



Sean Cummins

Early career Mechanical Engineer with experience in the consumer product development industry actively seeking new employment in the Seattle area

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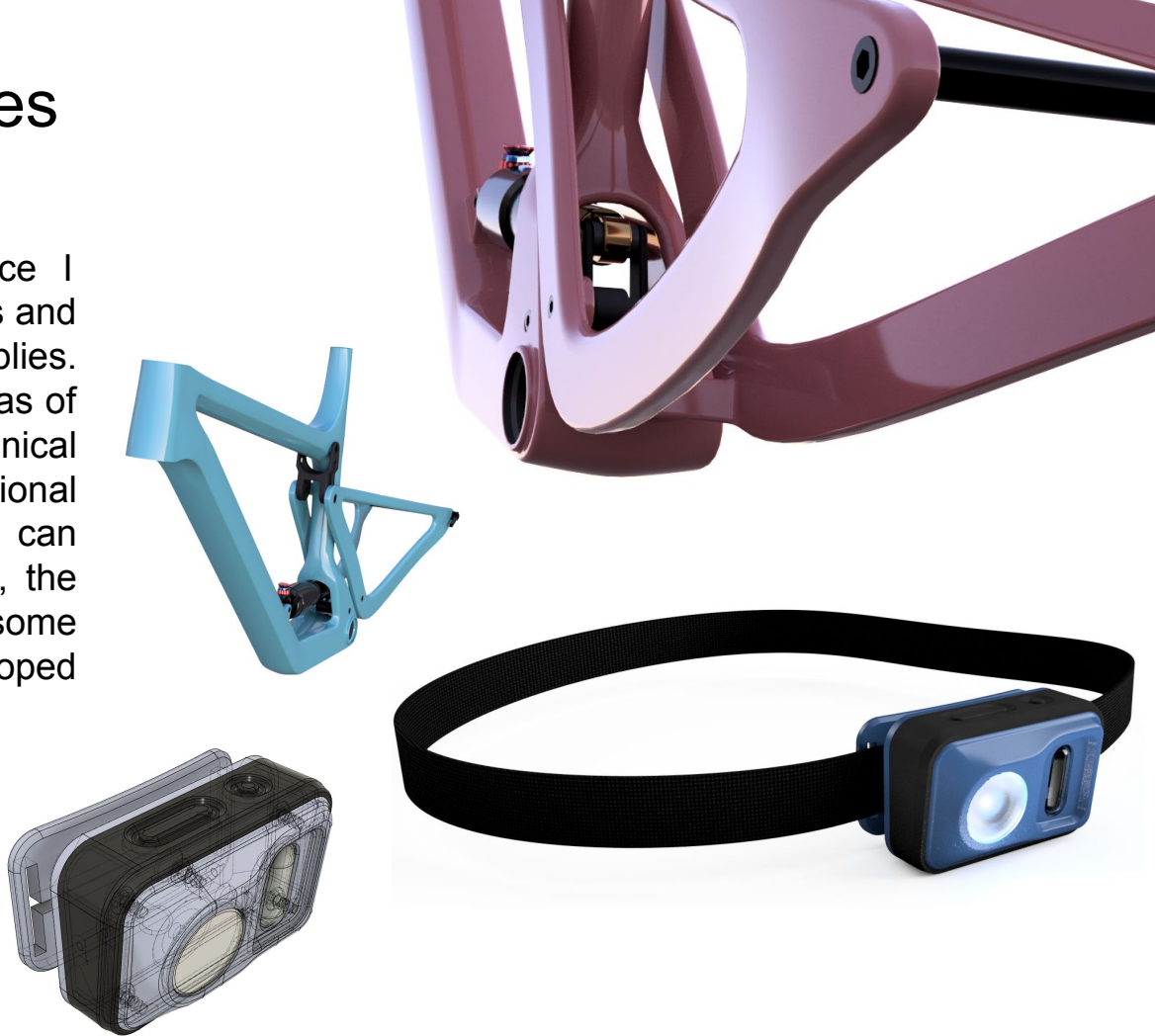
About Me

I am a Mechanical Engineer with a passion for solving complicated multidisciplinary engineering problems that challenge and develop my skills as an engineer. I have professional experience in the fields of consumer and commercial product development and internship experience with multi-million dollar government contracts developing ocean sensor arrays. In addition to my professional experience, I graduated with a Bachelor of Science degree in Mechanical Engineering from the Colorado School of Mines. Outside of work and school I enjoy spending time both furthering my skills as an engineer through personal projects as well as disconnecting from it in nature through outdoor activities such as biking, skiing, climbing, and camping.



CAD Modelling Samples

To complement my existing experience I have taken the time to create 3D models and renderings of some complex assemblies. These models show off some of my areas of expertise in both modeling and mechanical design. Because much of my professional experience is protected by NDAs, and can therefore not be shared in great detail, the following few slides serve to highlight some of the skill sets that I have developed through my professional experiences.



