# Presentation Attack Detection Product Suite



Ensuring the authenticity of biometric images is critical to high confidence biometric identification and authentication in unattended or fully automated use cases, from digital ID verification to physical access control to air travel. To protect against face recognition spoofing, Paravision offers an advanced Presentation Attack Detection (PAD) software suite supporting server, desktop, mobile and embedded applications. Leveraging the latest advances in Vision AI, Paravision PAD is fully passive and operates in real-time, enabling advanced protection without compromising user experience. The Paravision PAD SDK is available in two families, both highly optimized for targeted use cases and leading chipsets, operating systems, and imaging architectures:

- 1. **3D/NIR:** For embedded devices that use a multi-channel combination of visible, near-infrared, and depth imaging
  - a. Leverages Ambarella SoCs and the Ambarella / Lumentum / ON Semiconductor AIoT 3D imaging architecture
  - b. Delivers advanced PAD in 60msec
- 2. **2D/BETA:** For standard cameras such as smartphone selfie cameras or webcams that use standard visible light (RGB) imaging
  - a. Processing available either on smartphone (iOS and Android) or server-side (Windows and Linux)
  - b. Functions on single frame, color images, such as standard selfie images, delivering metrics on the likelihood that an image is authentic or a spoof
  - c. Includes advanced metrics for real time user feedback, including Paravsion's NIST-tested image quality metric, maximizing performance and usability

In short, Paravision powers its partners with world-class PAD technology in a way that fits their technical expertise and deployment goals, supporting solutions for the next generation identity, security, efficiency, and user experiences.

## Supported Computing Environments

Paravision supports a wide range of computing environments, enabling our technology on a wide variety of platforms. Paravision proudly partners with leaders from Silicon Valley and around the world to deliver outstanding price, performance, availability, and support:

3D/NIR	2D/RGB					
Embedded	Mobile		Desktop / Server			
Ambarella	Apple Silicon	ARM	NVIDIA	Intel		
Ambarella"	Ć	arm		intel partner alliance		
Supported Computer Vision Framework						
<b>©penVINO</b> `		<b>CV</b> flow	<u>ဴ</u> PyTorch	<b>S</b>		

### System Architecture



#### User Interface Reference Apps

Paravision provides full reference apps with UI/UX recommendations as well as sample apps with source code that can be used for rapid, low-risk development.



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## **Technical Specifications**

#### EMBEDDED - 3D/NIR

Supported programming languages	C++ / C Wrapper		
Supported operating system	Linux		
Supported hardware platform	Ambarella CV25/ CV22 (CVflow) + On Semiconductor RGB-IR CMOS Sensor + Lumentum VCSEL		
PAD (Liveness) Details	Level 1 and Level 2 PAD 3D/NIR liveness based on single face image and pattern from structured light emitter (VCSEL)		

#### MOBILE / DESKTOP / SERVER - 2D/RGBBETA

	Mobile	Desktop/Server
Supported programming languages	Swift - iOS Kotlin - Android	C++ / Python Wrapper
Supported operating systems	iOS 13+ Android 8.0+ (API ver 26)	Windows Server 2019 Datacenter Linux Ubuntu 20.04
Supported hardware platforms & computer vision frameworks	Apple Silicon ARM (PyTorch)	ntel (OpenVINO) NVIDIA(TensorRT)
PAD (Liveness) Details	Level 1 available now, Level 2 coming soon Calculated on a single, 2D/RGB selfie face image Real time image quality / user feedback	