

ENGINEERING DESIGN EXPO

XXXV

*Celebrating the next 25 years in engineering
and what it means to
Engineer Like a Vandal*

APRIL 27, 2018



University of Idaho

College of Engineering



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The Micron Foundation strives to build a strong community and promote robust education in the areas of science, technology, engineering and mathematics (STEM). Through our support of local non-profits, K-12 schools and universities, we support the communities where our employees live, work and volunteer.

We are proud to support students at the 2018 Engineering Design EXPO and the University of Idaho College of Engineering.



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WELCOME TO ENGINEERING DESIGN EXPO

Celebrating the Next 25 Years in Engineering and what it Means to Engineer Like a Vandal



It is my pleasure to welcome you to the 25th Annual Engineering Design EXPO, Idaho's longest-running exposition showcasing senior engineering capstone projects. For more than 100 years, the College of Engineering has been providing highly talented engineers to Idaho and the world. Our capstone design experience is the highlight of our engineering program. University of Idaho engineering students tackle real-world issues with the help of industry and academic partners. Our project sponsors provide the technical problems and our students provide solutions, gaining invaluable hands-on research and design experience in the process. It's a perfect match!

We have been hosting an exposition of our students' innovation for twenty-five years. Every year we make an effort to not only showcase our students but to do something different that demonstrates the importance of engineering to our world. This year we are focused on celebrating the next 25 years in engineering. Because over the next 25 years our current and incoming students will make the most of their education and a difference in the world.

Over the years EXPO has grown in significance bolstering our educational process and our students' development. But it is not possible without the support of our industry partners and friends of the College of Engineering. We depend on your generous support to produce this quality event.

I want to thank this year's corporate and academic presenting sponsors the Micron Foundation and Engineering Outreach at the University of Idaho for their generosity and commitment to EXPO.

In addition, I want to thank all of the sponsors and partners that support EXPO activities from our K-16 Extended Experience program to providing meals for our judges and capstone students. Thank you to Avista, the Boeing Company, BP, CCI-Speer, the Center for Advanced Energy Studies, HP, Idaho National Laboratories, Idaho Power, Idaho STEM Action Center, J-U-B Engineers, Lochsa Engineering, Power Engineers, Schweitzer Engineering Laboratories, Wagstaff and Western Trailers.

We are proud of the educational experience our students receive. As you visit EXPO please engage with our students and ask them about their projects and engineering designs, the future they hope to create and what it means to them to Engineer Like a Vandal.

Finally, I want to thank all of our faculty, staff, students, judges and industry and academic partners who have helped shape EXPO over the past two and a half decades. We look forward to celebrating the next 25 years of EXPO with you!

Sincerely,

Larry Stauffer, Dean
University of Idaho, College of Engineering

THANK YOU

2018 ENGINEERING DESIGN EXPO SPONSORS AND PARTNERS

The University of Idaho, College of Engineering thanks all of our sponsors and partners for their generous support of the 25th annual Engineering Design EXPO. We value and appreciate your participation and continued commitment to engineering education and EXPO.

Corporate Presenting Sponsor



Academic Presenting Sponsor



Event Sponsors



Event Partners



Sponsorship Opportunities

Planning Engineering Design EXPO is a yearlong activity. To explore future opportunities to support the University of Idaho's Engineering Design EXPO contact the College of Engineering Development team at 208-885-5201 or email expo@uidaho.edu. We look forward to talking with you about how you can help support EXPO and our current and future students.



Engineering Design EXPO

April 27, 2018

7 a.m. - 4 p.m.

Bruce M. Pitman Center

SCHEDULE

EXPO INFORMATION

1st Floor

7 a.m. - 2:30 p.m.

PROJECT PRESENTER REGISTRATION AND SETUP

2nd Floor, International Ballroom

7:00 a.m. - 8:30 a.m.

JUDGE REGISTRATION, BREAKFAST AND ORIENTATION

2nd Floor, Vandal Ballroom

7 a.m. - 8:45 a.m.

EXTENDED EXPERIENCE GROUP CHECK-IN

1st Floor

8 a.m. - 10:30 a.m.

OPENING CEREMONY

2nd Floor, Chiefs Lounge Area

8:45 a.m. - 9 a.m.

