

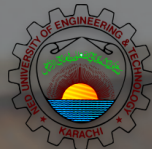
SMART CITY LAB

NATIONAL CENTER OF ARTIFICIAL INTELLIGENCE

NED UNIVERSITY OF ENGG. & TECHNOLOGY

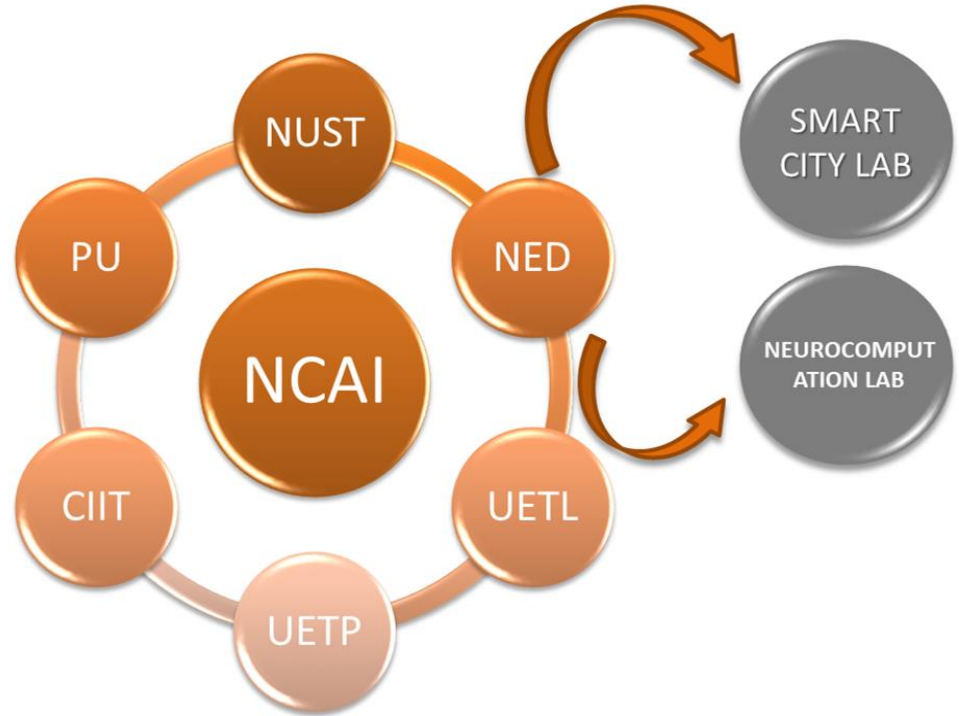


**NATIONAL CENTRE OF
ARTIFICIAL INTELLIGENCE**



WHAT IS NCAI?

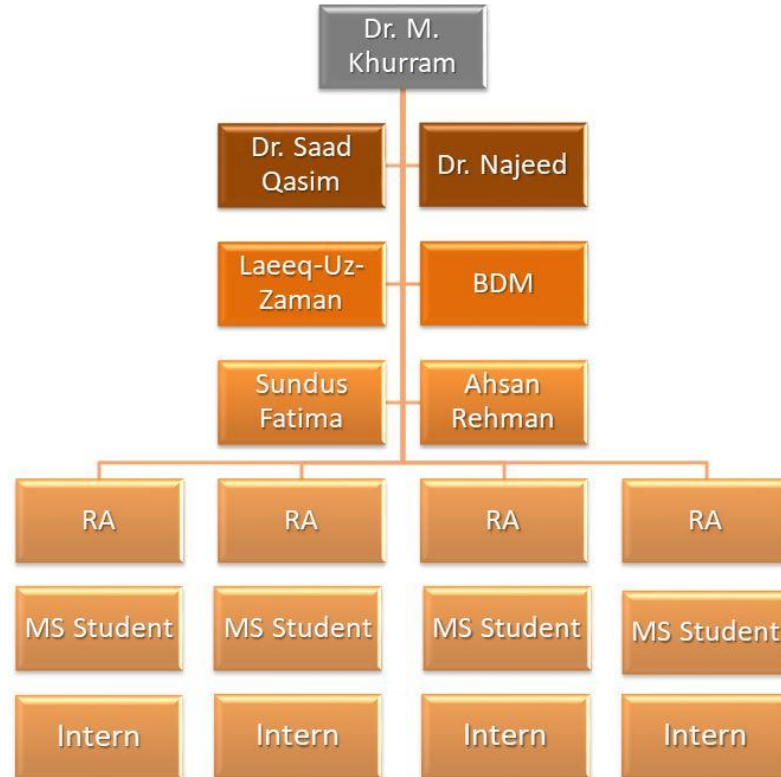
- NCAI is the latest technological initiative of Government of Pakistan under the government's Vision 2025.
- The center is designed to become the leading hub of innovation, scientific research, knowledge transfer to the local economy, and training in the area of AI.



