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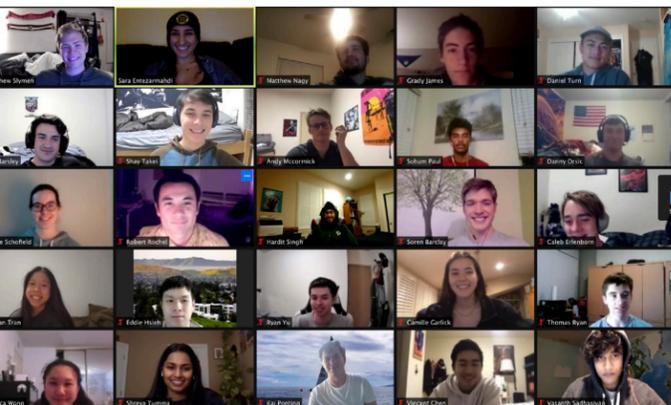
# LOOKING BACK MOVING FORWARD

PROVE LAB PERIODICAL  
SPRING 2021 • ISSUE I

# THE TEAM

PROVE Lab was started by a handful of students who saw the potential to do more with alternative energy. They wanted to be a part of something that had not been done before at Cal Poly and to accomplish something that had not been done in the world.

Members of PROVE lab are diverse in area of study, background, and interests. While some of our members are passionate about the automotive industry, most have passions that extend far beyond it or even the projects they are working on. The one unifying feature of our members is a strong desire to tackle meaningful challenges in pursuit of seeing an innovative concept brought to reality.



**RECENT ORGANIZATIONAL RESTRUCTURING** included the development of specialized subteams, each with their own Leads. These subteams allow for a more organized and efficient workflow.



**PAULO ISCOLD** FACULTY ADVISOR | **KELLEN BARSLEY** PROJ. MANAGER | **CALEB ERLBORN** PROJ. MANAGER | **SHAY TAKEI** PROJ. MANAGER



**SARA ENTEZAR** BUSINESS | **GRADY JAMES** HIGH VOLTAGE | **ROBERT ROCHEL** HIGH VOLTAGE | **CHLOE SCHOFIELD** MECHANICAL | **ANDY MCCORMICK** AEROSHELL | **ALEX JOHNSON** LOW VOLTAGE | **VASANTH SADHASIVAN** LOW VOLTAGE

**Our vehicles aren't just built to break world records. We strive to make a profound impact and challenge the status quo through innovative engineering driven by ambitious goals.**



**PROVE BUILDS ALL ITS PROJECTS** from the ground up, as students learn the ins and outs of technical engineering and business management across a project's full life cycle. Through using alternative energy in our vehicles, PROVE Lab hopes to demonstrate the viability of clean energy and help pave the way for a renewable energy future.

Freed from the restrictions of competition, our team is left to make our project's visions uniquely our own. All aspects of project development are coordinated by students, from detailed technical designs and system engineering to sponsor acquisition and team management. Every member of PROVE is given the opportunity to excel, regardless of their experience, major, or background. The personal growth and development of our team's technical and soft skills is our top priority, and we ensure every member at PROVE Lab is given responsibilities to make a real impact on the project, aligning with their own interests.

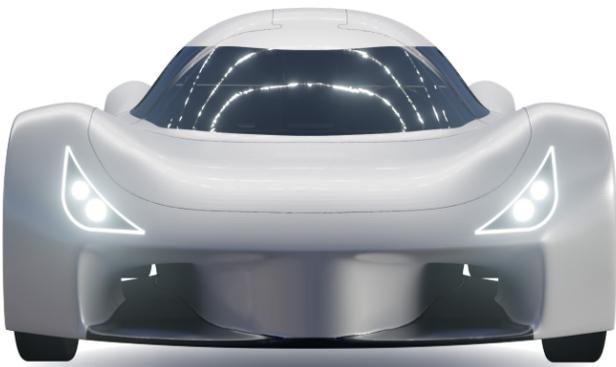
**MEMBERSHIP DEMOGRAPHIC BY MAJOR**

14	MECHANICAL ENGINEERING
6	AEROSPACE ENGINEERING
3	ELECTRICAL ENGINEERING
3	COMPUTER ENGINEERING
5	OTHER

# CURRENT PROJECT: MILA

**THE ENDURANCE CAR PROJECT** looks to develop a fully electric long-range sports car that will drive 1000+ miles on a single charge, aiming to break the Guinness World Record for the longest distance traveled on a single charge.

