The Blank Visor vs. The Halo: Why Functional Clarity Beats Minimalism in Humanoid Robot Faces

By Katherine Lee

Introduction

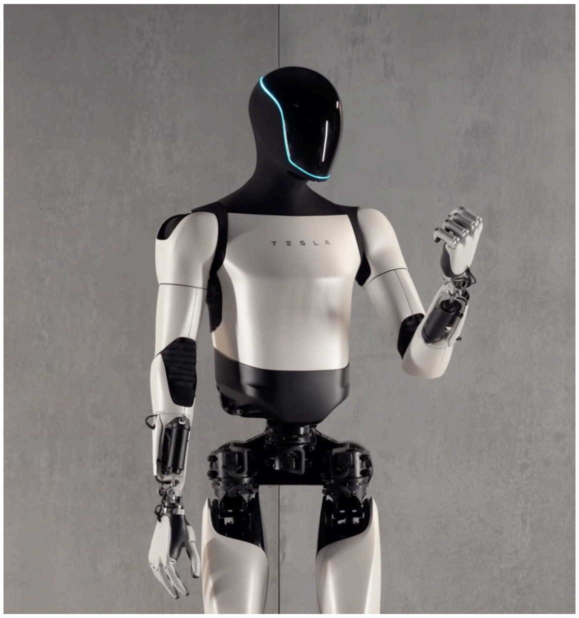
As the humanoid robot race accelerates, companies are developing robots for an increasingly wide range of tasks, each shaped by distinct design intentions. Despite these differences, a common trend has emerged in humanoid face design: the opaque, minimalist “black visor,” seen in robots such as Tesla’s Optimus and Figure AI’s 03. At CES 2026, however, Boston Dynamics introduced a contrasting approach with Atlas’s illuminated “Halo” face, signaling a shift in robot design philosophy. As robots move toward collaborative work environments, designs that prioritize clear communication and functional legibility, rather than human likeness, are likely to define the future of humanoid interfaces.

Intended Uses of Atlas and Optimus

Boston Dynamics’ **Atlas** is an enterprise-grade humanoid robot designed to perform autonomous material handling and complex industrial tasks, such as part sequencing and machine tending, within existing manufacturing workflows. Tesla defines **Optimus** as a "general purpose, bi-pedal, autonomous humanoid" engineered to alleviate the human burden of "unsafe, repetitive, or boring tasks,” while selling it at an affordable price, targeting between $20,000 and $30,000. The overlaps of Optimus and Atlas are that they are both also made to complete factory work or dangerous tasks that require strength and accuracy.

Optimus’ Design Choices: Opaque Black Visors

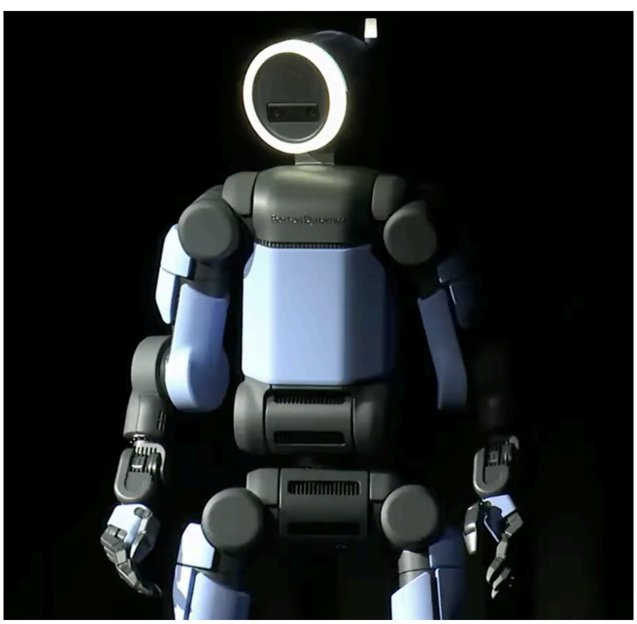
Tesla’s Optimus face design is a “black visor,” reflecting a human head with a completely black, opaque, rounded covering in the face, often made by infrared-transparent polycarbonate which allows high resolution cameras to see through the material without being visible to the human eye. The purpose of this design is to prioritize engineering efficiency, seamlessly housing cameras and sensors in a produced, modular shell that is cost effective and durable for harsh environments. This creates an ‘expressionless’ face that looks modern, while having a seamless, futuristic look.



