



## NVISO announces a milestone release of its Neuro SDK for manufacturers building state-of-the-art AI-enabled human-machine interfaces.

Following on from its announcement in July 2022 of successful neuromorphic interoperability with BrainChip Akida, NVISO is now announcing support for two new high performance AI Apps from its Human Behavior AI App catalogue, Gaze and Facial Action Unit Detection. NVISO is making available a full SDK release for manufacturers looking to provide mission critical human-interaction features meeting the most demanding performance, cost, and power budgets.

**Lausanne, Switzerland – Friday 16th December, 2022** – nViso SA (NVISO), the leading Human Behavioural Analytics AI company, is pleased to announce that through the porting of additional AI Apps from its catalogue it has further enhanced the range of Human Behavioural AI Apps that it supports on the BrainChip Akida neuromorphic processing platform. These additions include Facial Action Units, Body Pose and Gesture Recognition on top of the Headpose, Facial Landmarks, Gaze and Emotion AI Apps previously announced. This increased capability supports the further deployment of NVISO Human Behavioural Analytics AI software solutions with target applications include Robotics, Automotive, Telecommunication, Infotainment, and Gaming..

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For more information about NVISO  
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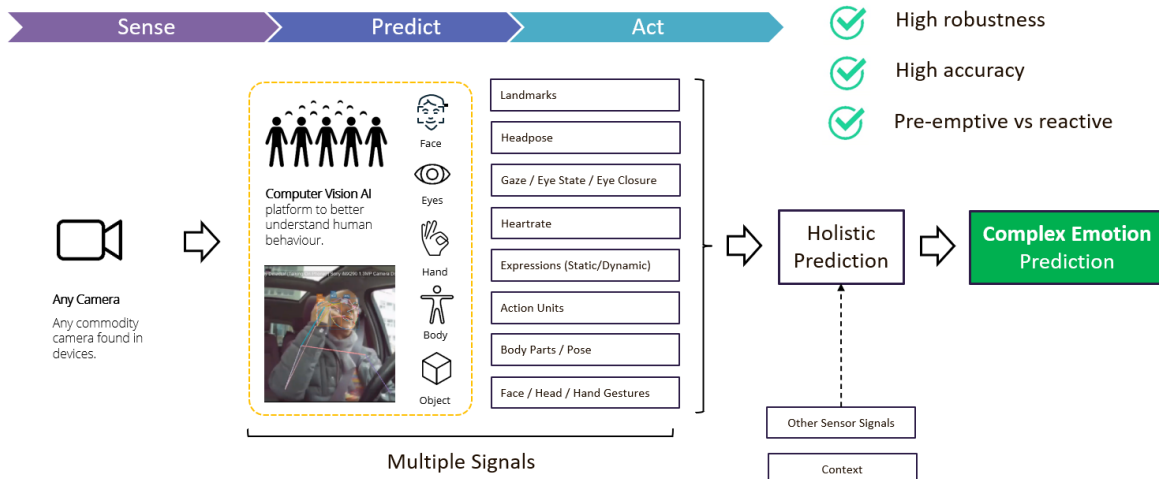
[www.nviso.ai](http://www.nviso.ai)

### **The SDK release supports the latest advancements for holistic platform for the analysis of complex emotions with Gaze and up to 58 Facial Action Units:**

This latest release of the SDK for use by solution developers will support performance evaluations and then implementation across an increased range of use case scenarios. As noted this support

provides for deployment of a wide selection of NVISO's existing range of real-time, deep learning-based AI Apps such as those used for face detection, gaze, head pose recognition, facial analysis, emotion recognition, object detection, gesture recognition and body pose analysis along with its new state of the art graph-based facial analysis for the analysis of complex emotions.

## NVISO's UNIQUE **HOLISTIC PREDICTIVE** APPROACH



**Implementation of complex emotion analysis using state-of-the-art graph-based facial analysis:** As one of the most important affective signals, facial affect analysis (FAA) is essential for developing human-computer interaction systems. Early methods focussed on extracting appearance and geometry features associated with human affects while ignoring the latent semantic information among individual facial changes, leading to limited performance and generalization. Recent work attempts to establish a graph-based representation to model these semantic relationships and develop frameworks to leverage them for various FAA tasks.