EXPO HALL OPEN

2nd Floor, International Ballroom

9 a.m. - 3:30 p.m.

TECHNICAL PRESENTATIONS

2nd Floor, Vandal Ballroom, Silver, Gold & Chiefs Rooms;
Basement level, Cataldo Room

9 a.m. - 12 noon

MOVIE: DREAM BIG: Engineering Our World

2nd Floor, Borah Theater

**9:00 a.m., 10:00 a.m., 11:00 a.m., 12:00 p.m.,
2:00 p.m.**

FUTURE ENGINEER TALK: ALEX KNOLL

The Things We Can Do

2nd Floor, Borah Theater

1 p.m. - 1:30 p.m.

KEYNOTE TALK: BURT RUTAN

Managing and Motivating the Creative Process

2nd Floor, Vandal Ballroom

2:30 p.m. - 3:30 p.m.

EXPO CLOSING CEREMONY

2nd Floor, Vandal Ballroom

3:30 - 4 p.m.

2018 EXPO TECHNICAL PRESENTATIONS

Technical presentations are approximately 20 minutes and will take place in multiple locations in the Bruce M. Pitman Center between 9 a.m. and 12 noon. (Chief's Room, Vandal Ballroom, Silver Room, Gold Room and Cataldo Room).

Gold Room

(2nd floor - Bruce M. Pitman Center)

- 9:00 am Application for Speech Visualization
- 9:20 am Modeling and Measurement of Permittivity for Near Space Communications
- 9:40 am Advanced Communications System for Suborbital Flight
- 10:00 am TATER (Tamper Analysis via Transient Electromagnetic Responses)
- **10:20 am Break**
- 10:40 am Mitigating Cyberattacks Caused by Fast Acting Hardware
- 11:00 am Solar Powered Flywheel Energy Storage System
- 11:20 am Voltage Source Converter Fault Protection
- 11:40 am Non-Wire Solutions to Traditional Power Grid Upgrades

Silver Room

(2nd floor - Bruce M. Pitman Center)

- 9:00 am Boeing Sidewall Lighting Installation
- 9:20 am Coffee Roaster Filtration System
- 9:40 am SEL Thermal Card Guide
- 10:00 am An Aerodynamic Study of Bulk Commodity Trailers
- **10:20 am Break**
- 10:40 am Combat Food Insecurity
- 11:00 am Portable Biodiesel
- 11:20 am UI Steam Plant Combustion Instrumentation
- 11:40 am Two-Stroke Exhaust Design
- 12:00 am Clean Snowmobile Challenge

Vandal Room South

(2nd floor - Bruce M. Pitman Center)

- 9:00 am Discover Bot: Discovery Center Telerobotics Exhibit
- 9:20 am RoboCodo: Post-Surgical Elbow Rehabilitation Device
- 9:40 am Project A.R.M.: Assistive Rehabilitation Monitor
- 10:00 am Aerogel Insulation Study

- **10:20 am Break**
- 10:40 am Wireless Tower of Lights
- 11:00 am Personality Analysis Using Machine Learning
- 11:20 am Sightless Navigation and Perception (S.N.A.P)
- 11:40 am Project VERITAS
- 12:00 pm Virtual Control System Network

Chiefs Room

(2nd floor - Bruce M. Pitman Center)

- 9:00 am Inconel Tubing Pre-Pullout Grinding and Visual Test System
- 9:20 am INL Grinder Water Filtration System
- 9:40 am Wireless Forklift Height Encoder
- 10:00 am Compact Robotic Wheel Drive
- **10:20 am Break**
- 10:40 am VandalForge Metal Additive Manufacturing Hardware
- 11:00 am VandalForge Printer Software
- 1:20 am Combined Biochar, Heat, and Power System
- 11:40 am Team Crumbletech's Temperature Array
- 12:00 pm Photo-bioreactor for Microalgae Cultivation.