The student team will complete the full life cycle of the project—from design to systems testing—while applying the skills learned inside and outside the classroom.



## ESTIMATED SPECIFICATIONS

EXPECTED RANGE	1200 mi
RECORD RUN SPEED	35 mph
BATTERY PACK CAPACITY	110 kWh
COEFFICIENT OF DRAG	0.12
TOTAL WEIGHT	2,900 lbs

# SIGNIFICANT EVENTS

**DURING SPRING**, the team hosted a number of social and professional events to strengthen team cohesion and career-readiness. These events not only foster friendships within the team, but provide a welcoming space for members to learn from each other, industry members, and professionals.

**LOCKHEED MARTIN RESUME WORKSHOP**  
Lockheed Martin's Janet Bachtel joined PROVE in a resume building workshop, providing insider tips and helpful career skills.

**THE INTERSECTION OF GENDER AND ENGINEERING**  
The team hosted its first presentation centered on diversity, equity, and inclusion in the engineering space, joined by guest speaker Tina Smilkstein, Ph.D.

**ALUMNI SOCIAL AND NETWORKING EVENT**  
Graduated members virtually connected with current members to learn about recent club developments, discuss professional endeavors, and share nostalgic stories.

**ULTIMATE FRISBEE**  
A handful of team members gather monthly to stay active and connected over a game of Ultimate Frisbee!

**BALANCING FUN AND CASUAL EVENTS WITH INFORMATIVE WORKSHOPS ENSURES A FRIENDLY, CAREER-READY, AND SOCIALLY AWARE TEAM. EACH EVENT LOOKS TO FOSTER AN INCLUSIVE, WELL-ROUNDED CLUB CULTURE.**



## THE INTERSECTION OF GENDER AND ENGINEERING

A discussion on gender disparity in the engineering academic and work place



# 2020-2021 PROGRESS

DESPITE AN UNPRECEDENTED SHIFT to a remote workflow, the PROVE team presses on virtually, remaining optimistic about the prospective return to campus and manufacturing. Until then, members work to perfect Mila's detailed design and integration using online softwares like MATLAB, Siemens NX, and more.

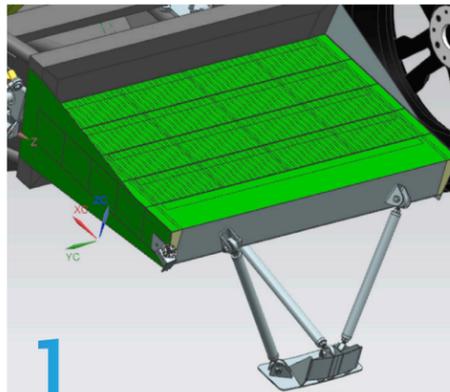
## 1 MECHANICAL

- Finalized design and analysis of suspensions and steering geometry
- Finalized design and analysis of brakes and driver safety systems
- Created initial design for ergonomic driver and passenger seating



## 2 AEROSHELL

- Prepared foam mold design for manufacturing
- Practiced carbon fiber panel manufacturing
- Created initial design for door, hood, and trunk opening mechanisms



