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`<model-viewer>` Web3D made Easy

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What is <model-viewer>?

- Interactive 3D rendering with one line!
- Open-source web component
- Input: [glTF](#) (Khronos standard)
- Physically-Based Rendering (PBR)
- Wrapping [Three.js](#) wrapping WebGL & WebXR
- Partners include:
  - Shopify
  - NASA
  - Visible Body

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`<model-viewer src="Astronaut.glb" background-color="#455A64"></model-viewer>`

Gateway to Augmented Reality

- Legacy: launches native apps for AR
  - Quick Look on iOS
  - Scene Viewer on Android
- WebXR on Chrome Android with DOM Overlay
  - Stay in the browser for AR
  - Faster: No redownloading the model
  - Complete customization with HTML, CSS, JS
  - Runs same ARCore as native apps
 - Live demo of example video

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DOM Customization is a Big Deal

- Easy UX
  - All HTML elements available
  - CSS for page-consistent styling
  - JS links the page to the 3D scene
  - Elements can align to a 3D position
- Consistency between 3D and AR
  - Decedent nodes all show up in WebXR
  - Scope CSS to the `ar-status`
  - Logic on the web, not in the model
  - Live demo of example video

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Style: Beach

<model-viewer> brings PBR to the most devices

- Broad compatibility
  - IE11
  - WebGL 1.0 fallback
  - Minimal extensions required
- Novel environment lighting strate
  - Just-in-time prefiltering - faster th
  - No floating-point texture extensions
  - Supports extreme HDR like the sun
  - Compares well to other renderers
  - Details and examples of the method

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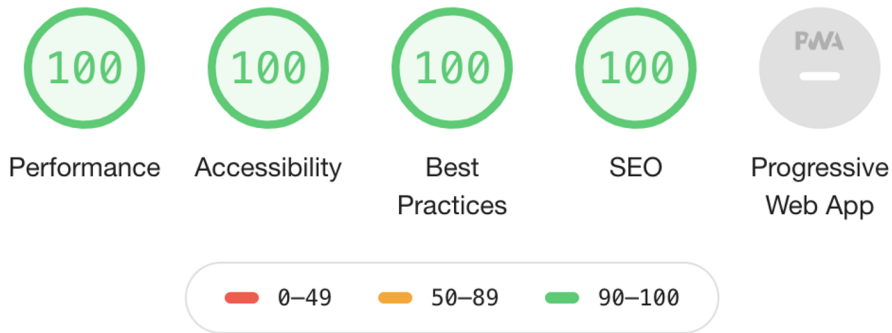Metal