Cataldo Room

(Basement level - Bruce M. Pitman Center)

- 9:00 am 99.9 Percent High Purity Nitrogen Generator
- 9:20 am Increasing Polystyrene Recycling with Small Scale Depolymerization Reactors
- 9:40 am Copper Recovery from Spent Hoof bath Solutions
- 10:00 am Production of Liquid Filled Polymer Microspheres
- **10:20 am Break**
- 10:40 am Gypsos Sulfate Removal from Mine-Impacted Waters
- 11:00 am Using NIR Spectroscopy to Control Coffee Roasts
- 11:20 am LABRAT, Lead Acid Battery Research And Testing
- 11:40 am Bench Top to Industry: Ultra-High Temperature (UHT) Starch Pasteurization Unit

THANK YOU

2018 Engineering Design EXPO Judges



Thank you to all of the individuals who have taken time to lend their expertise to serve as Engineering Design EXPO judges. Judges play an essential role in the EXPO experience. Our students gain invaluable insights through their interaction with EXPO judges. To all of our 2018 EXPO judges, thank you for joining us on the 25th anniversary of EXPO, your participation is greatly appreciated. We hope to see you again next year.

Shankar Achanta - Schweitzer Engineering Laboratories

Edward Anderson - Battelle Energy Alliance

Phillip Arpke - Wagstaff, Inc.

Peter Baran - Design Magnitude Idaho

Ralph Barker - Retired

Amanda Battles - Clearwater Paper

Taylor Blanc - Schweitzer Engineering Laboratories

Pat Blount - Moscow High School

Pietro Boyd - Nightforce Optics

Mary Ellen Brewick - University of Idaho

Garry Brown - Idaho National Laboratory

Kris Brown - Self-Employed

Ed Cimbalik - Micron

Jay Clark - Motorola Solutions, Inc.

Jeffrey Daniels - Acoustic Research Detachment - NSWCCD

Jason Dearien - Schweitzer Engineering Laboratories

Sharon Eroschenko - U.S. Bureau of Reclamation

Byron Flynn - General Electric

Stephen Goodwin - Schweitzer Engineering Laboratories

Yvonne Hallock - Retired

Robert Hallock - Retired

Chris Hazelton - Coffman Engineers Inc.

David Hollenback - BERG Manufacturing

Howard Hooper - HP Inc.

Paul Huber - The Boeing Company

Christopher Hyde - University of Idaho

Mark Ingram - Micron

Richard Jacobsen - Idaho State University

Dave Joerger - Idaho Power Company

Krista Kinsey - J.R. Simplot Company

Jacob Leachman - Washington State University

Brent Lee - Schweitzer Engineering Laboratories

Amy Lientz - Idaho National Laboratory

Richard Maguire - Avista Utilities

Ken Mays - College Advisory Board Member

Thomas Moore - Self-Employed

Caitlin Owsley - Janicki Industries

Lyle Parks - Retired

Marc Patterson - Idaho Power Company

Tom Pfeiffer - Idaho National Laboratory

Shawn Pratt - HP Inc.

Behnaz Rezaie - University of Idaho

Jonathan Richards - Schweitzer Engineering Laboratories

Kurt Ririe - Idaho National Laboratory

Pete Robichaud - USDA Forest Service, Rocky Mt. Research Station

Anne Seifert - Idaho National Laboratory

Adam Seubert - Schweitzer Engineering Laboratories

Steve Silkworth - Avista Corp

Alex Simon - The Boeing Company

Mark Sipe - Coffman Engineers, Inc.