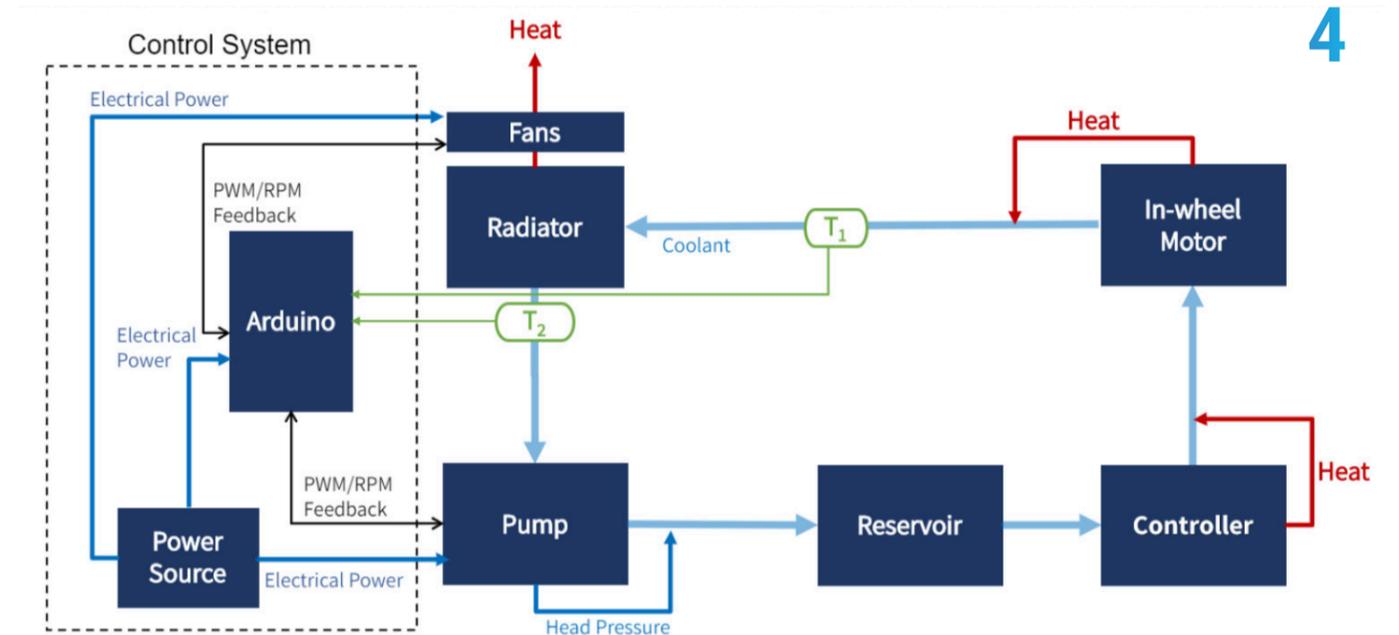
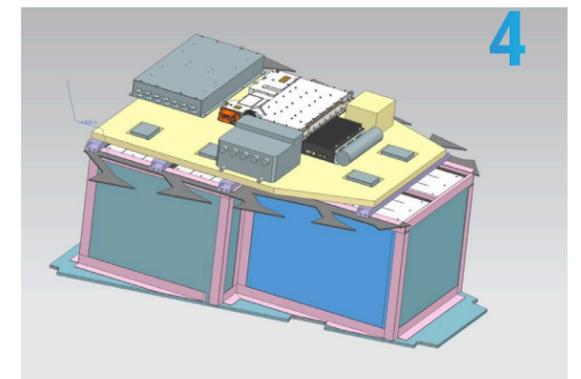
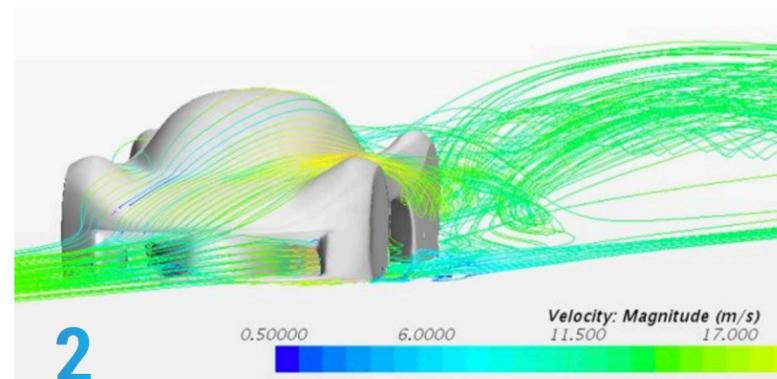
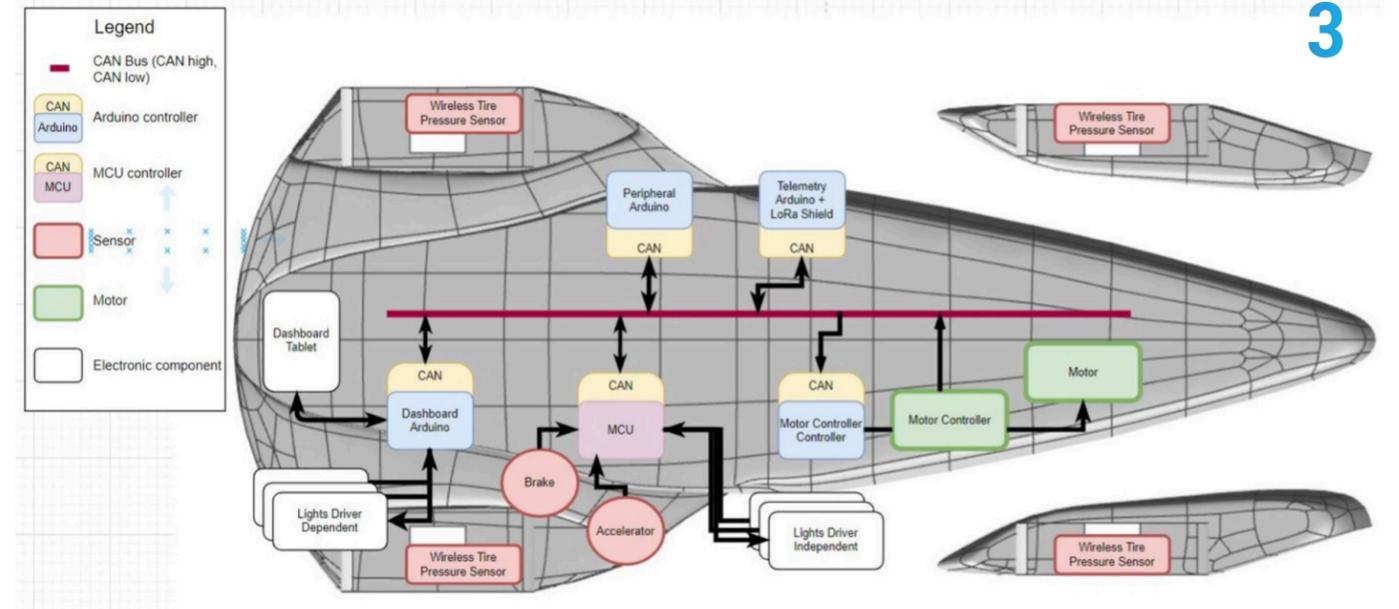
## 3 LOW VOLTAGE