Optimus Gen 2 (2023) (https://www.youtube.com/watch?v=cpraXaw7dyc)

Atlas' Design Choices: Illuminated Halo Interfaces

The brand new Boston Dynamics' Atlas, recently revealed at [CES 2026](), the "Halo" design uses light based elements, such as a glowing ring around the face for dynamic signaling, conveying status, intent, or warnings without mimicking human thought. Zachary Jackowski, the General Manager of Atlas at Boston Dynamics, explains that there are four 360 degree cameras embedded around the head of Atlas, with a face using simple geometry, flat surfaces, and seamless exterior, made to be used as a perception hub rather than a simple communication tool.



Atlas at CES 2026 (https://www.youtube.com/watch?v=9e0SQn9uUlw)

Comparison in Design Choices Based on Use Purpose

Tesla's Optimus and Boston Dynamics' Atlas reflect fundamentally different visions of human-robot interaction, shaped by the relationship between aesthetic design and operational intent. Optimus adopts a minimalist facial design to present a neutral interface that reduces emotional attachment and avoids the uncanny valley, positioning the robot as a helpful, task-oriented tool rather than a social entity. In contrast, Atlas follows a strictly utilitarian, "form follows function" approach, where appearance is dictated by mechanical performance. Its 360-degree rotating joints and three clamp-like fingers on each hand prioritize efficiency and dexterity over human resemblance. As emphasized by Jackowski, Atlas is not designed to be human, but designed to be helpful, and its industrial aesthetic closely aligns with its engineering purpose and functional identity.

Visor vs. Halo: Functional Clarity in Humanoid Faces

Trust in robotics is fundamentally rooted in the alignment between a machine's appearance and its actions. Using Don Norman's Three Levels of Processing written in *The Design of Everyday Things*, we can see how this alignment operates across the human psyche to foster reliability in shared spaces.

At the subconscious visceral phase, our first perception of the product is formed, which is heavily influenced by the aesthetics of the product, such as appearance. (Norman, 51). The immediate, subconscious attraction or repulsion triggered by a robot's face establishes the baseline for all subsequent interactions. By utilizing geometric "Halos," designers leverage minimalist design cues to signal that the robot is a functional tool rather than a social entity, preventing the response that occurs when a machine's appearance mimics a human.

The behavioral level of processing operates subconsciously, linking actions to expectations that are confirmed through feedback, even when the outcome is negative (Norman, 52). Without feedback, users experience a loss of control. At this level, trust emerges when a robot's physical interface clearly communicates its state and anticipated actions. While an opaque visor offers a visually clean appearance, an illuminated halo functions as an active signifier, providing continuous cues that support user control and predictability.

The reflective level represents the deepest stage of processing, where users evaluate past experiences, actions, and outcomes to form lasting judgments about a product (Norman, 53). In robotics, reflective processing determines whether a robot's performance consistently fulfills the "industrial" or "helpful" identity suggested by its design. Long-term trust is established only when aesthetic expectations align with functional outcomes, shaping whether the robot is accepted in shared human spaces.

Future Industry Trends

Many developers are moving away from highly anthropomorphic faces (such as Engineered Arts' Ameca or Hanson Robotics' Sophia) due to the uncanny valley effect, due to the uncanny valley effect. Jackowski explains that Atlas avoids human mimicry to prevent mismatched expectations: robots should be seen as reliable generalist tools, with faces serving as functional communication hubs using clear, non-verbal cues rather than social masks. This supports growing emphasis on ambient signaling to foster trust and predictability in human-robot collaboration, especially in industrial settings, over full human replication.

Conclusion

While both approaches have merits–the visor for efficiency and scalability, the halo for enhanced communication–industry trajectories indicate growing emphasis on functional transparency to build trust as production scales. While the “black visor” remains an efficient and cost-effective solution for sensor integration, it often creates a transparency gap that can undermine trust in high-stakes collaborative settings. In contrast, Boston Dynamics’ “halo” design represents a shift toward ambient, spatial communication, recognizing that intent must be felt, not merely read. As humanoid production scales, the most successful interfaces will prioritize clear signaling that reduces cognitive load, enhances predictability, and emphasizes safety and functional transparency, positioning robots as reliable partners rather than unsettling replicas of human life.