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# Team Project Proposal

## Team Project Name: Rover On Mars?

### Team Members:

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### Project Theme:

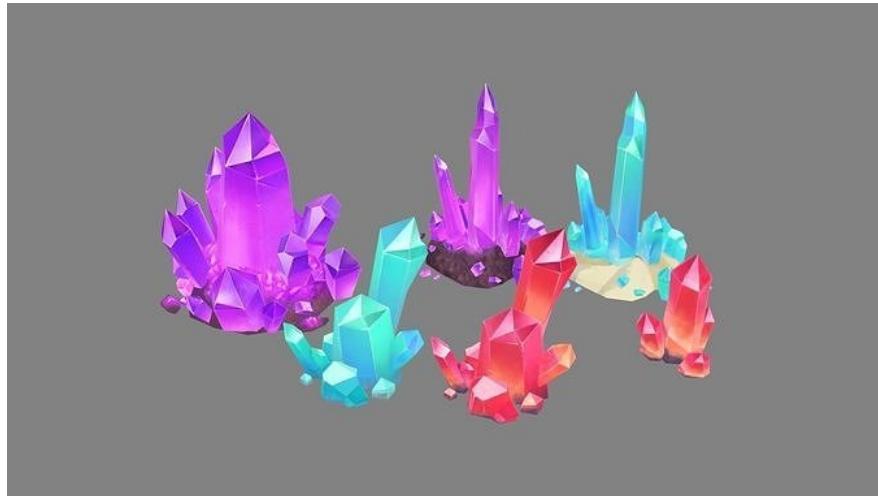
Ever wanted to explore Mars from the safety of your own home? How about helping to further our exploration of the cosmos by collecting Martian samples? “Rover on Mars?” is a 3rd-person Mars exploration rover simulator where you are tasked with the operation of a rover on a Martian-like landscape to explore and collect Martian samples for later analysis. The player will be able to control the rover using arrow keys (or WASD controls), and be able to collide with samples to collect them before a new sample becomes available in the play-area.

Additionally, to enhance the player’s experience, several environmental factors can be controlled directly by the player, including the amount of dust cover, number of active samples, and time of Sol—the Martian-equivalent of an Earth day.

### Current Drafted Product:



**Proposed Depiction:**



As seen above, we aim to have the player view and control a rover model similar to the Spirit and Opportunity rovers from a 3rd-person view from behind (seen in the top-left image). The Mars play-area will include a variety of rough and smooth terrains to more closely mimic actual Mars terrain (seen in both top images), however maintain a more polygonal artistic form (as seen in the top-right image). “Water-ice” crystals, among other soil-related samples, will be scattered amongst the terrain, taking brighter crystal-like form for contrast (as seen in the bottom image).

### Features:

- Dynamic rover player
  - Controllable
- Mars-themed terrain
  - Polygonal art style
  - Large play-area, statically defined
- “Water-Ice” crystals and other soil samples for player pickup
  - Disappears upon collision with player rover
- Toggle between day and night
  - Toggleable

- Will have base light level so scene is not completely pitch-black to allow for continued gameplay
- Toggle time-based day-night cycle
  - Toggleable
- Custom rover paint-job
  - Randomized upon button press (player customization)
- Rover integrated radio/antenna
  - Custom music will play when mouse clicked
- Add in Mars base
  - Decorative purposes

### User Interaction:

| Key                                | Action  | Class Topic                             |
|------------------------------------|---|---|
| Arrow Keys, WASD                   | Operate rover                                   | Collision Detection (Advanced)          |
| Button                             | Toggles between day and night                   | Lighting and Shadows (Advanced)         |
| Button                             | Toggle time-based day-night cycle               | Project 3                               |
| Button                             | Randomize rover paint-job                       | Project 2                               |
| Button                             | Change number of active samples to-be-collected | General User-Interactivity              |
| Mouse Click on Rover Antenna/Radio | Play space/Mars-themed music                    | Bonus Feature, Mouse Picking (Advanced) |