



# November Newsletter

90% of engineering solutions  
only serve 10% of the population.

## Highlights

This month's newsletter provides introductions to our ongoing projects, along with the latest progress updates from each team. Featured projects include the Hip Abductor Machine, Adaptive Swim Bench, Engineering Wellness Initiative, Pit-lining Material Testing, Leg Press Machine, Scoliosis Brace Tension Sensor, In-series Biosand Filter, and Prosthetic Sensor Sock.

Project90 has successfully hosted a series of impactful events this month, including a Winter Charity Drive, an Excel Training Workshop, and multiple outreach booths designed to expand awareness and community engagement. Enjoy reading about the activities from the last month!

## Word Search

J	B	S	X	E	P	N	X	P	M
W	U	C	X	S	R	I	F	G	A
E	I	O	T	H	O	N	I	P	C
L	L	L	U	V	S	E	L	R	H
L	D	I	E	B	T	T	T	O	I
N	I	O	X	S	H	Y	E	J	N
E	N	S	C	O	E	R	R	E	E
S	G	I	E	C	T	V	Z	C	U
S	X	S	L	K	I	B	X	T	T
S	R	Q	I	S	C	I	R	J	S

**Project  
Ninety  
Building  
Prosthetic  
Socks**

**Scoliosis  
Machine  
Filter  
Wellness  
Excel**





Aarushi Bhargava

# Presidents

Ekam Sidhu



# Comms

# Finance



# Events

## TRIVIA

1. Which organ has an engineered fully artificial replacement?

a) Lungs b) Trachea c) Spleen d) Thyroid



# Project Introductions

## Hip Abductor Machine

The Hip Abductor Machine is a therapeutic device for kids with cerebral palsy to strengthen the inner thighs. It offers safe, guided resistance to improve hip stability, posture, balance, and walking. Adapted for small bodies and varied abilities, it reduces the risk of hip dislocation.



## Adaptive Swim Bench

A customizable land-based tool replicating swim strokes for a Special Olympics athlete. It builds strength, endurance, and technique with adjustable, accessible features for diverse needs. The bench boosts performance and inclusion, enabling independent training with dignity.



## Wellness Initiative

This initiative boosts mental health awareness in the Schulschulich School of Engineering via posters and gamified engagement. It equips students with stress management, resilience tools, and connection-building strategies. It fosters openness, empathy, and recognizes wellness as key to academic and professional success.



## Pit Lining Material Tests

This project develops low-cost, stronger pit linings for latrines in flood-prone or unstable soils using tested sand-cement ratios. It evaluates compressive strength, porosity, and stability to find the most reliable, affordable mix. Findings reduce pit collapse, extend latrine life, and include field guidelines for scalable community use.





## Leg Press Machine

The Leg Press Machine is a rehab tool for kids with cerebral palsy to safely strengthen quads, glutes, and calves. It promotes proper alignment and builds power for walking, standing, and daily mobility. Adjustable resistance fits individual needs for progressive, accessible therapy.



## Scoliosis Brace Tension Sensor

The Scoliosis Brace Tension Sensor clips to the brace buckle to monitor tension and wear time. It delivers real-time adherence data to clinicians, patients, and families. Reminders and progress tracking help kids stay consistent, slowing curve progression.



## In-Series Biosand Filter

A low-cost, portable water purifier using stacked buckets for low-resource and emergency areas. It enhances biosand technology to better reduce turbidity and pathogens such as E. coli. Guides, training, and deployment tips empower communities to build and maintain their own systems.



## Prosthetic Sensor Sock

A thin smart fabric with pressure sensors worn under a prosthetic socket for real-time pressure mapping. It aids prosthetists in spotting pressure points and refining fit, particularly for those with impaired pressure sensation. Intuitive software allows fast adjustments to boost comfort and usability.



