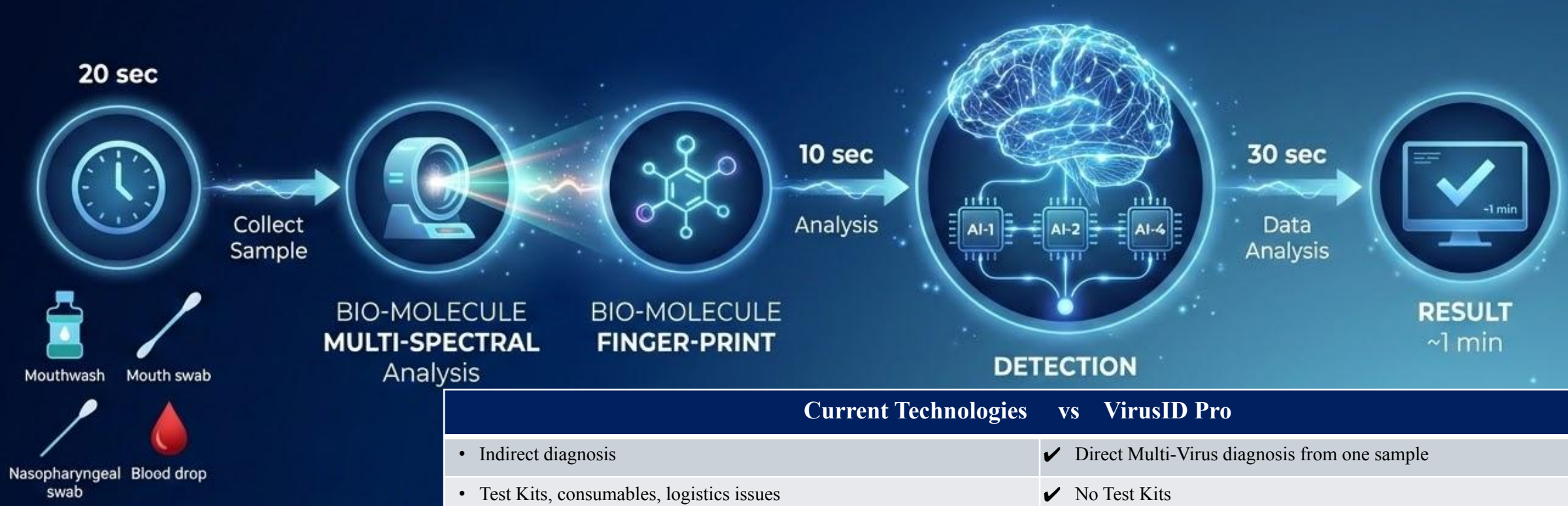
VirusID Pro

AI-Driven, Rapid, Portable Multi-Virus Detection Kit

Technology & Process



Current Technologies	vs	VirusID Pro
• Indirect diagnosis		✔ Direct Multi-Virus diagnosis from one sample
• Test Kits, consumables, logistics issues		✔ No Test Kits
• Multiple Equipment		✔ Only one test Equipment
• Laboratories, medical staff and facility (for PCR based tests)		✔ No medical staff
• Time (more than 15 minutes) & Cost		✔ Time (~1 minute) & Lower cost

PoC Study 1

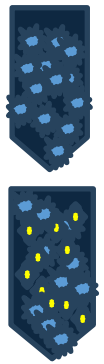
Can VirusID Pro be trained to detect and differentiate between various biomolecules, such as Denosumab, the Hepatitis-A vaccine, and the Influenza vaccine, when they are mixed in saliva?

Hepatitis A Vaccine

Denosumab

Influenza Vaccine

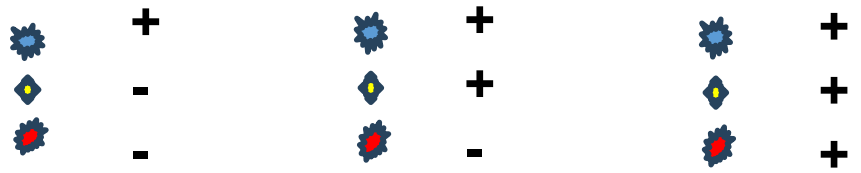
Test Samples



30 sec

Measure in VirusID Pro

RESULTS



This study showed that VirusID Pro effectively learned to detect and distinguish biomolecules and viruses under laboratory conditions

PoC Study 2

Can VirusID Pro and point-of-care device detect the SARS-CoV-2 virus in mouthwash samples with acceptable accuracy?

