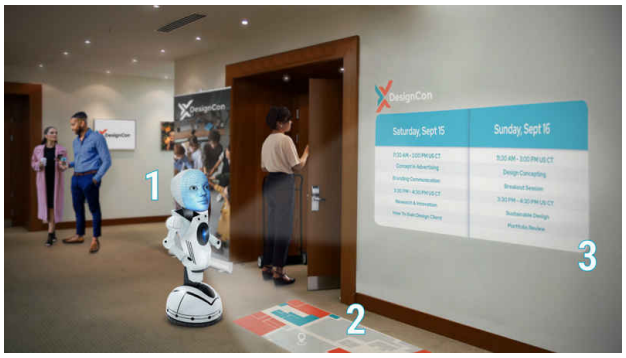
Application Brief

TI DLP® Pico™ Technology for Humanoid Robots

Humanoid robots, those resembling a human form, can be used in a wide range of industries including consumer, education, commercial, industrial, medical, and entertainment. Compact projection solutions from TI DLP® Pico technology allow users to engage with on-demand, free-form displays on or outside of the robot.



Projection Configurations

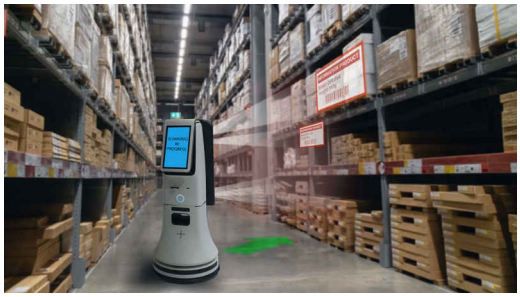
1. **Facial Graphics**: Ability to convey emotion through facial expressions by projecting faces on curved or uniquely shaped surfaces from within.
2. **Ground Projection**: Display guidance/directions, warnings, or other messaging with the option to incorporate interactivity on surfaces or with gestures.
3. **Project on wall or objects:** Display full video or informational graphics and ability to dynamically modify graphics to highlight or label spaces and objects when paired with a camera or vision system; learn more about machine vision solutions using DLP technology.

Recommended DLP Pico Chipsets for Robotics

Type	DMD	Resolution
Facial	DLP160CP/AP	180p, 360p
	DLP2000	360p
	DLP2010	480p
	DLP230GP/KP/NP	540p, 720p, 1080p
Ground or surface	DLP3010	720p
	DLP3310	1080p
	DLP4710	1080p
	DLP471TP	4K UHD

Applications

Projection displays can stand alone or work alongside employees in commercial and industrial environments to provide alerts, guidance, and directions. While including facial features can make the product more engaging to the user in a retail setting, other features like ground or surface projection can provide critical safety information or increase efficiency of tasks.



In residential or consumer applications, humanoid robotics can augment virtual assistant technology offering the ability to stream content anywhere with a large display when needed but remain discreet when not in use. In addition, humanoids are being leveraged for educational and medical applications where the ability to create dynamic lifelike facial expressions aids in social/emotional development.

Additional Resources

- Read the Getting Started application note.
- Leverage the Chipset Selection Guide to choose from a range of sizes, brightness, resolution, and power consumption.
- Order DLP Pico Evaluation Modules (EVMs) starting at $99.
- Read Brightness Requirements and Trade-offs application note.
- Contact optical module suppliers.

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