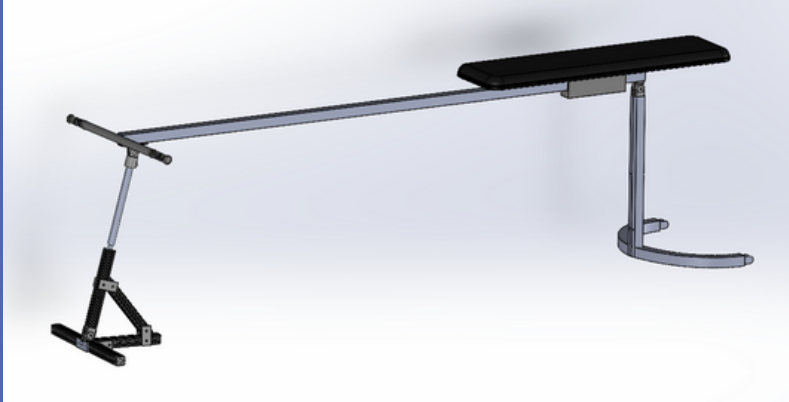
### TRIVIA

2. Which rock drummer, after losing his right arm, came back using a foot-and-left-arm-controlled drum kit?



# Project Progress

## Adaptive Swim Bench



The Adaptive Swim Bench team is in the CAD design phase, developing solutions to make the bench foldable and adjustable while in use. They have explored mechanisms such as linear actuators and gas springs to achieve this functionality. The team aims to complete its first CAD iteration by the end of November and construct a PVC prototype before the semester ends.

**Team Members:** Zalia, Hannah, Joel, Romina, Michaela, Anika, Caitlyn, Makayla, Cindy and Arvin

## Pit Lining Material Tests

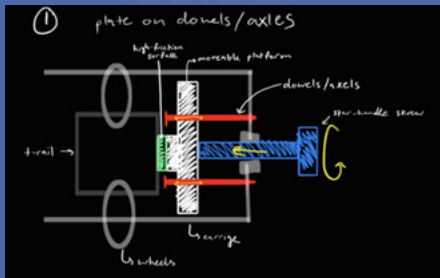
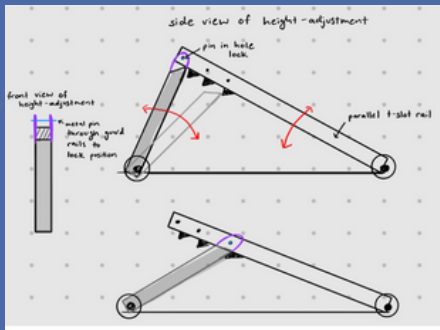


The Concrete Pit team has partnered with CAWST and committing to research on Liberia, local materials, and relevant concrete properties. They have set testing goals, variables, and sample dimensions for durability and strength assessments. The team is now finalizing testing ratios, completing lab training, and preparing to begin mixing and pouring concrete samples.

**Team Members:** Mandy, Yasmine, Dominika, Natasha, David, Bas and Sahajpreet



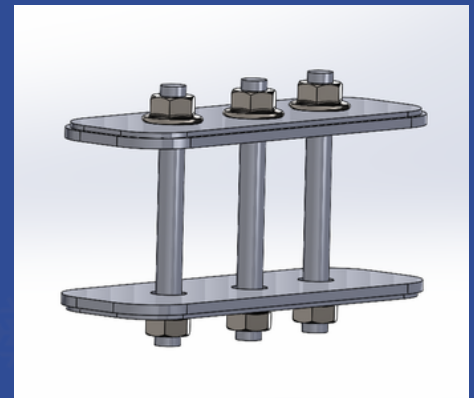
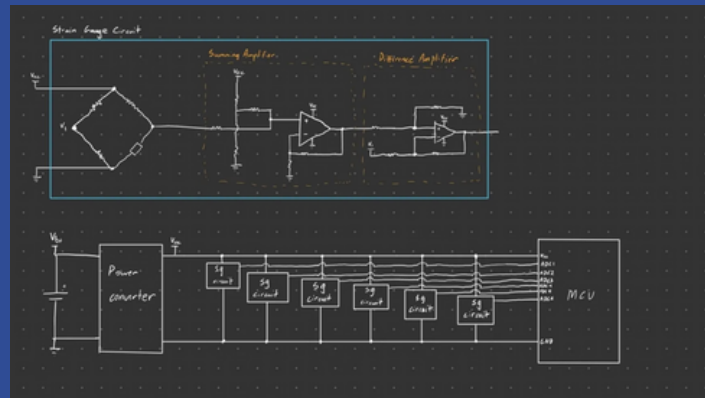
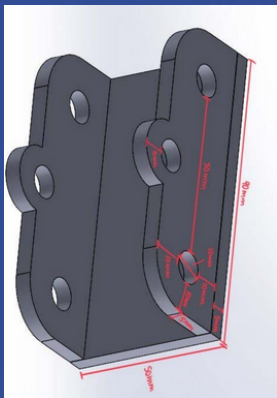
# Leg Press Machine