mouthwash samples

mouthwash samples + SARS-CoV-2

Test Samples

30 sec

Measure in VirusID Pro

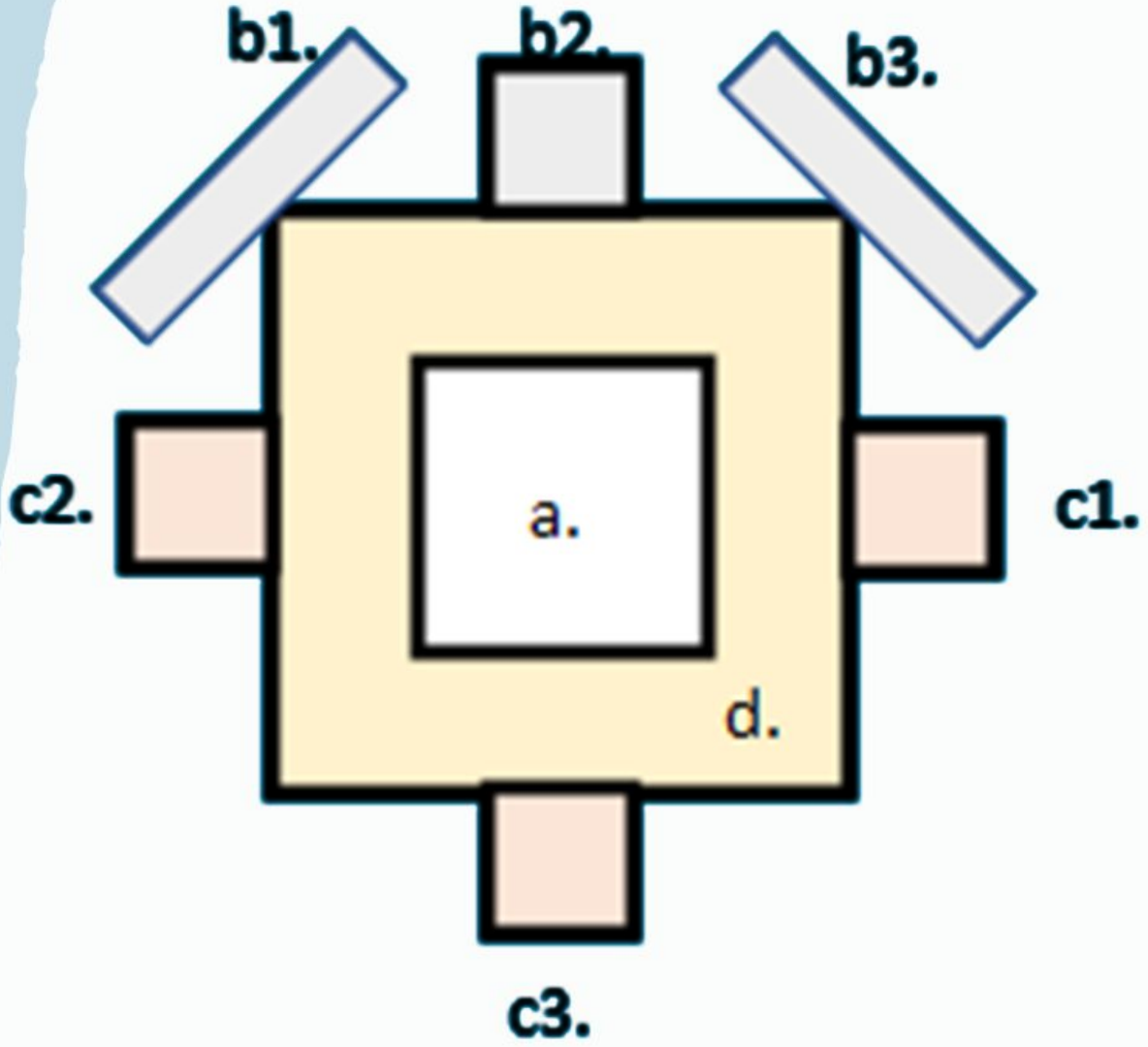
VirusID Pro results

PCR results

This study demonstrated the performance of the AI's learning capabilities in heterogeneous mouth saliva samples within a pre-clinical study setting.

Technology

- **Mobile hardware** collects convoluted/overlapped data obtained via detectors (c1., c2., c3) which are customized to measure the electromagnetic spectrum produced from the interaction of the signals sent from electromagnetic sources (b1., b2., b3) to the sample (a). and sends it to the AI-based software.
- **In A.I.-based software**, a workflow is developed by sequential use of different methods. Then, the data is processed by a few sequential learners.
- The formed raw output data goes to a decision-making algorithm to connect scientific method development to A.I. and finally, the output is given to the user.



