



Gemini Robotics

ER 1.6

Model Card

Gemini Robotics-ER 1.6 - Model Card

Model Cards are intended to provide developers with essential, summarized information on models, including overviews of known limitations and mitigation approaches. Model cards may be updated from time to time; for example, to include updated evaluations as the model is improved or revised. The model card below covers Gemini Robotics-ER 1.6.

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Model Information

Description: Gemini Robotics-ER (Embodied Reasoning) 1.6 is a Vision-Language-Model that enhances Gemini's spatial and physical reasoning capabilities. It is based on Gemini 3.0 Flash.

Inputs: Text strings (e.g., a question, a prompt, document(s) to be summarized), images, audio, and video files, with a token context window of up to 128k.

Outputs: Text, with a 64K token output.

Architecture: Architecture: Gemini Robotics-ER 1.6 is based on the Gemini 3.0 model family. For more information about the model architecture, see the Gemini 3.0 Flash [model card](#).

Model Data

Training Dataset: Gemini Robotics-ER 1.6 was trained on Gemini 3.0 training datasets and additional datasets representing various embodied reasoning tasks. For more information about the training data, see the Gemini 3.0 Flash [model card](#).

Training Data Processing: For more information about the training data processing, see the Gemini 3.0 Flash [model card](#).

Implementation and Sustainability

Hardware: Gemini Robotics-ER 1.6 was trained using [Google's Tensor Processing Units](#) (TPUs). See details in the Gemini 3.0 Flash [model card](#).

The efficiencies gained through the use of TPUs are aligned with Google's [commitment to operate sustainably](#).

Software: Software JAX (Bradbury et al., 2018), ML Pathways (Dean, 2021).

Evaluation

Approach: See Figure 1, Figure 2 in the [release post](#) for Gemini Robotics-ER 1.6 evaluation procedures and Figure 3 for Gemini Robotics Safety evaluation procedures.

Results: See Figure 1, Figure 2 in the [release post](#) for Gemini Robotics-ER 1.6 evaluation results, and Figure 3 for Gemini Robotics Safety evaluation results.

Intended Usage and Limitations

Benefit and Intended Usage: Gemini Robotics-ER 1.6 represents an advancement to our reasoning-first Gemini Robotics-ER models that enables robots to understand their environments with precision. This model specializes in reasoning critical for robotics, including visual and spatial understanding, task planning and success detection.

Known Limitations: For more information about the known limitations for Gemini Robotics-ER1.6, see the Gemini 3.0 Flash [model card](#).

Acceptable Usage: For information about the acceptable usage for Gemini Robotics-ER1.6 see the Gemini 3.0 Flash [model card](#). Additionally, users are required to use discretion before using the Robotics Models in a production, commercial, or public environments, and to not use the Robotics Models for safety-critical applications or work, such as in the following settings: (i) healthcare, (ii) transportation, or (iii) other areas where safety protocols are vital, and a malfunction could reasonably foreseeably lead to death, personal injury, or property damage.

Ethics and Safety

Ethical Considerations & Risks: Previous impact assessment and risk analysis work as discussed in ([Gemini ER1.5 report](#)) and references therein remain relevant to Gemini Robotics. See Section 6 for information on responsible development and safety mitigations

Evaluation: Gemini Robotics-ER 1.6 demonstrates compliance with [Gemini safety policies](#) on adversarial spatial reasoning tasks, and shows a substantially improved capacity to adhere to physical safety constraints compared to previous generations. To ensure real-world readiness, we tested how well the model identifies safety hazards in [human-centric scenarios](#).