CAD Modelling Samples

Full Suspension Mountain Bike

This model is designed to the specifications of current mountain bike industry standards including suspension travel, bearing sizes, wheel clearance, etc. The following areas of product design were pertinent in driving design decisions for this assembly:

- Surface Modeling
- Solid Modeling
- Mechanism Kinematics
- Composites Manufacturing
- Human Body Kinematics
- Photorealistic Rendering

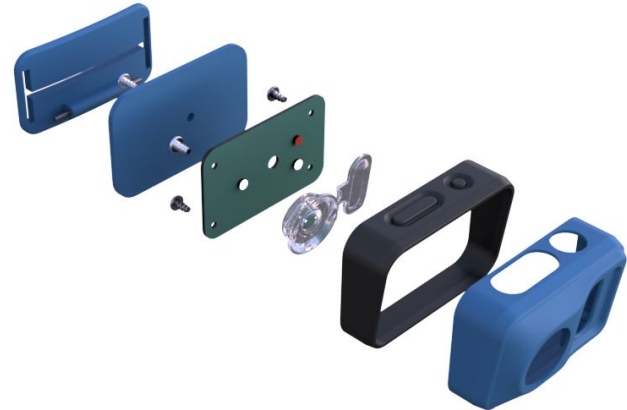
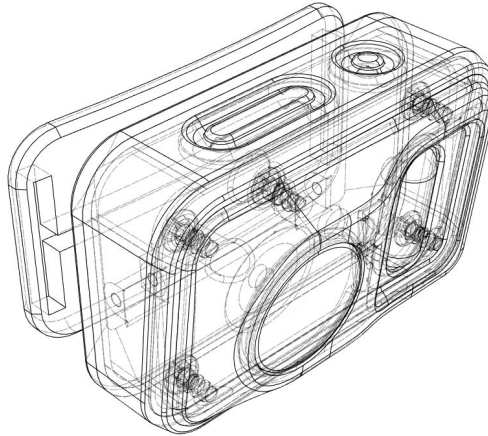


CAD Modelling Samples

Outdoor Headlamp

Though inspired by existing products on the market, I designed this product with a unique combination of aesthetics and functionality in mind. I heavily focused on the user-facing features of this product by including features such as multiple buttons for fine tuning light adjustments, soft-touch overmolding layers, and variable color LEDs. Some key design areas include:

- Injection Molding
- Design-For-Manufacturing
- Surface Modeling
- Electronics Manufacturing
- Wearable Electronics



Product Development Experience



Powers Innovation (Current)

While working for Powers Innovation I have contributed to the success of numerous consumer and commercial product development projects. These projects have exposed me to a wide array of markets from wearable electronics to household kitchen equipment. Through these projects I have spent time working through all stages of the product development lifecycle from small scale prototyping to design improvements for large scale manufacturing (10,000+ units). Here are some of the skills I've developed:

- Product Development: Industrial Design, Market Research, Prototyping, Testing, Intellectual Property Protection and Patent Navigation, Marketing, Product Improvement
- Manufacturing Processes: Injection Molding, Machining, Casting, Compression Molding, Metal Forming, Additive Manufacturing
- Electronics Development: Circuit Design, PCB Fabrication and Assembly, Electronics Testing
- Collaboration between multi-disciplinary teams



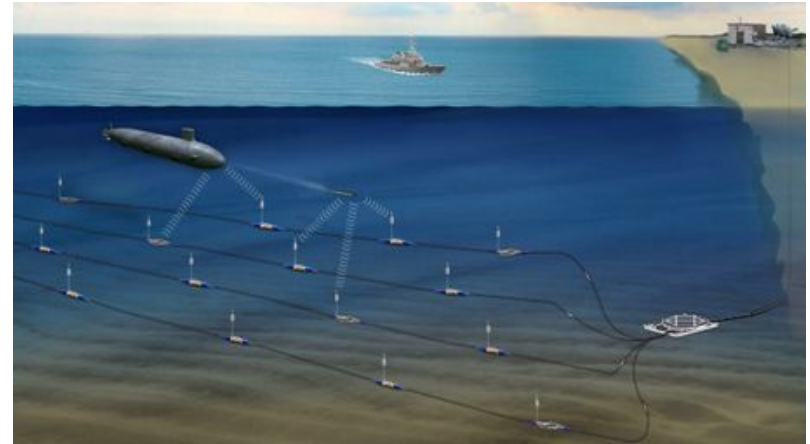
Production ready consumer products

Mechanical Engineering Internships



L3Harris Technologies (Summer 2019)

During this summer I spent the majority of my time working on contracted projects for the Department of Defense developing underwater acoustic sensor arrays. My primary role was resolving issues identified in the initial installation phase of the project that was conducted prior to my internship. These issues encompassed a wide range of stages in the engineering lifecycle including issues with drawing errors, manufacturing procedures, system transport, component functionality, and installation procedures. Some of these issues took minimal time to resolve while others encompassed multiple weeks of designs, calculations, and collaboration amongst multidisciplinary teams. Through this work I developed useful real-world experience with problem investigations and resolution, developing and updating manufacturing processes, and working on long-term multi-phase operations.



