Based on the assurance case pattern and the domain information provided for the DeepMind system, the assurance case can be instantiated as follows:

\*\*Assurance Case for the DeepMind System\*\*

- \*\*G1\*\*: Interpretability Claim. The DeepMind model is sufficiently interpretable in the clinical context

- \*\*C1\*\*: ML Model: DeepMind's tissue-segmentation and diagnosis neural networks

- \*\*C2\*\*: Interpretable: Transparency in the midpoint generation of segmentation maps

- \*\*C3\*\*: Context: Clinical settings for retinal diagnosis

- \*\*S1\*\*: Argument based on the essential aspects of interpretability

- \*\*C4\*\*: Essential aspects of interpretability: Transparency, understandability, faithful explanation

- \*\*G2\*\*: Right Method. The right interpretable methods are implemented, i.e. the tissue-segmentation map faithfully explains neural network decisions

- \*\*C5\*\*: Interpretability methods: Transparency through segmentation maps

- \*\*S2\*\*: Argument over interpretable methods

- \*\*G8\*\*: Interpretability method is right type, e.g., local/global (i.e., the correct thing is being explained); specifically, local explanations applicable per scan

- \*\*G9\*\*: Interpretability method is suitably faithful to the ML model process; tissue-segmentation map closely represents neural network processing layers

- \*\*G3\*\*: Right Context. Interpretations produced in the clinical context

- \*\*C6\*\*: Format of interpretations: Visual maps and confidence levels alongside clinical judgments

- \*\*G5\*\*: Right Time Interpretations produced at the appropriate time, e.g., during the patient examination

- \*\*G6\*\*: Right Setting Interpretations are available in the clinic during patient consultation

- \*\*G7\*\*: Right Audience Interpretations produced for retinal clinicians

- \*\*G4\*\*: Right Format Interpretability methods are presented in the right format for the clinical audience; visual and numerical data formats used

In this assurance case, we create a structured argument over the interpretability of the DeepMind system specifically oriented towards clinical use in diagnosing retinal diseases. The structured argument highlights the key aspects of interpretability, starting with the model itself and expanding through methods, context, timing, setting, audience, and the specifics of the methods used. Each point is connected logically and supported by concrete aspects of the System's operations and characteristics. This instantiated assurance case closely follows the structure laid out in the assurance case pattern while replacing placeholders with specific, system-relevant details provided in the domain information.