WHO WE ARE



OUR TEAM



“

The mission of Smart City Lab is to create innovative environment to achieve sustainability and growth, doing research in the field of technology to make better quality of life and bridging gap between academia and industry through joint ventures.

”

SMART CITY LAB FOCUSED AREAS

01 | Smartcity management systems

02 | Applications using AR/VR

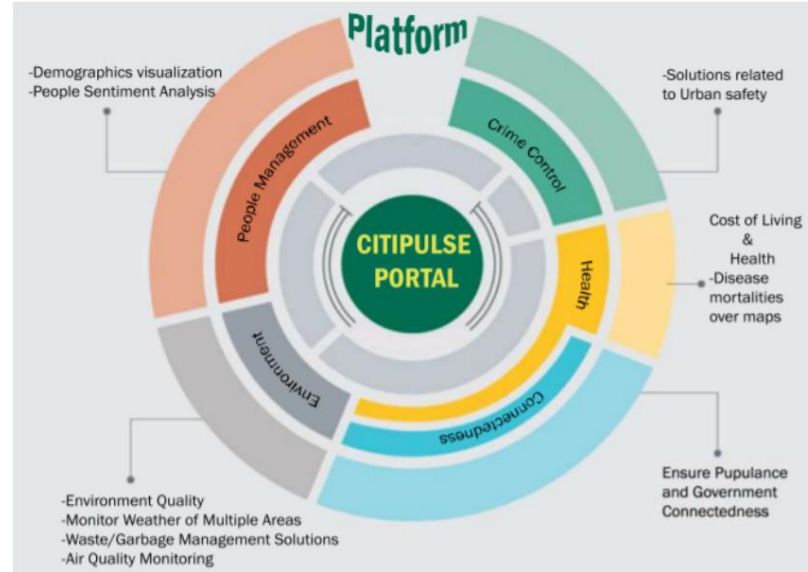
03 | Computer Vision based solution

04 | Smart Auto-Electric Vehicles

OUR PROJECTS

A BRIEF INTRO OF OUR SUCCESSFUL PROJECTS

CITIPULSE



People Management



Safety & Security

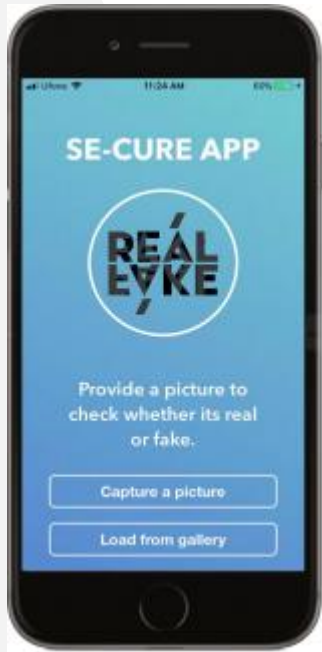


Traffic Management & Control



Environment Management

SE-CURE APP



The Secure-App is the ultimate cost-effective solution for companies deeply concerned about forgery of their products

1000 Samples tested



Detect Counterfeit Products

90% Above Accuracy



Unique Encrypted Image



Encrypted with QR code



Uncopyable & Undetectable

https://drive.google.com/file/d/1yUAicPHU9t_iJU-jr4dJwLQrx0rVEoIN/view?usp=sharing

URDU OCR

- Online portal for Urdu OCR Deployed, its very user friendly. You can upload images that consist Urdu text in different fonts.
- Extract the Urdu literature from a document image and to identify their reading format in order to convert the image into searchable electronic representation.
- System recognizing both handwritten and printed urdu (some list of fonts depending on trained dataset).
- Got high accuracy of about 90% for some specific fonts.

تفریح اور پدایات کا ایک بہت اچھا ذریعہ
میں ایک مہینے میں کم سے کم ایک پنک

تفریح دل پدایات کا ایک بہت اچھا ذریعہ
میں ایک مہینے میں کم سے کم ایک پنک

INTERNSHIP PORTAL

- Making employable youth
- Improving competency and knowledge in intern
- Eliminating the gap between industry and educational institutions.
- Providing employer skillful resources.