Howard Skidmore - JR Simplot Company

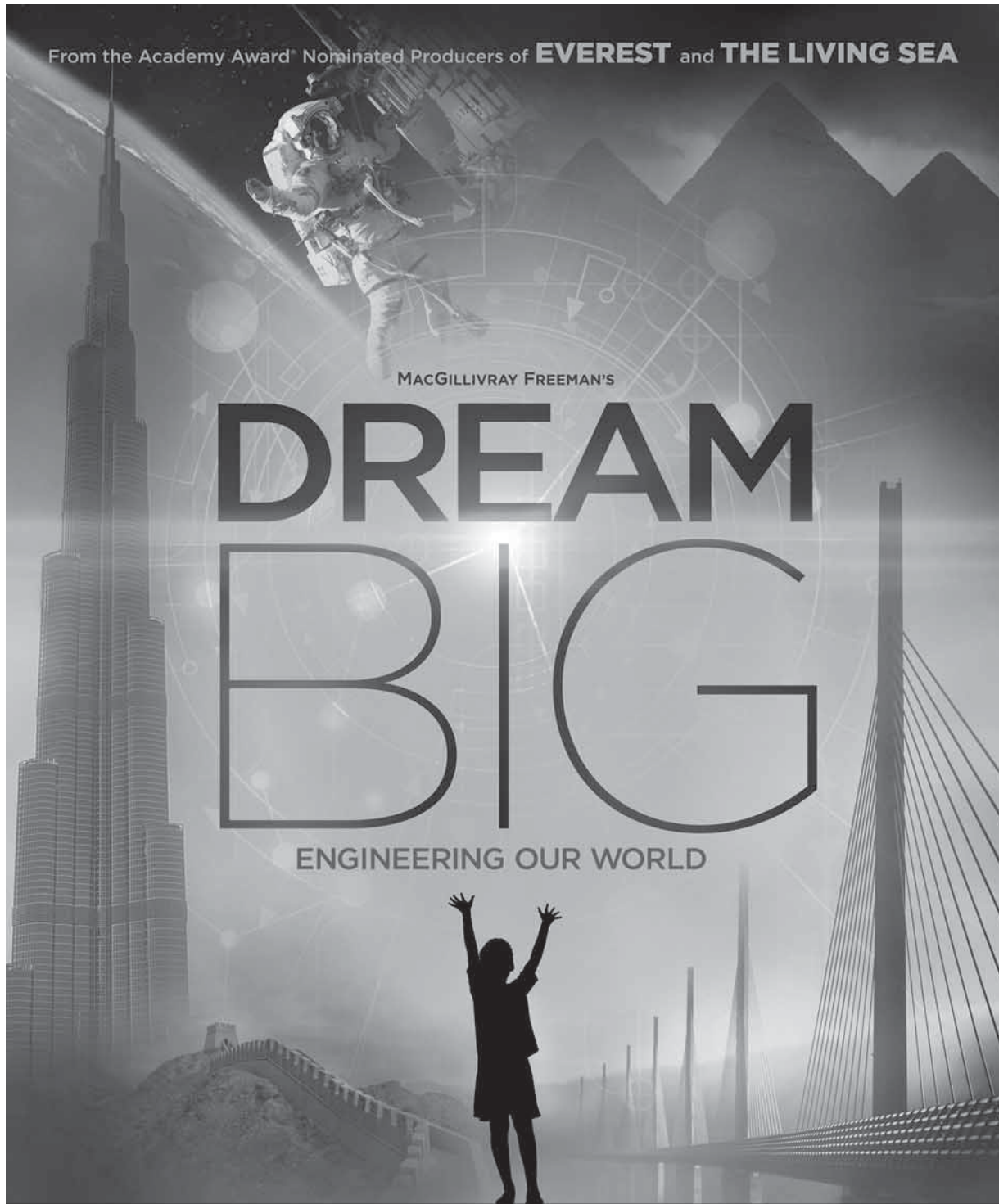
Jamison Slippy - Quest Aircraft Company

Sean Stadelman - Schweitzer Engineering Laboratories

Ed Whitehead - Retired

Min Xian - University of Idaho

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NARRATED BY JEFF BRIDGES MUSIC BY JOHN JENNINGS BOYD EDITED BY JASON E. PAUL, STEPHEN JUJON, MARK FLETCHER PRODUCED BY SHAUN MACGILLIVRAY DIRECTED BY GREG MACGILLIVRAY

MACGILLIVRAY
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OF CIVIL ENGINEERS



BORAH THEATER - EXPO SHOWTIMES:

9:00 a.m. | 10:00 a.m. | 11:00 a.m. | 12:00 p.m. | 2:00 p.m.



Women in Engineering Exploratorium

Exploring Engineering at the University of Idaho

A new event held April 26-27, 2018 in conjunction with the 25th annual Engineering Design EXPO and in partnership with the U of I Society of Women Engineers.

The Exploratorium is an event designed for 9th and 10th grade girls who want to learn more about the STEM disciplines and consider engineering in college. The Exploratorium will provide hands-on activities, exposure to the engineering disciplines and unique U of I Engineering programs and interaction with female engineering students and alumni.