Clinical Study 1

Is it feasible to develop VirusID Pro for precise COVID-19 detection using nasal swabs and RT-PCR validation?

RESULTS: Our findings indicate that VirusID Pro offers a reliable and highly sensitive solution for detecting COVID-19. Its ease of use, rapid results, and suitability for point-of-care testing position it as a promising tool for any infectious agent diagnosis

BEFORE ATTENTION ADDED INTO MODEL

2448 patient samples for training

816 patient samples for evaluation

Open Learning study

Table-1: Sensitivity, specificity, PPV, and NPV values obtained from the AI learning validation stage with respect to RT-PCR

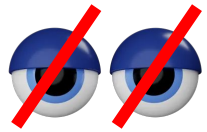
	PCR (+)	PCR (-)	Total	Sensitivity (%)	Specificity (%)	NPV (%)	PPV (%)
MSA (+)	328	50	378	88.4	88.76	90.18	86.77
MSA (-)	43	395	445				
Total	371	445	816				

MSA: multi-spectrum analysis, RT-PCR: reverse transcription-polymerase chain reaction, NPV: negative predictive value, PPV: positive predictive value

Clinical Study 2

Is our technology as sensitive as RT-PCR at Sancaktepe Hospital for COVID detection?

350 patient samples



Double-blind testing

Simultaneous real-life case study

Table-3: Sensitivity, specificity, PPV, and NPV values obtained from the AI testing stage with respect to PCR

	PCR (+)	PCR (-)	Total	Sensitivity (%)	Specificity (%)	NPV (%)	PPV (%)
MSA (+)	115	24	139	81.73	81.99	87.81	75.16
MSA (-)	38	173	211				
Total	153	197	350				

MSA: multi-spectrum analysis, PCR: polymerase chain reaction, NPV: negative predictive value, PPV: positive predictive value

AFTER ATTENTION ADDED INTO MODEL

F1 Score Val: 0.8742

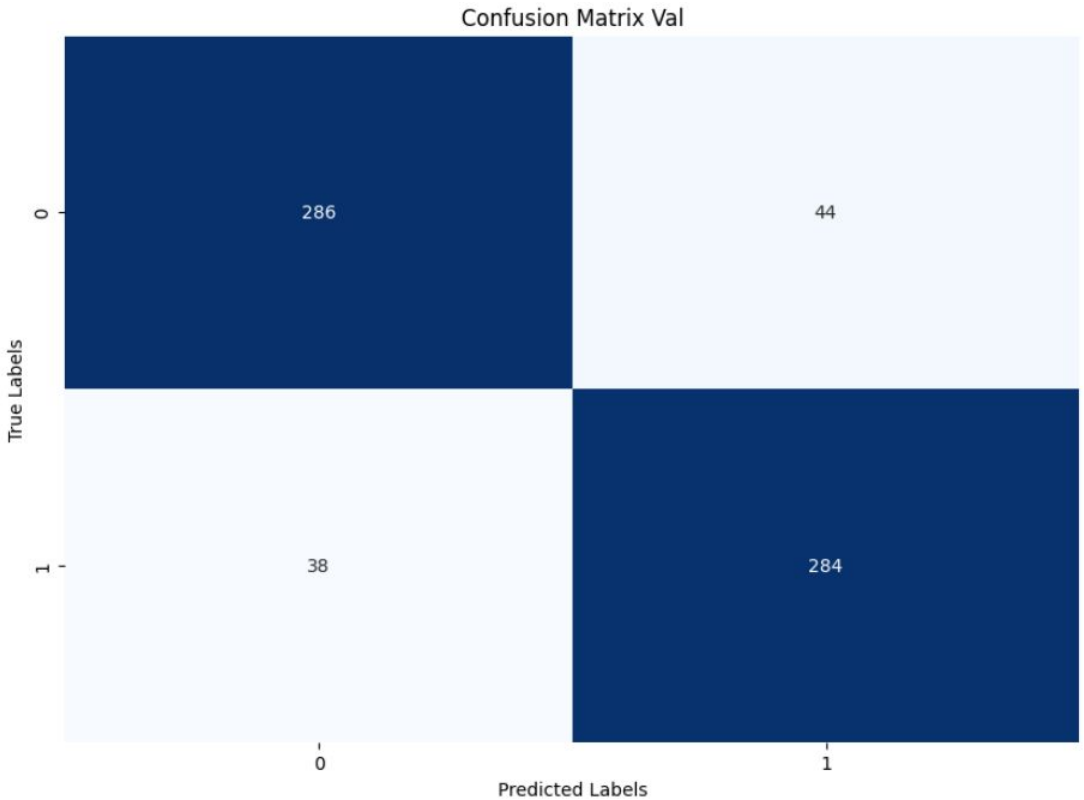
Classification Report Val:

