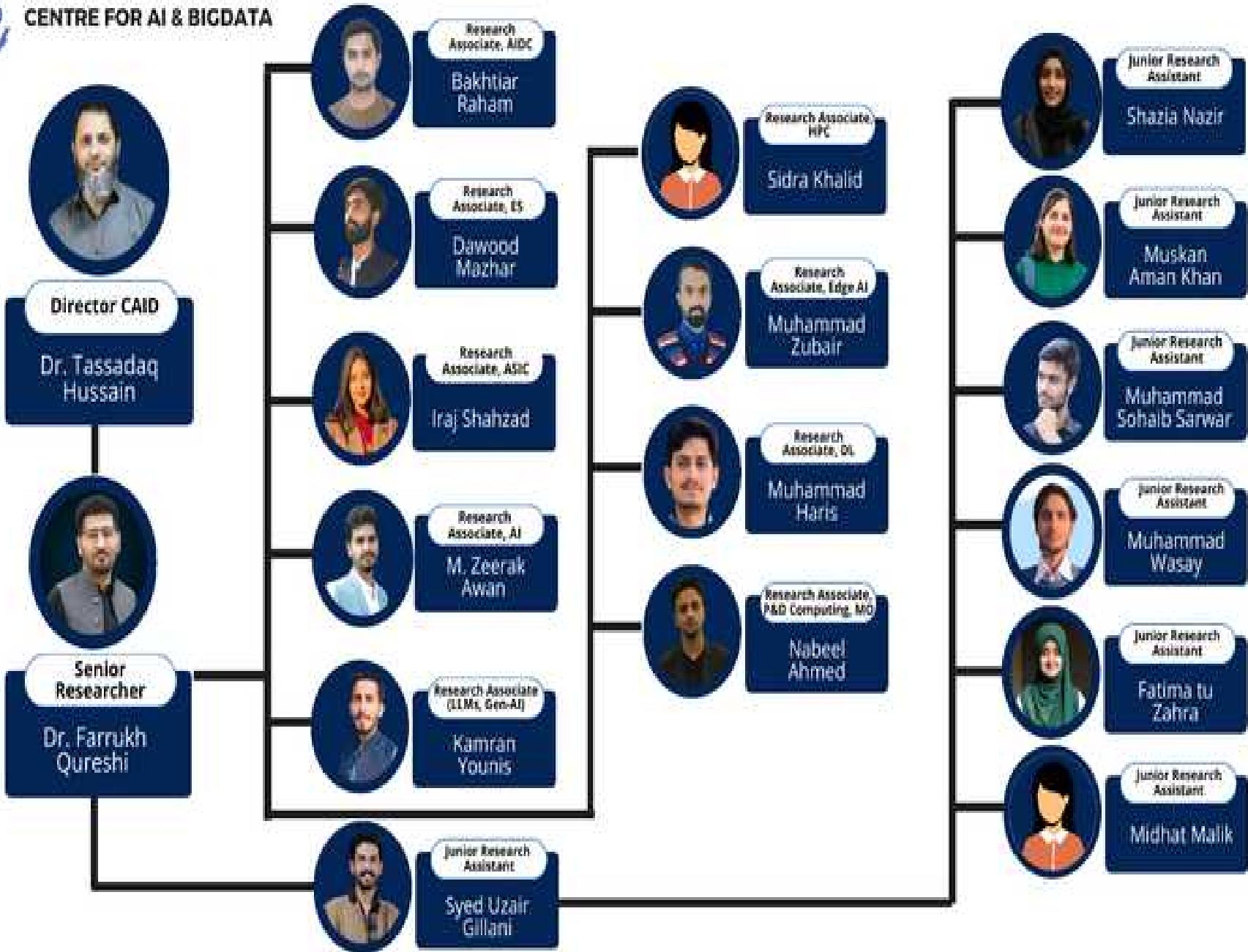


Requirements	Outputs	Time	Deliverables	Cost
Applications				3-5 Million
Product (Hardware)				9-10 Million



CENTRE FOR AI & BIGDATA

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A
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NAMAL University, Mianwali

SHAPING THOSE WHO SHAPE
THE FUTURE



CAID: Centre for AI and BigData

Director:

Senior Researcher:

Dr. Tassadaq Hussain

Dr. Farrukh Qureshi