Exploratorium participants will receive a unique opportunity to hear from Sanjay Mehrotra, CEO

of Micron, who has agreed to speak directly to participants on the importance of our future engineering workforce.

Building an inclusive, diverse community is a goal of the University of Idaho, College of Engineering. The college hopes to triple the number of female students by 2025. To assist in that objective the college holds a series of women in engineering events, like the Exploratorium, to inspire young women to pursue engineering.

Learn more about Women in Engineering activities hosted by the College of Engineering

UIDAHO.EDU/WIE



What does it mean to **ENGINEER LIKE A VANDAL?**

It means being committed to providing opportunities to grow the profession

U of I's student-led Society of Women Engineers wants to bust national trends of women holding fewer senior level positions and leaving the engineering field at higher rates than men.

They want to be role models for high school students who can't name a single female engineer.

Each year, they strive to draw more young women into the field through a day of hands-on, real-life engineering challenges. Like building a water filtration system from plastic bottles and paper towels. They hope the creations will be the beginning stages of the next generation of engineers.

uidaho.edu/busting-trends

"I think it's really important to show these young women that even though there's not too many of us, we're in this together and we're going to help them get better. I really want them to be inspired to push themselves to be ambitious."

Emily Kaschmitter
Biological Engineering Major

2018 EXPO Future Engineer Talk:

Alex Knoll

Ability App Developer

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Celebrating the next 25 years in engineering



Credit: Michael Rozman / Warner Brothers / The Ellen DeGeneres Show

THE THINGS WE CAN DO

April 27, 2018 | 1:00-1:30 p.m.

Borah Theater, Second Floor, Bruce M. Pitman Center

13-year-old app developer, Alexander Knoll, will discuss his journey developing Ability App and talk about the things we can do, big and small, to make the world a more inclusive and accessible place.

About Alex Knoll

Alexander Knoll is a 13-year-old app inventor, human rights advocate and international speaker from Post Falls, Idaho. Knoll has a big heart and has always been drawn to helping others.

Knoll has accomplished a great deal in his short life, thus far. At Age 8, he testified in front of the Idaho State Legislature Tax and Revenue Committee, on behalf of the school children of Idaho. At Age 10, he became the Regional and State Grand Champion of Invent Idaho (a statewide competition for young inventors) for his app invention that can help people with disabilities navigate public spaces and find safe, reliable services and employment called Ability App.

Learn more about Alex Knoll at www.AbilityApp.org



2018 EXPO Keynote Speaker:

Burt Rutan

Internationally Renowned Aerospace Designer

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MANAGING AND MOTIVATING THE CREATIVE PROCESS

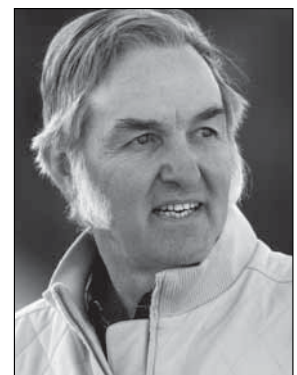
April 27, 2018 | 2:30-3:30 p.m.

Vandal Ballroom, Second Floor, Bruce M. Pitman Center

About Burt Rutan

Named “Entrepreneur of the Year” by Inc. Magazine and described by Newsweek as “the man responsible for more innovations in modern aviation than any living engineer,” Burt Rutan is a bold entrepreneur and designer with the vision and passion for the advancement of technology.

Rutan is designer of Voyager, the first plane to fly around the world without stopping or refueling. He is also designer of SpaceShipOne, the world’s first privately-built manned spacecraft to reach space. His company SCALED Composites has developed and tested a variety of groundbreaking projects, from military aircraft to executive jets, showcasing some of the most innovative and energy-efficient designs ever flown. Rutan will give his EXPO keynote on the topic of managing and motivating the creative process. *Learn more about Burt Rutan at www.burtrutan.com*



