



Direct-Hold Optical Fixture for Nikon Microscope Inspection of 1w AUX Optics

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ABOUT ME

- Major: Mechanical Engineering, with a biomedical emphasis
- Career Goals / Interests: My main career goal is to work in biomedical engineering. I have always wanted to help people, and I believe a career in this field would allow me to design prosthetics and medical equipment that improve lives. I am also interested in other areas of engineering, including agricultural engineering and aerospace.
- I chose a fellowship at LLNL because I want to prove myself as a strong intern and improve my chances of working here full time. Working at LLNL would give me the chance to work on medical devices and explore environmental and agricultural engineering.



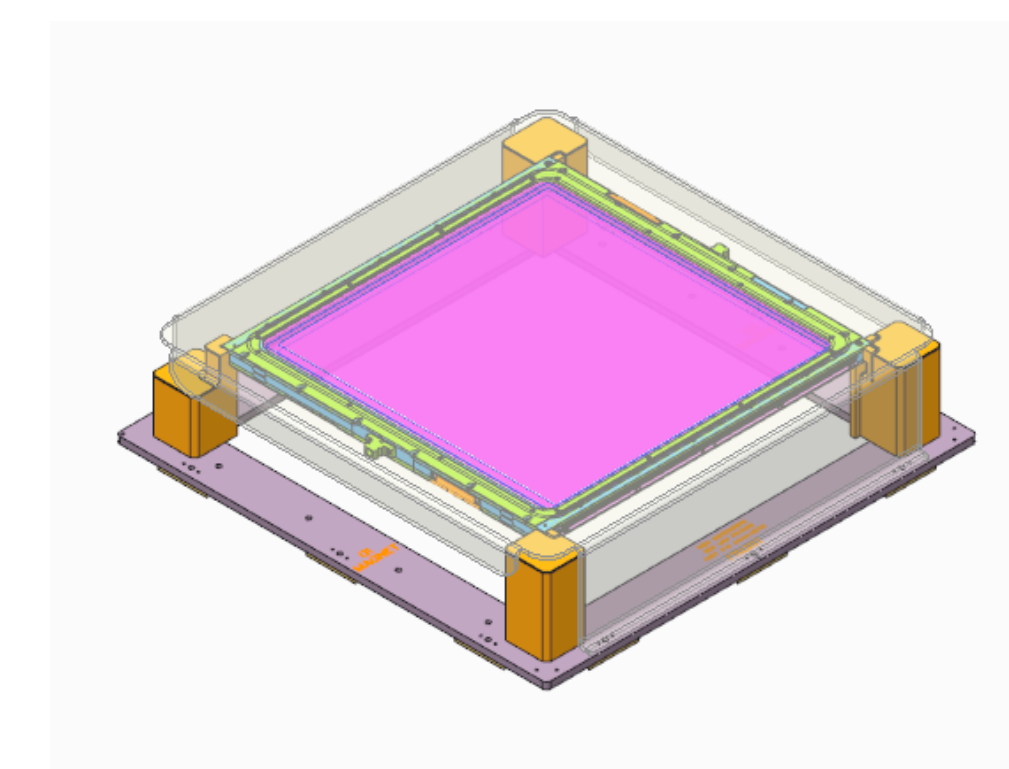
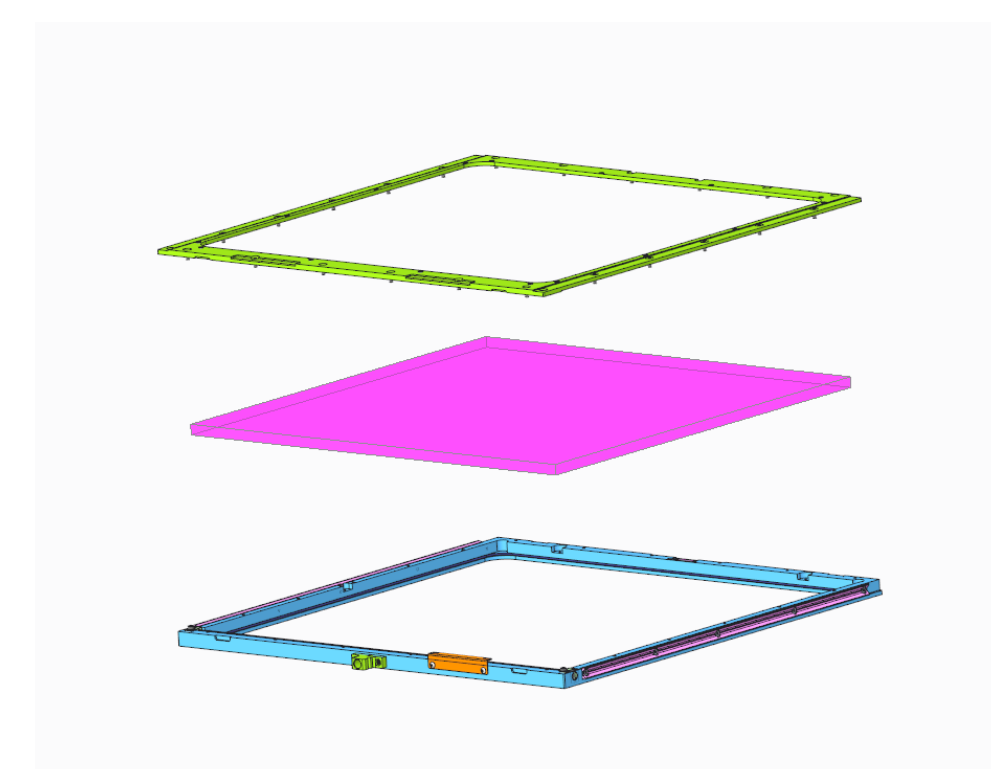
Photo of a Deep Brain Simulation (DBS) Implant

