



Critical Materials Institute
AN ENERGY INNOVATION HUB

Critical Materials Institute Educational Exhibit Application

Company Background: The Critical Materials Institute (CMI) is an energy hub conducting research for the Department of Energy. CMI consists of over 300 researchers across 4 national labs and 6 university campuses (including Mines) and multiple industry members. CMI's research focuses on certain Rare Earth Elements (REE's) and metals that are crucial for the development of green energy & new and emerging technology found in everyday articles such as cell phones, computers and batteries. These materials are susceptible to sudden price changes due to an easily interruptible supply chain on the mining side and resource availability across countries. CMI's research focuses on the development of substitutes for critical materials, the discovery of new sources and extraction techniques for mining and the creation of recycling techniques from products containing these materials. We have developed a museum exhibit, housed on the bottom floor of the Mines Geology Museum, that is designed to teach the public about Critical Materials by focusing on the process of finding source deposits, mining those deposits, and creating products that are essential for green energy and technology. The exhibit has been in place for three years and content within the exhibit is updated annually.

Team Size: 3-4 Students

Location: Client/team meetings will be held on campus in Engineering Hall, as the CMI hub on our campus has offices on the ground floor of the building.

Project Summary: CMI would like to develop a phone application (or web app that can be accessed with a smartphone) to act as an educational tool, increasing the general public's access to our research and exhibit in the Geology Museum (and in the future possibly add complementary museum information to any developed app). The application will have the following functionalities:

- Acting as a media player for audio-guide clips for the CMI exhibit
- Providing links to additional literature
- Hosting a media player for CMI video clips (on our touch kiosk in the exhibit)
- Serving as an archive for previous webinar videos
- Providing a platform for CMI to communicate the latest articles, resources and any upcoming event information

- Supplying additional information about careers related to Critical Materials and Rare Earth Elements

Ideally, the application will also host some interactive education components, such as digitized versions of our current hands-on components. Examples include an interactive map of types of REE deposits or a minigame with the same functionality of our lighting display in the museum. The overall goal of this application is to integrate our Critical Materials Institute Exhibit with a broader educational tool, so that the general public can use the application as an education tool and museum visitors may use it as a supplemental guide. We highly suggest that students interested in this project visit our exhibit, if possible, to gain a better understanding of what CMI does and the goals for this project. If you are unable to visit the exhibit but are still interested, please request additional information from our contacts.

Key Skills/Technologies: The application will need to function on both iOS and Android platforms with the same capabilities for each. If the team decides a web application would serve as a better educational tool, then they will have the freedom to create that instead. Since we as a client are not well-versed in coding, the team will have the opportunity to decide the best tools for them to use.

Student Benefits:

- Freedom to take creative liberties with the application design and to suggest new ideas for content to be included.
- Opportunity to develop an application from preliminary design to the final, usable form and to modify the preliminary design as needed. This project also requires the team to create the same application for both iOS and Android, presenting an additional challenge.
- Ability to work remotely & have team meetings on campus.
- Build leadership skills by working with a less-technically versed client- the student team on this project will have to be very independent with regards to coding the application itself once the layout has been designed.
- Opportunity to learn about a unique, multidisciplinary topic while still performing computer science-based work.

Contact Information:

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