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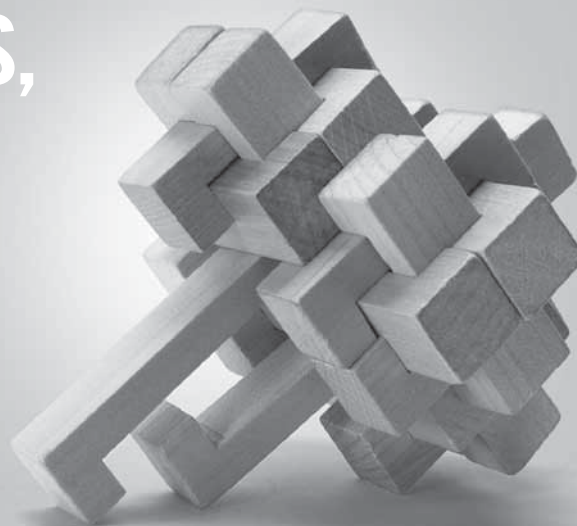
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About the College of Engineering Senior Capstone Program

The University of Idaho's College of Engineering senior capstone program is the foundation of our annual Engineering Design EXPO event. The program has evolved over its long history to become a catalyst for local and regional engineering design development. Our capstone program evolution has occurred as the result of a continuous stream of projects from regional industry, equipment donations from alumni and industry supporters, graduate student support, and educational research grants. As a result Engineering Design EXPO is Idaho's longest running engineering showcase and a signature event for the University of Idaho. Engineering Design EXPO is a unique opportunity for senior students to share the results of their team projects with the public, elementary and high school students, alumni, and industry partners.

The Six core values of our senior capstone program:

PROFESSIONAL INTEGRITY: day-to-day and long-term actions, aligned with professional codes of ethics in ways that are relevant and meaningful, responding to the needs of clients and society at large.

GROWTH ORIENTED: awareness of current knowledge, skills, and learning styles, informing self, peer, and mentor actions that elevate performance expectations while providing needed support for measurable change in professional behaviors and attitudes.

TECHNICALLY COMPETENT: enlightened use of engineering principles, early prototyping, modeling, experimentation, application of appropriate software tools, selection of state-of-the-art components, problem formulation & decomposition, and specification of manufacturing methods.

COLLABORATIVE: respectful, supportive, empowered community of practitioners promoting mutual understanding of diverse motivations and complementary skills while working towards a shared vision.

RESOURCE RICH: inspiring work environment providing ready access to prior work products, catalogs, instructional videos, software tutorials, and expert consultation as well as multiple opportunities to learn and use state-of-the-art tools for computation and manufacturing.

VALUE ADDED: significant return on investment by developing compelling project goals that respond to stakeholder needs, innovating, measuring progress through systematic collection and analysis of data, assuming responsibilities needed for efficient and effective results, and compiling documentation that allows others to adopt solutions.

2018 EXPO Project Advisers

BIOLOGICAL ENGINEERING

- Dev Shrestha

CHEMICAL AND MATERIALS ENGINEERING

- Matthew Bernards
- David Drown

CIVIL AND ENVIRONMENTAL ENGINEERING

- Erik Coats
- Charles Cornwall
- Fritz Fiedler
- David MacPherson

- Batric Pesic

- J.J. Petersen

- Sunil Sharma

COMPUTER SCIENCE

- Bruce Bolden

ELECTRICAL AND COMPUTER ENGINEERING

- Yacine Chakhchoukh

- Herbert Hess

- Saied Hemati

- Brian Johnson

- Feng Li

- Ata Zadehghol

MECHANICAL ENGINEERING

- Coleton Bailey

- Steve Beyerlein

- Dan Cordon

- John Crepeau

- Ankit Gupta

- Gautam Kumar

- Michael Maughan

- Edwin Odom

- Joel Perry

- Behnaz Rezaie

- Daniel Robertson

- Matthew Swenson

- Tao Xing

Congratulations to our Graduating Seniors

We congratulate you on a job well done and we wish you the best in your future. We also look forward to the contributions you will make to engineering over the next 25 years.