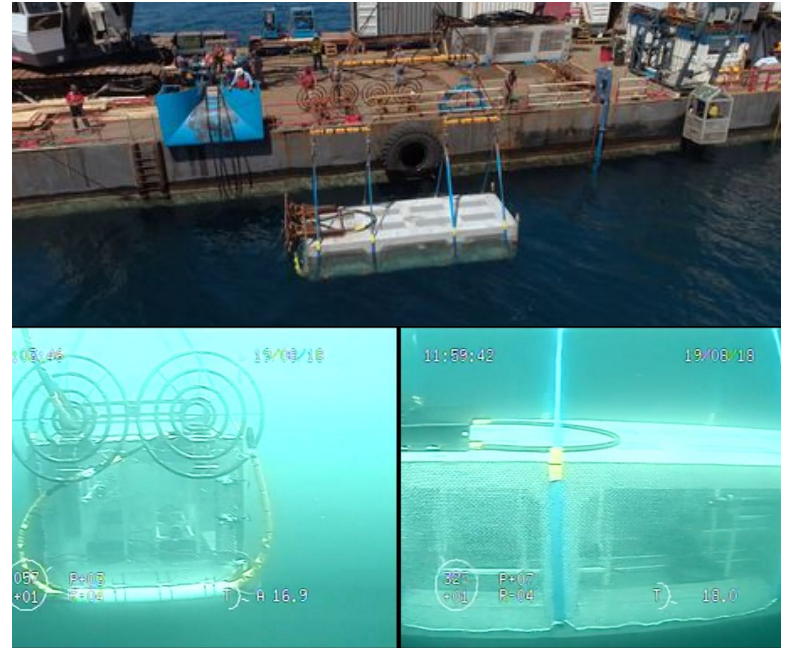
Rendering of underwater acoustic sensor array

Mechanical Engineering Internships



L3 Technologies (Summer 2018)

As a Mechanical Engineer Intern at L3 Technologies I spent most of my time working on components used in the [Sylmar Ground Return System](#) for the Los Angeles Department of Water and Power. Tasks included designing components ranging from small electrical housing parts to large structural support for transporting multi-ton cable spools on the ocean. Additional tasks involved writing tests procedures, conducting tests to validate component functionality, and converting existing company systems to 3D models in SolidWorks. I also gained valuable insight into the real-world operations of engineering such as design-for-manufacturing, conducting business meetings with various teams to facilitate progress of a project, and working under the restrictions of complex customer requirements and budgets.



Installation of Sylmar Ground Return System

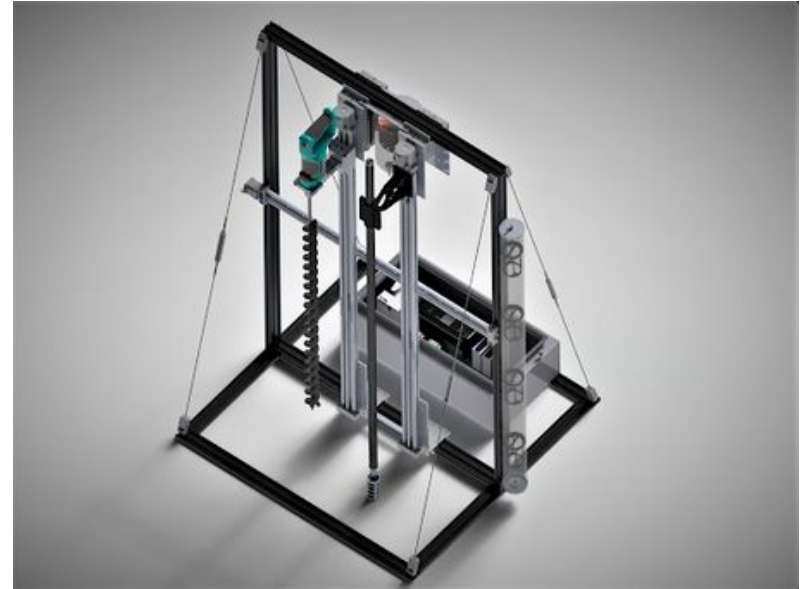
Academic Projects



NASA RASC-AL: Moon to Mars Ice Prospecting Challenge (2019-2020)

This event gives ten university teams in the United States the opportunity to participate in a competition focused on designing a system capable of extracting water on the Moon and Mars. The multi-day competition focused heavily on autonomously reaching a layer of ice beneath multiple layers of terrain and melting, extracting, and filtering any resultant water. Unfortunately the competition scheduled for June 2020 was ultimately cancelled due to the Covid-19 Pandemic, however, the team made the following accomplishments prior to graduation in May:

- Second Place overall at Mines Virtual Design Showcase
- Innovative melting system that extracted water, heated it, and pumped it back into the melting well to more efficiently melt ice
- Autonomous control system capable of enacting all operations without user-intervention



Rendering of final system assembly

Thank you for your time and consideration. Please feel free to contact me with any further questions you may have.