URL: <http://internship.rcai.pk/>

RICE QUALITY ANALYZER

Advantages

- Accuracy up to 99%
- Easy to Use
- Time Saving
- Easy Record Keeping
- Printable Reports
- Detailed Reports



RICE QUALITY ANALYZER
Research Center For Artificial Intelligence

Quality Analysis Report

Test time : 10:21	Test date : 10-09-2020
Variables	Values
Average Length (10g) (mm)	7.68
Average Width (10g) (mm)	1.97
Whole Grain (qty)	11
Whole Grain Weight (gm)	0.19
Broken Grain (qty)	0
Broken Grain Weight (gm)	0.0
Total Grains (qty)	11
Reference Value (100g) (mm)	4.5
Total Weight (gm)	0.19

SMART CITY LAB FOCUSED AREAS

01 | Health Care

02 | IoT

03 | AI / Machine Learning / Computer Vision Based
Solutions

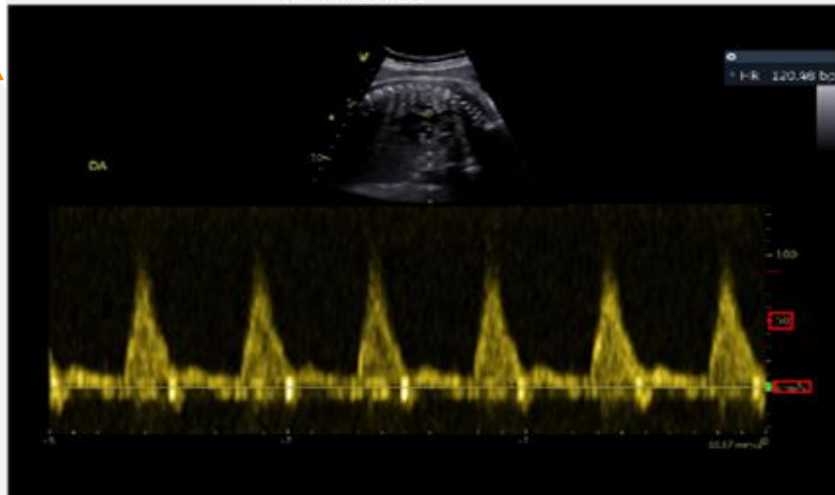


HEALTH CARE

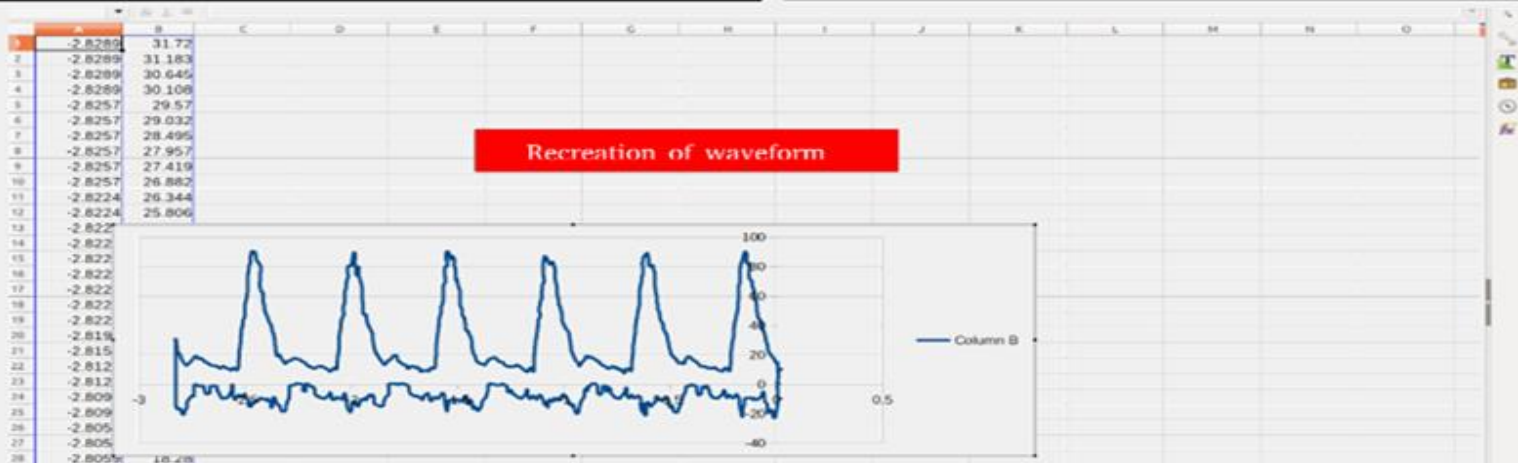
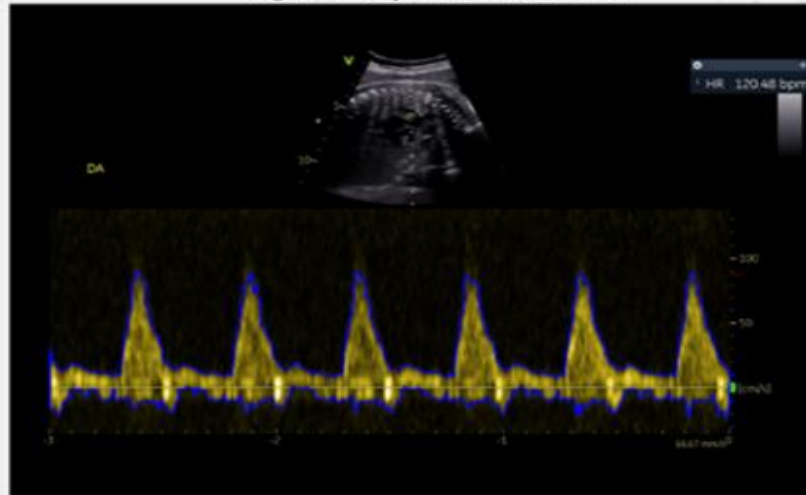
DICOM (Automatic extraction of Doppler velocity waveform)

- ▶ Predict stillbirth and death of the baby within the first week of birth.
- ▶ Few parameters in current manual analysis
- ▶ Time consuming manually requires 30-45 minutes.
- ▶ Efficient process provide results within seconds
- ▶ Algorithm used to detect signal inside DICOM
- ▶ Help in Predict mortality before time.

scale detection



Signal velocity wave form detection



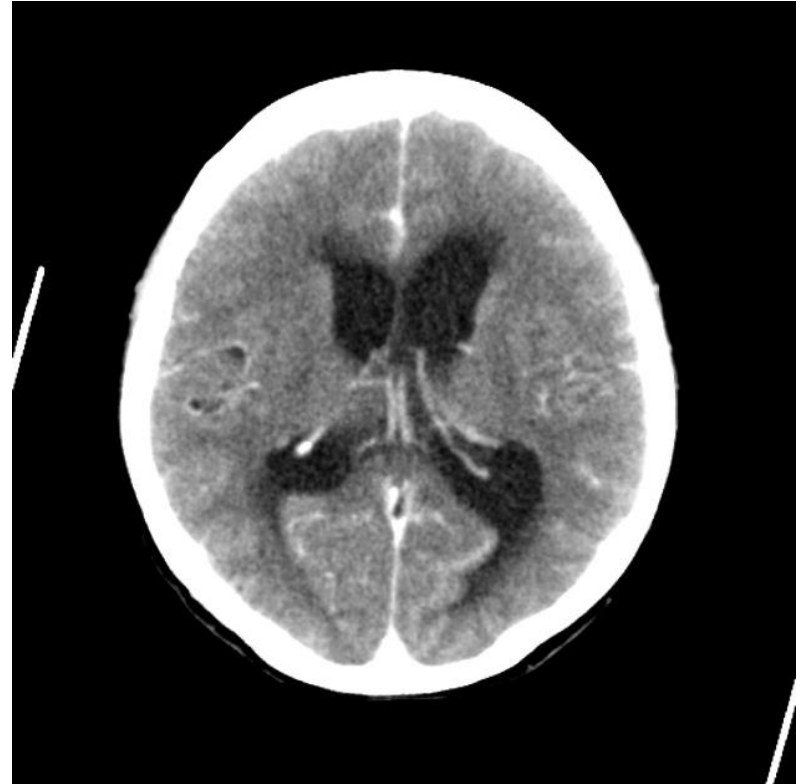
User engagement prediction on social media platform using machine learning and deep learning