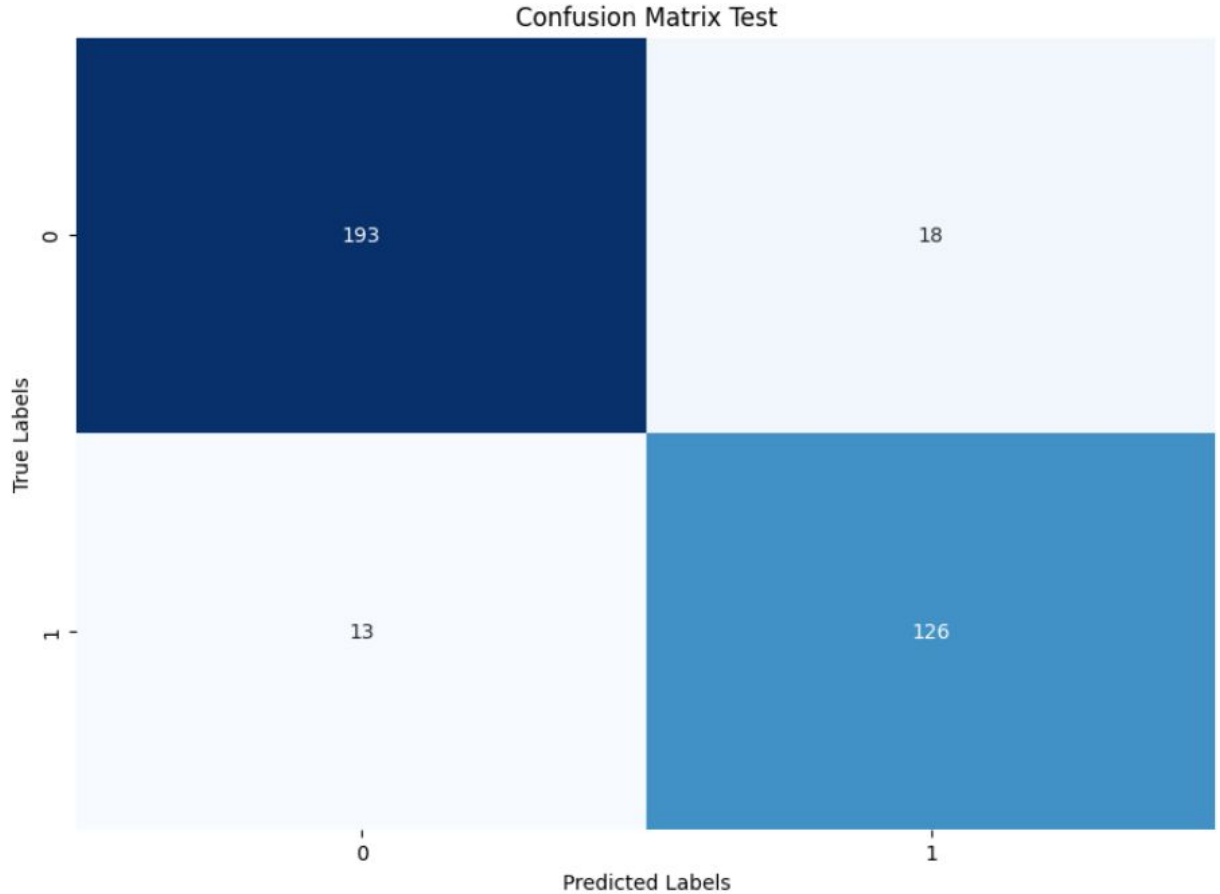
	precision	recall	f1-score	support
0.0	0.88	0.87	0.87	330
1.0	0.87	0.88	0.87	322
accuracy			0.87	652
macro avg	0.87	0.87	0.87	652
weighted avg	0.87	0.87	0.87	652

F1 Score Test: 0.9117

Classification Report Test:

	precision	recall	f1-score	support
0.0	0.94	0.91	0.93	211
1.0	0.88	0.91	0.89	139
accuracy			0.91	350
macro avg	0.91	0.91	0.91	350
weighted avg	0.91	0.91	0.91	350


Confusion Matrix Val
286
44
38
284
0
1
0
1
True Labels
Predicted Labels


Confusion Matrix Test
193
18
13
126
0
1
0
1
True Labels
Predicted Labels

VirusID Pro – Global Network Vision

Train anywhere & Test anywhere