SUMMER RESEARCH

Abstract: The current optical fixture design mounts the optic within a line replaceable unit (LRU), which adds complexity to handling and inspection. This project develops a direct-hold optical fixture for the 1w AUX optic to replace the LRU-based configuration and enable through-optic inspection using a Nikon microscope. The design focuses on secure retention, prevention of optic damage, microscope compatibility, and improved technician usability. System requirements were established through stakeholder input and design review planning, including safety, repeatability, material suitability, and unobstructed optical access. A concept of operations was defined to support optic loading, scanning, removal, and teardown. The expected outcome is a simpler, safer, and more efficient workflow for damage inspection of 1w AUX optics.

Methods:

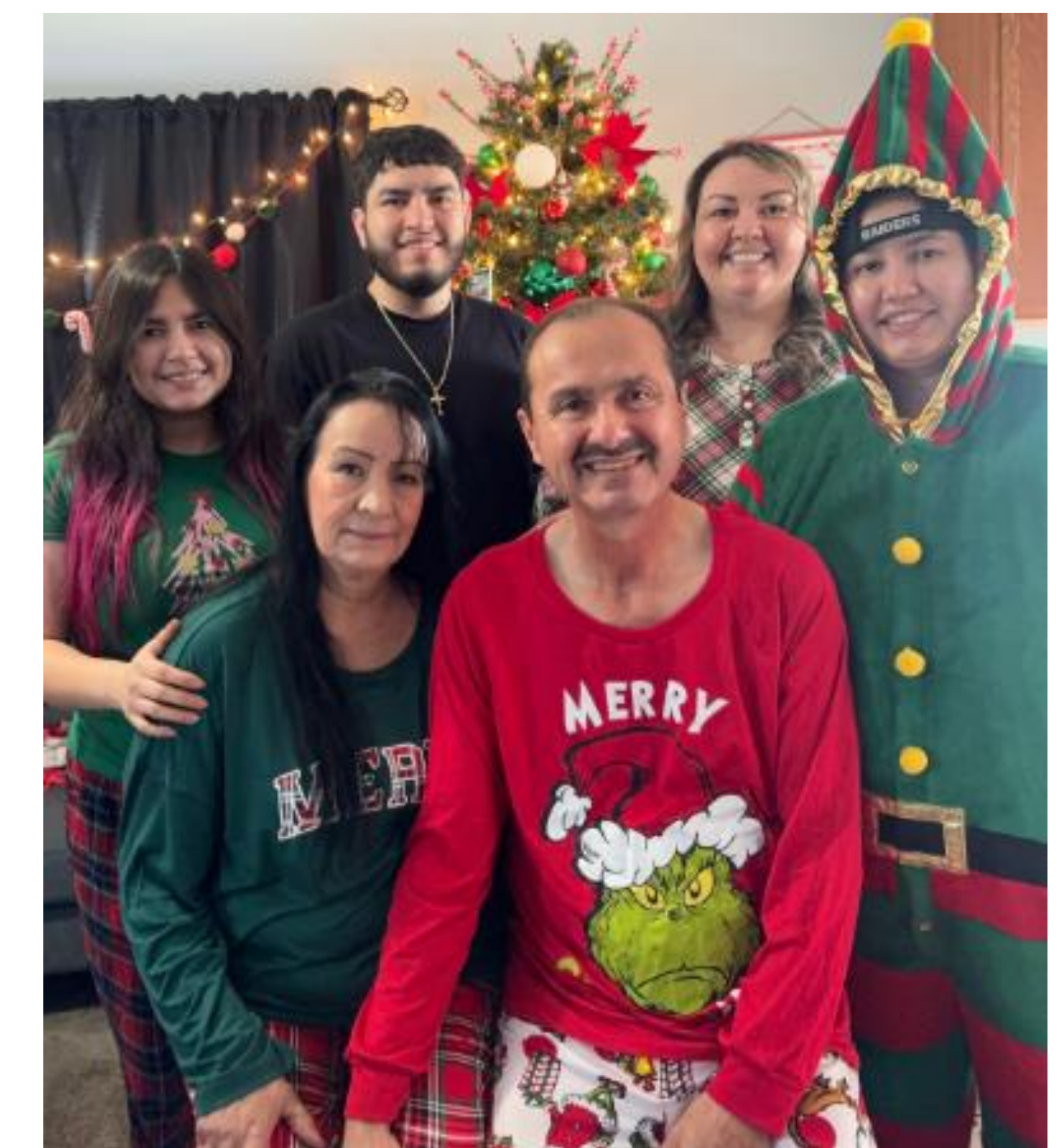
1. Met with stakeholders to gather input and requirements
2. Planned in-person workdays at the facility
3. Learned and used Creo Parametric for the design
4. Met with my mentor and other engineers when I needed help



Photos of the original fixture design that I updated and modified. The LRU is shown in green, and the 1w AUX optic is shown in pink.

LLF AWARD

- The LLF funds made this internship possible for me by helping cover housing, groceries, professional clothing, and weekend activities in Livermore.
- This fellowship has had a very positive impact on me. It motivates me to stay focused during difficult college courses and showed me and my family that I can build a career in engineering.



My family on Christmas Day 2025

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

LLNL-POST-2022141