- Analysis of Human Behaviour through Social Media
- Helps to Create Understanding
- Case Study on a Group of Employees
- **7850** Data points
- Likes, Comments, Rating, Theme & Type extracted

THEMES	TOTAL POST	NUMBER OF RATINGS	PER POST AVERAGE ENGAGEMENT
INSPIRATIONAL AND THOUGHT PROVOKING	4282	110617	25.83
RECENT UPDATES	833	34755	41.72
INFORMATIVE	1427	55588	38.95
ACKNOWLEDGMENT AND APPRECIATIONS	943	52750	55.93
COMPASSION	330	9021	27.33
CHALLENGE AND SOLUTIONS	33	3667	111.12
TOTAL	7848	266,398	33.9

Enhanced radiological diagnosis of Cerebral tuberculosis using machine learning (ML).

- Tuberculosis (TB) - major infectious disease.
- Tuberculosis meningitis (TBM) / Cerebral tuberculosis - rare category
- Diagnosis & Treatment
- Classification
- AI-based predictive scoring system
- Integration for Mobile App



INTERNET OF THINGS



AQUA AGRO



ANDROID APP FOR FARMERS



- Monitoring
- Control
- Easy access

O/P DEVICES ON CLOUD



- Showing different parameters measured at the field
- Updated on hourly basis

50%

SAVE WATER

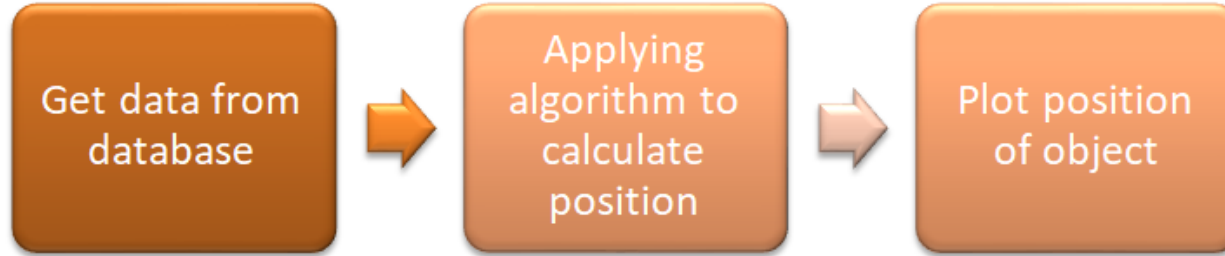
35%

MORE CROPS



IRRIGATE MORE ACRES

PINS (POSITIONING & INDOOR NAVIGATION SYSTEM)