Non-metal

Smooth

Rough
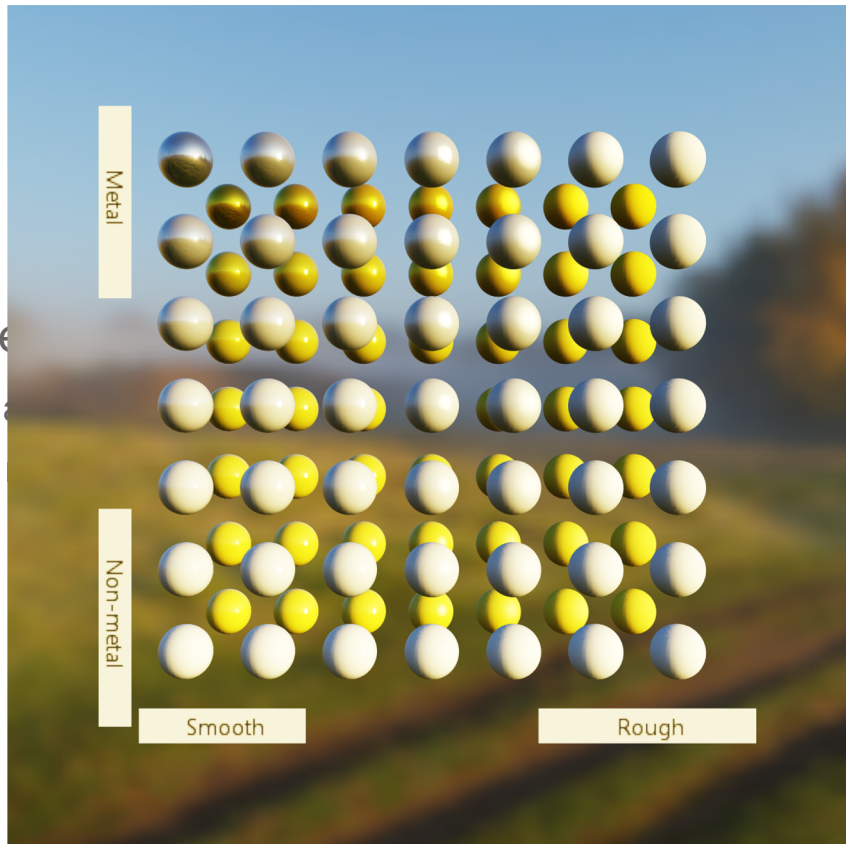
Rendering Performance

- Single shared WebGL context
  - Multiple elements share shaders &
  - Only renders when it needs to
  - No copy when only one element is v
- Dynamic render scaling
  - Maintains frame rate by dropping r
  - Full resolution once it stops movi
  - Coming soon to WebXR!
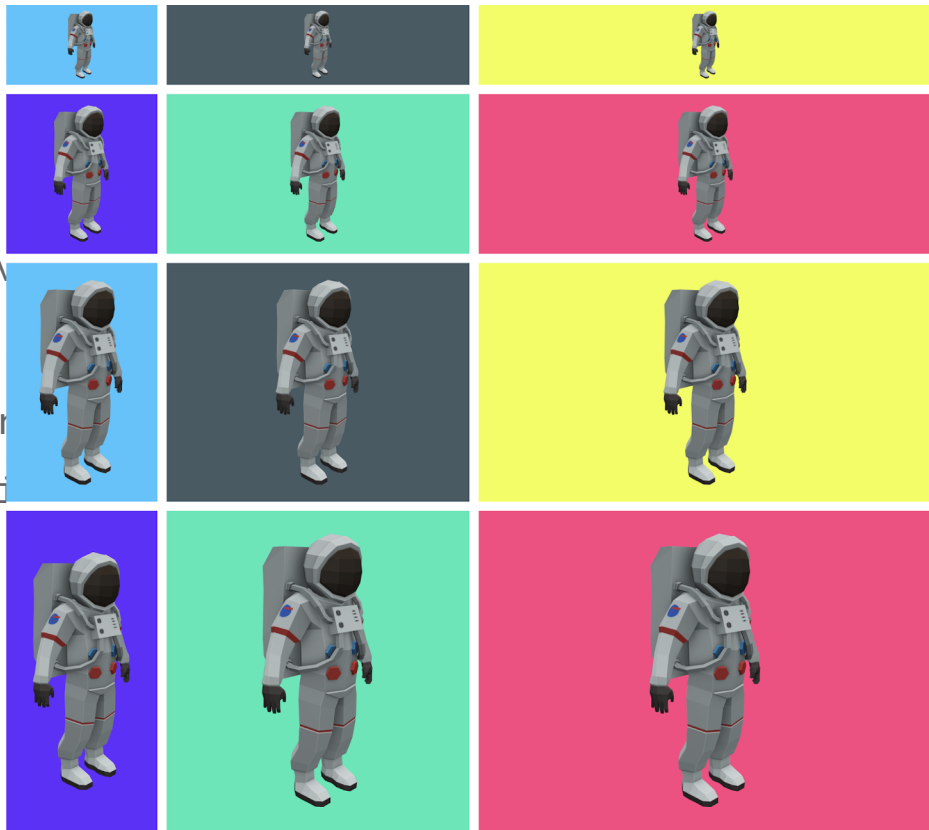
<model-viewer> Lighthouse scores

- Lazy loading by default
    - Only 199 KB minzipped
    - [Defer model loading](#) - 93 mobile performance
    - [Defer library loading](#) to get 100
    - Seamless posters either way, all aspect ratios
    - Our [editor](#) creates posters and much more

100	100	100	100	PWA
Performance	Accessibility	Best Practices	SEO	Progressive Web App

0–49   50–89   90–100

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Looking to the Future

- glTF PBR Next extensions
  - Realistic rendering for more materials
- Expanded scene-graph API
  - Multiple model placement
- New WebXR APIs
  - Viewport scaling
  - Lighting estimation
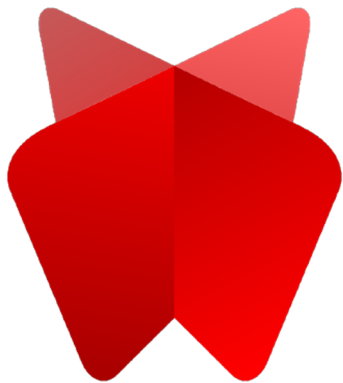 - Depth estimation

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modelviewer.dev

twitter.com/modelviewer

spectrum.chat/model-viewer

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Thanks!