- Finished testing data packet size using long range communications system
- Finished center console user interface design
- Worked on vehicle initialization safety systems



## 4 HIGH VOLTAGE

- Designed prototype battery system to test electrical system functionality
- Completed preliminary thermal analysis on fire protection and cooling systems
- Created conceptual design for Mila's main battery structure

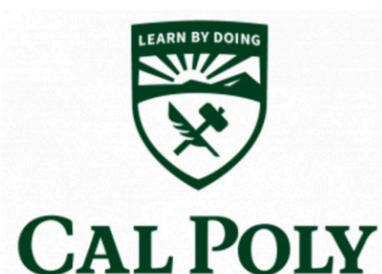


# OUR SPONSORS

A HUGE THANK YOU TO ALL THE SPONSORS WHO MAKE OUR PROJECTS POSSIBLE!

AS A NONPROFIT Instructionally Related Activity, members of PROVE manage partnership outreach, materials acquisition, and appropriate budgeting, and your assistance ensures that our project can keep making progress.

The PROVE Team ensures that every single donation assists in the development of Mila and the education of our members, and we understand the generosity of all donations. Once again, thank you!



# LETTER FROM THE PROJECT MANAGERS

As PROVE's project managers, we have oversight into every aspect of the team and our incredible project Mila. We have watched as members of our team grow and learn new skills, becoming more confident and more capable as engineers. Friendships have formed and the team has grown as whole, overcoming many difficulties, both technical and logistical.

As we progress, our members prove themselves to be valuable assets to the team, in their contributions towards both the physical project and maintaining our social team atmosphere. Whether through their engineering designs, or at virtual game nights and socially distant frisbee games, we are glad to have gotten to know each and every one of our members. It is an honor to continue working with such a committed group of students who persevered through the difficulties of the virtual format imposed by the pandemic.

We are excited to be redefining the limit for the range of electric vehicles one milestone at a time. As we begin to move into the next school year and beyond, we have ambitious goals for Mila laid out. The eventual reopening of machine shops and lab spaces on Cal Poly's campus will allow for the continued manufacturing of Mila. We will work alongside our members to gain experience in many diverse forms of fabrication and integration, from welding and soldering, to CNC machining and composite layups. Once we have Mila's chassis integrated with the mechanical systems, and rolling on its wheels, we will have completed our next major step in the road to success.

Thank you to everyone who supports our team and our endeavor into the future of sustainable vehicles!

Sincerely,  
the Project Managers



CALEB ERLERNBORN



KELLEN BARSLEY



SHAY TAKEI

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PROVELAB