**CUSTOMER
BEHAVIOUR**

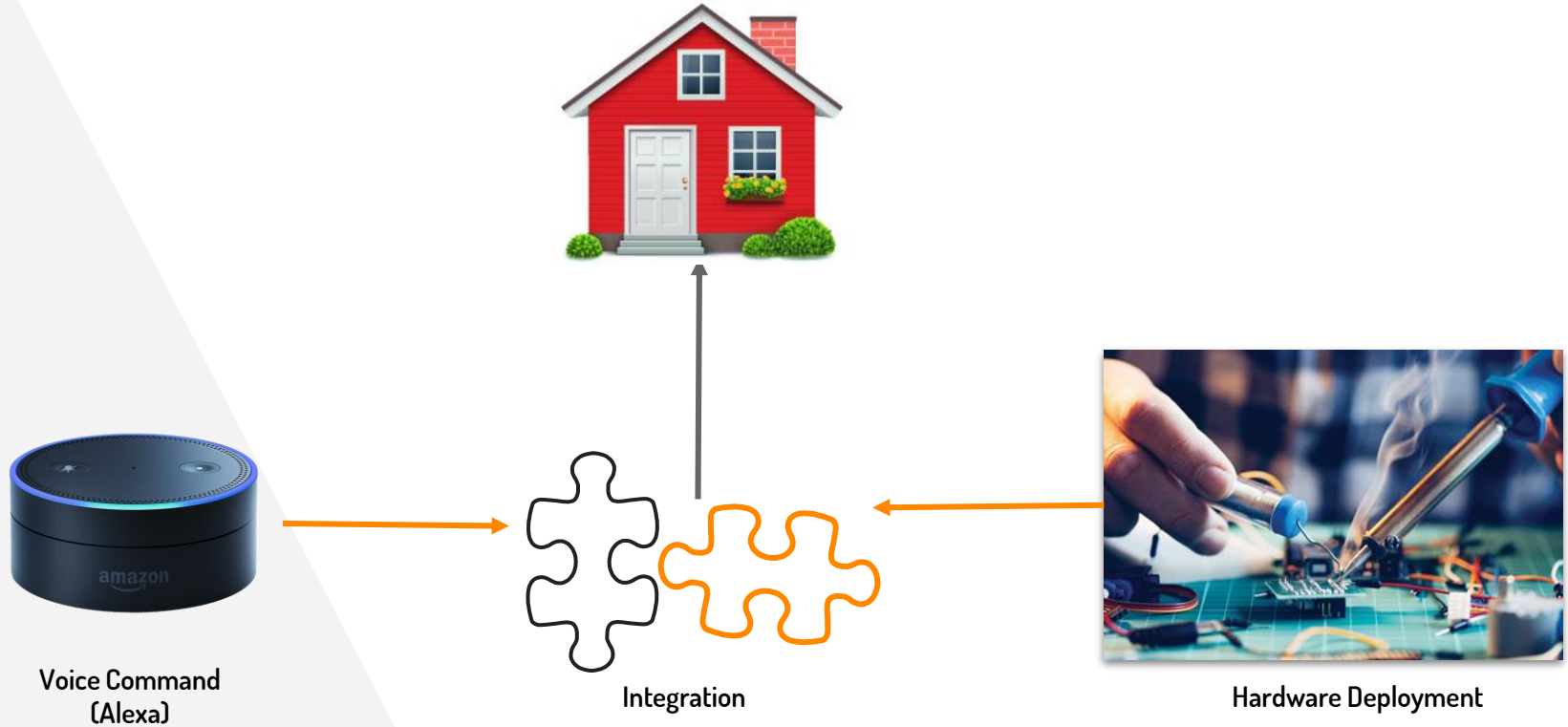


**EMERGENCY
EVACUATION**



**POSITION & ASSET
TRACKING**

HOME AUTOMATION



ARTIFICIAL INTELLIGENCE, ML & COMPUTER VISION



AI PROCTOR

MONITORS...