The Leg Press team assessed the original mechanism and uncovered several unexpected issues that require redesign. Working with Ability Workshop, they finalized a new frame approach and are currently developing CAD models. Once those are complete, they will purchase materials and begin manufacturing.

**Team Members:** Rebecca, Christian, Daniella, James, Kristina and Wajeelha

# Scoliosis Brace Tension Sensor



The P90 Scoliosis Brace Tension Sensor team is developing a device that measures brace strap tension and reports the data in a user-friendly format. They have completed preliminary research and chosen core components, including an STM32 microcontroller and a load cell-based sensing system. The team is also planning an app to display tension data and has researched biomedical requirements such as load ranges, usability, and comfort. They are now working with Cascade Orthotics to obtain information and materials as they move toward prototyping.

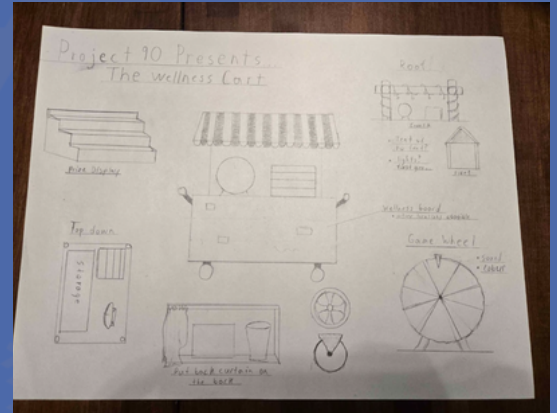
**Team Members:** Sedoo, Tatiana, Nayha, Shyla, Kate, Hargun, Avneet, Ayman, Isabella and Mathew

## TRIVIA

3. What is the world's largest living structure?



# Wellness Initiative



The Wellness Cart team is developing a cart to promote wellness practices and resource sharing in the engineering community. They have researched care-card models, planned a prize system, selected items to purchase, and outlined key wellness themes. The team is also creating a poster campaign with actionable wellness tips, supported by research into accessible and effective design. These initiatives aim to make wellness more visible and easy to engage with on campus.

**Team Members:** Muhammad, Lujaina, Nayha, Jonart, Zara, Razaan, Zunaira, Rojka, Elaha, Joseph, Zach and Salomé

# In-Series Biosand Filter



The Biosand Filter team is currently focused on research and early project planning. They are preparing to meet with CAWST again and are working toward arranging a visit to CAWST's headquarters next month. Their next steps include refining their design direction and identifying testing requirements as the project progresses.

