ABSTRACT

TITLE:	Project Armeise: An Altitude/Azimuthal Multi-Camera Mount for High Altitude Atmospheric Research
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ABSTRACT: Project Armeise is an engineering design project with a goal to design, fabricate, analyze, and test an affordable camera mount to be used in the research of sprites, a high altitude electrical phenomenon. Scientific research and exploration has led to the discovery of these large scale electrical discharges in the earth's troposphere. Sprites appear during thunderstorms as reddish-orange flashes of light traveling upwards at high speeds. Recent developments in high-speed camera technology have helped scientists find evidence of the wide-ranging effects that thunderstorms can have throughout the earth's atmosphere. Dr. Ryan Haaland of Fort Lewis College is currently conducting sprite research and is in need of a pan and tilt mount capable of holding research cameras that are used in the field. In order to reach the requirements demanded by the field research setting, this mount must be easy to set up and transport by one individual. The mount must be capable of rotation about two axes to within 0.5 degrees of accuracy and a slew rate of 15 degrees per second. An on-board power supply must be wirelessly controlled via a graphical user interface for ease of use in remote locations. The variety of pan and tilt mounts currently on the market leave a gap between prohibitively expensive high end mounts and inexpensive low end mounts. This project seeks to fill the void left by the current market by creating an affordable mount designed specifically for field research.