Logging activity



Face Detection



Face Recognition



Screen activity

ADVANTAGES



No Fake Identity



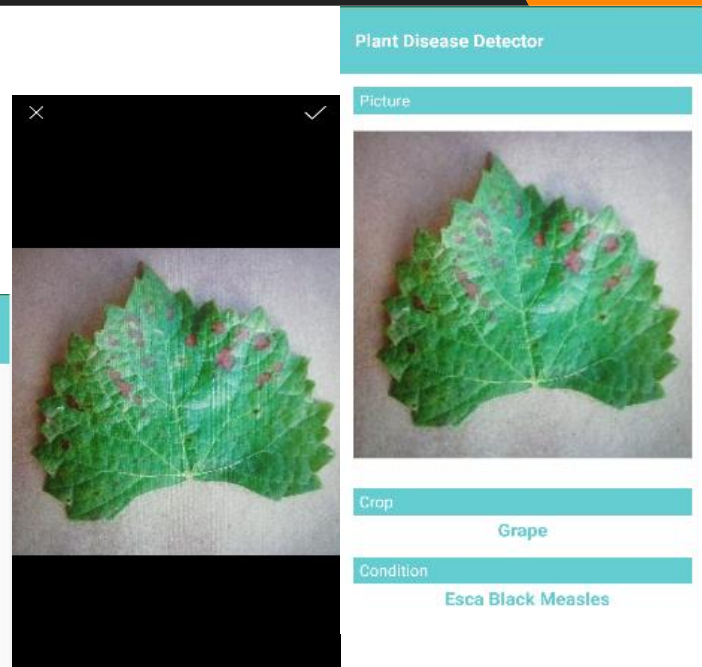
No cheating



Online Exam Security

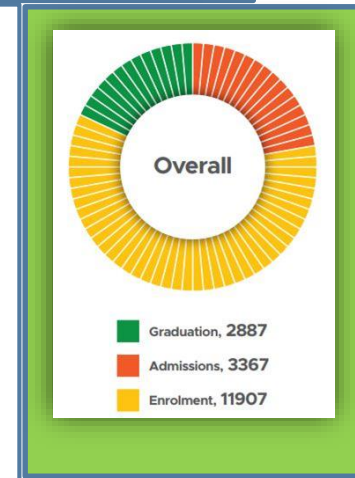
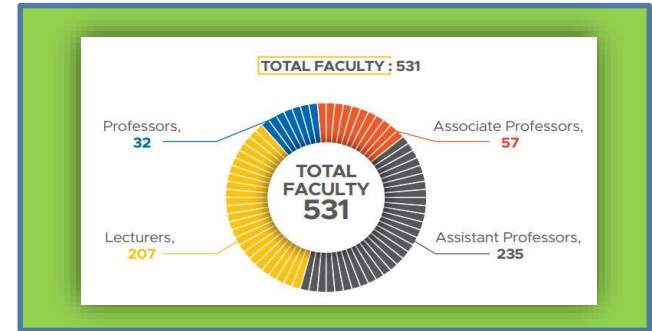
PLANT DISEASE DETECTION

- Deep learning based plant disease detection
- Simple interface for the farmer to upload picture of the leaf
- The system allows detection of 26 diseases across 14 crops.
- This allows a farmer to react quickly and prevent further crop damage.



GREEN SPACE ANALYSIS

- Provides any part of the world or area of the required green space
- Helps in planting more trees according to specific data provided
- Following is the case study on NEDUET green space.
- The research concluded that NED is deficit of green space area of 24782 sq. m



“

Crowd Counting through Computer Vision technique

True Count=619



Estimated Count=439 Accuracy=70%



True Count=1175



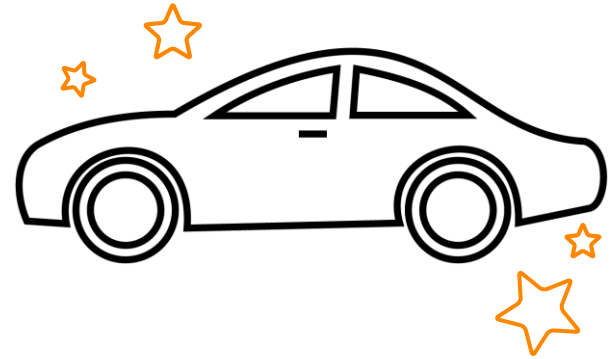
Estimated Count=962 Accuracy=81%



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FIRST EVER IN PAKISTAN!

NCAI envisions to lead the innovation in autonomous sector of Pakistan.

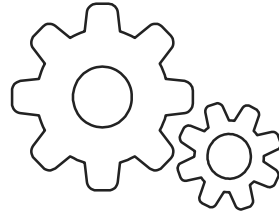


Autonomous Vehicle Project

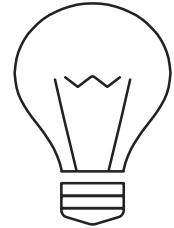
NCAI Smart City Lab envisions to lead the disruption of automotive sector in Pakistan. We aspire to be pioneers in production of advanced driver-assistance systems (ADAS) with a broader vision of achieving both partial & full vehicle autonomy encompassing local challenges.



SAFETY



| AUTOMATION



| INTELLIGENCE

Project Modules

We are determined to address the extreme urban road conditions, specific to Pakistan.

