Dependencies:

- **Data:** A large dataset of drill core images and their corresponding lithology and geological discontinuity labels is needed to train the AI model.
- **Computing resources:** The AI model can be computationally expensive to train and deploy. Access to powerful computing resources is required.
- **Expertise:** Developing and deploying such a device assembly requires expertise in image processing, machine learning, and device development.

Showstoppers:

- **Inaccurate AI model:** If the AI model is not trained on a sufficiently large and representative dataset, it may not be able to accurately identify the lithology and geological discontinuities of drill core samples.
- **Hardware limitations:** The device assembly may be limited by the capabilities of the hardware used, such as the camera module and the processing power of the microcontroller or single-board computer.
- **Environmental factors:** The device assembly may not be able to operate reliably in harsh environments, such as dusty or wet mines.