Upper Face Action Units	
Inner brow raiser   AU1: 0.46	Upper lid raiser   AU5: 0.60
Outer brow raiser   AU2: 0.32	Cheek raiser   AU6: 0.54
Brow lowerer   AU4: 0.40	Lid tightener   AU7: 0.56
Lower Face Action Units	
Nose wrinkler   AU9: 0.44	Lip stretcher   AU20: 0.43
Upper lip raiser   AU10: 0.65	Lip funneler   AU22: 0.16
Nasolabial deepener   AU11: 0.17	Lip tightener   AU23: 0.06
Lip corner puller   AU12: 0.31	Lip pressor   AU24: 0.02
Sharp lip puller   AU13: 0.11	Lips part   AU25: 0.86
Dimpler   AU14: 0.19	Jaw drop   AU26: 0.24
Lip corner depressor   AU15: 0.10	Mouth stretch   AU27: 0.85
Lower lip depressor   AU16: 0.34	Lip bite   AU32: 0.03
Chin raiser   AU17: 0.33	Nostril dilator   AU38: 0.05
Lip pucker   AU18: 0.03	Nostril compressor   AU39: 0.08
Tongue show   AU19: 0.11	
Symmetrical Face Action Units	
Left Inner brow raiser   AUL1: 0.07	Right Inner brow raiser   AUR1: 0.07
Left Outer brow raiser   AUL2: 0.06	Right Outer brow raiser   AUR2: 0.08
Left Brow lowerer   AUL4: 0.04	Right Brow lowerer   AUR4: 0.03
Left Cheek raiser   AUL6: 0.03	Right Cheek raiser   AUR6: 0.01
Left Upper lip raiser   AUL10: 0.09	Right Upper lip raiser   AUR10: 0.04
Left Nasolabial deepener   AUL12: 0.04	Right Nasolabial deepener   AUR12: 0.00
Left Dimpler   AUL14: 0.00	Right Dimpler   AUR14: 0.02

**Designed for non-mobile / non-cloud devices and neuromorphic interoperable and optimised.**

NVISO AI Apps are specifically designed for resource constrained low-power and low-memory hardware platforms deployed at the extreme edge. These AI Apps analyse core signals of human behaviour, such as body movements, facial expressions, emotions, identity, head pose, gaze, eye state, gestures, or activities, and identify objects with which users interact. In addition, these AI Apps can be optimised for typically resource constrained, low power and low-cost processing platforms deployed on the edge, as demonstrated with ultra-compact models such as the Emotion Recognition AI App with less than 100KB of memory. Furthermore, NVISO AI Apps can be easily configured to suit a camera system for optimal performance in terms of distance and camera angle, and thanks to NVISO's large scale proprietary human behaviour databases NVISO's AI Apps are robust to the imaging conditions often found in real world deployments. Unlike cloud-based solutions, NVISO's solutions do not require information to be sent off-device for processing elsewhere so user privacy and safety can be protected.

AI App Feature Current Availability (Dec 2022)	Edge AI Hardware Platforms (Non-mobile)				
	BrainChip Akida	Intel Nuc	NXP iMX8	NVIDIA Jetson	RaspberryPi 4
Headpose	Core NVISO Neuro Models available on all edge AI computing platforms.				
Facial Landmarks					
Gaze					
Emotion					
Facial Action Units					
Body Pose	No	Yes	No	Yes	No
Gesture	No	Yes	Yes	Yes	Yes

"This announcement of the delivery of a full SDK with an increased range of AI Apps from our catalogue supports our objectives in providing AI solutions on the extreme edge ", said Tim Llewellynn, CEO of NVISO SA, "Additionally the deployment of the combined technologies of NVISO AI Apps together with embedded neuromorphic processing can provide significant performance improvements for target use cases, in terms of both processing speed and power consumption. This enables delivery on the promise of wide scale deployment of human friendly technologies for an increasing number of applications ranging from consumer products through to medical devices and automated automotive systems. The addition of the latest graph based facial

analysis capability opens up the possibilities for the use of a wider range of up to 58 Facial Action Units in both emotion and other human behaviour/condition analysis ."

**About NVISO**, is an Artificial Intelligence ("AI") company founded in 2009 and headquartered at the Innovation Park of the École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland. Its mission is to help make autonomous machines safe, secure, and personalised for humans. As a leader in human behavioural AI, NVISO provides software solutions that can sense, comprehend, and act upon human behaviour in real-world environments. NVISO achieves this through real-time perception and observation of people and objects in contextual situations, combined with the reasoning and semantics of human behaviour based on trusted scientific research. NVISO's technology is made accessible through ready-to-use AI solutions addressing Smart Mobility and Smart Health and Living applications (interior sensing, health assessments, and robot interactions) with a key focus on deployments to the deep edge. With a singular focus on how to apply the most advanced and robust technology to industry and societal problems that matter, NVISO's solutions help advance human potential. [www.nviso.ai](http://www.nviso.ai)