**Team Members:** Rigel, Abdul K., Mirei, Rachel, Jessy, Rowan, Neha, Luke and Aisha

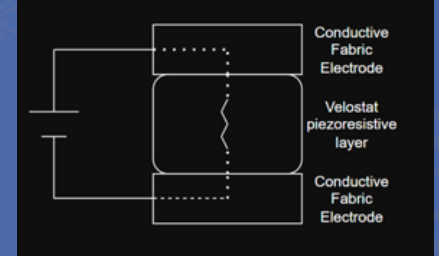
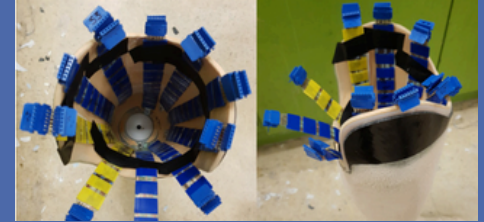
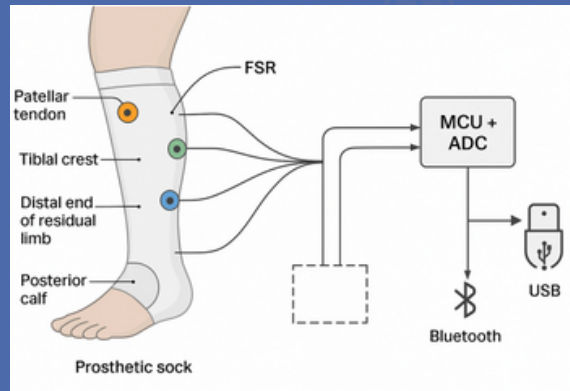
**LAUGH  
LAB**

Why don't students trust  
atoms in the lab?

Because they make up everything.



# Prosthetic Sensor Sock



The Prosthetic Sock team spent the past month researching pressure-sensing technology, current prosthetic fitting challenges, and common sock materials. They also identified companies, labs, and faculty members who may support future collaboration. The team is now aiming to develop precise, in-house sensors with 2D/3D mapping capabilities for improved user data. With this direction set, they expect to begin ordering materials and starting prototypes in the next two weeks.

**Team Members:** Alice, Neeor, Antonio, Lauren, Abdul W, KaryIn, Anureet, Raymbek, Khuong, Hira and Michael

# Hip Abductor Machine



The Hip Abductor team has been developing a wooden prototype to test core features and refine their approach. They are evaluating and selecting the mechanism that will be used in the final device, making design revisions based on prototype performance. Once finalized, the team plans to order materials and begin manufacturing in January.

**Team Members:** Caden, Rianne, Keegan, Abi, Stephanie, Dain and Daniel

**LAUGH  
LAB**

Why did the neuron break  
up with the synapse?

It needed some space to connect.



# Project90 Events

## Info Night

Project90 hosted a packed Info Night showcasing our mission. The response was incredible with over 200 applications!



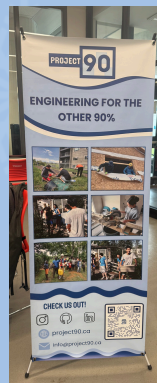
## Winter Charity Drive

Huge thanks to everyone who donated winter clothing and non-perishable food over the past three days. Project 90 collected these items for the Calgary Food Bank and Drop In Centre, helping to make a real impact in our community.



## ClubsWeek Fair

Project90 had a strong presence at SU Clubs Week on September 17th and 18th! Big thanks to everyone who volunteered and spent time at the tables chatting with students and sharing what we do. Great exposure and solid teamwork all around!



## Create and Connect

Proud to present that Raiyana S. and Caden K., represented at the recent Create & Connect event and won \$500 towards Project90! Congratulations!





## Board Game Team Bonding

Board Game Night was a fun team bonding session with great vibes and laughs all around! Thanks to everyone who joined us. We'd love to see even more faces next time, mark your calendars!



## Excel Workshop

Project90 x MESS Excel Workshop was a hit! Thanks to everyone who came out on Nov 3, learned new skills, grabbed pizza, and made it a great afternoon. Shoutout to MESS for the collab and to all the teams who showed up strong!



## General/Headshot Meeting

Project90's first full General Meeting + Headshots was a success! Amazing to have everyone together for full-team updates, portfolio breakouts, and professional photos (and snacks!).

Welcome to Project90!



## Open House

Project90 joined the UCalgary Open House on October 25 and welcomed hundreds of prospective students to the Engineering Atrium! Huge thanks to every volunteer who showed up, shared our projects, and helped inspire the next generation of engineers.



Check out our new website!

**Project90.ca**

Big thanks to Abdul Qureshi!

# Thank you



DEVELOPING  
WORLD  
CONNECTIONS

**SCHOLARS**  
ACADEMY PROGRAM



## TRIVIA ANSWERS

Question One:  
Rick Allen from  
Def Leppard

Question Two:  
The Trachea

Question Three:  
The Great  
Barrier Reef

PROJECT

90