Water puddles

- Optimized navigation through water challenging routes

Potholes

- Actuate through tough road conditions

Local Weather

- Model weather Independency in transportation

Traffic Congestion

- Reduce average time to commute

Eliminate Accidents caused by human error

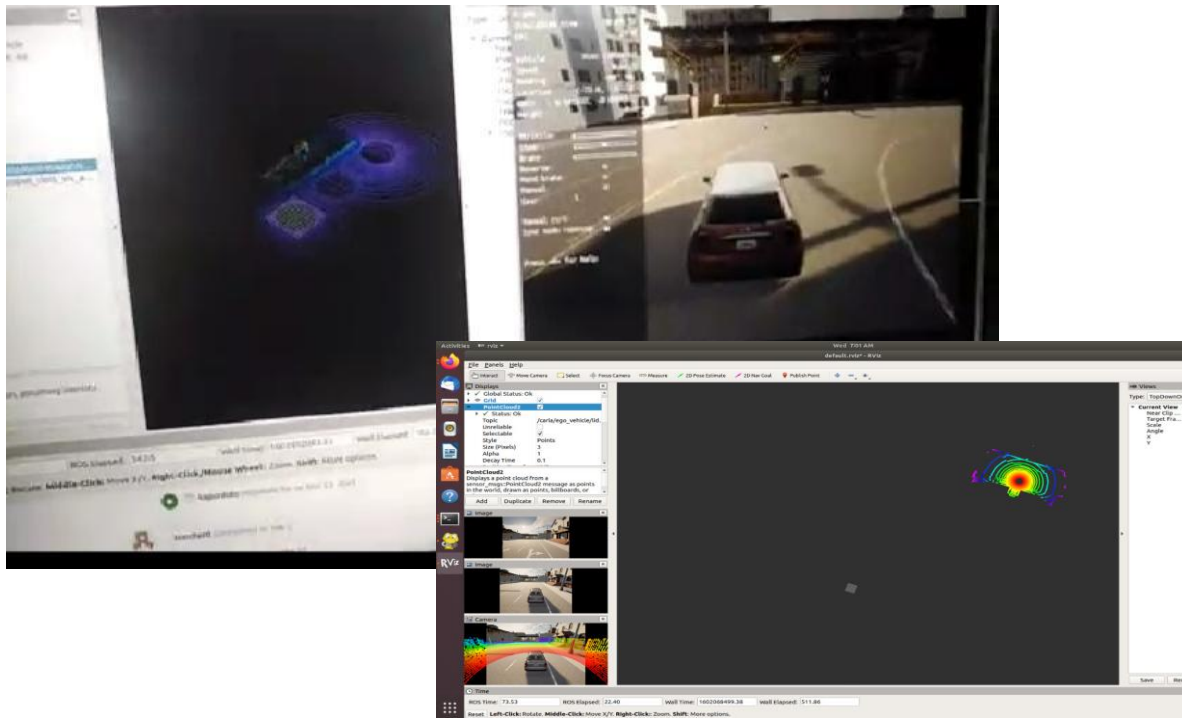


Our progress

have established drive and testing ecosystem on state of art CARLA simulator

are utilising ROS Framework which is industrial standard for developing, maintaining and expanding autonomous interfaces

use sensor fusion comprising of lidar point clouds, rgb camera and odometry information in CARLA to prepare occupancy grid maps.



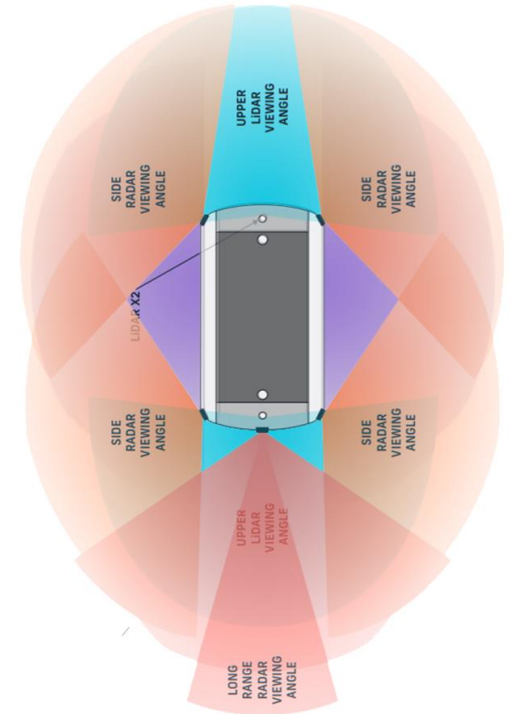
WORKSHOP & TRAINING SESSION ON AUTONOMOUS VEHICLE

Be the lead of the autonomous driving industry, Smart City Lab offers trainings. Our training sessions are designed not only to transfer knowledge, but also to encourage discussion about new ideas and share Experiences.

Project Modules

Session will provide

- ✓ Knowledge of hardware used in Autonomous vehicles.
- ✓ Main features and components of Autonomous vehicles
- ✓ Automation and intelligence in autonomous vehicles.
- ✓ Current industry practices and so on.





LET'S MEET OUR TRAINERS

- A senior data scientist currently focusing on the applications of machine learning and computer vision principles on traffic enforcement, financial technologies,
- Directing a company that is providing consultancy support in ventures including smart farming, identity verification, and robotics
- Currently supporting scientific projects leading to the Saudi Arabian Vision 2030 initiatives
- Worked on end-to-end autonomous vehicle systems right from sensors to vision and motion control with Hitachi and Nissan Europe



MEET
SYED ADNAN YUSUF
AT INDUSTRY CONNECT 4.0

INTERACTIVE SESSION