Khalid Aldossari - Electrical Engineering

Brian Aldrimk - Mechanical Engineering

Hussain Aljasim - Chemical Engineering

Abdullah Abdulaziz Alnafisah - Chemical Engineering

Abdulaziz Alotaibi - Chemical Engineering

Yazeed Alotaibi - Electrical Engineering

Barjas Alruwaili - Electrical Engineering

Rafael Akio Alves Watanabe - Electrical Engineering

Austin Anderson - Mechanical Engineering

Simon Barnes - Computer Engineering

Cody Barrick - Civil Engineering

Emma Bateman - Computer Science

Jacob Bechler - Computer Engineering

Lucas Becia - Biological Engineering

Adrian Beehner - Computer Science

Doy Bilbrey - Civil Engineering

Zachary Bjorklund - Computer Engineering

Andrew Blanchard - Civil Engineering

Byron Bowles - Mechanical Engineering

Robert Breckenridge - Computer Science

Jonathan Buch - Computer Science

Mariana Burdelis - Computer Engineering

Tysen Buster - Mechanical Engineering

Ry Butler - Civil Engineering

Dylan Carlson - Computer Science

Maichen Carnes - Chemical Engineering

Gregory Carter - Computer Science

Xi Chen - Biological Engineering

Tianyi Chen - Electrical Engineering

Timothy Clemans - Computer Science

Jonathan Counts - Chemical Engineering

Matthew Covalt - Computer Engineering

Daniel Cox - Mechanical Engineering

Jeffrey Craig - Electrical Engineering

Lucas Cressler - Civil Engineering

Hector Cruz - Electrical Engineering

Sean Daniel - Electrical Engineering

Feifan Deng - Electrical Engineering

Matthew Dieckmann - Mechanical Engineering

Mao Ding - Electrical Engineering

Marc Dobson - Mechanical Engineering

Melissa Dow - Electrical Engineering

Phoenix Duncan - Mechanical Engineering

Alexandra Edwards - Mechanical Engineering

Neale Ellyson - Chemical Engineering

Lydia Enberbretson - Computer Science

Drew Fagan - Mechanical Engineering

Zachary Farman - Civil Engineering

Peter Fetros - Computer Engineering

Peter Fetros - Computer Science

Nicholas Flynn - Electrical Engineering

Seth Forrest - Mechanical Engineering

Dustin Fox - Computer Science

Jesse Frantzich - Computer Science

John Gergen - Mechanical Engineering

Gabriel Gibler - Computer Science

Gretchen Gingerich - Biological Engineering

Marco Godinez - Civil Engineering

Kelie Gonzalez - Biological Engineering

Preston Goodall - Chemical Engineering

Eric Haakenson - Chemical Engineering

Zachary Hacker - Mechanical Engineering

Jake Hall - Mechanical Engineering

Brett Harned - Electrical Engineering

Matthew Harned - Mechanical Engineering

Colter Hathaway - Civil Engineering

Spencer Hauck - Mechanical Engineering

Nigel Hebbeln - Chemical Engineering

Daniel Hein - Mechanical Engineering

Meghann Hester - Mechanical Engineering

Brandon Hilliard - Mechanical Engineering

Aaron Hope - Chemical Engineering

Ancheng Hou - Electrical Engineering

Cortney Hudson - Chemical Engineering

Matthew Jungert - Biological Engineering

Jerry Kahn - Mechanical Engineering

Sean Kelly - Civil Engineering

Leif Krapas - Chemical Engineering

Yue Li - Electrical Engineering

Jiawei Liu - Electrical Engineering

Jason Maas - Mechanical Engineering

Collin Mabe - Mechanical Engineering

Michael Madsen - Computer Science

Dustin Mallett - Electrical Engineering

Lillian Malloy - Chemical Engineering

Andrea Mansfeld - Chemical Engineering

Katherine Mares - Civil Engineering

Paul Martin - Computer Science

Ryan May - Electrical Engineering

Sheila McAtee - Civil Engineering

Benjamin Merritt - Computer Science

Michael Meyer - Mechanical Engineering

Jacob Middleton - Mechanical Engineering

Kevin Miklos - Mechanical Engineering

Kyle Miley - Civil Engineering

Forrest Miller - Chemical Engineering

Jacob Miller - Mechanical Engineering

Thomas Moore - Mechanical Engineering

Cameron Moore - Mechanical Engineering

Bradley Morris - Mechanical Engineering

Brett Morris - Mechanical Engineering

Trevor Morse - Computer Science

Stafford-Ames Morse - Mechanical Engineering

Amanda Murdock - Chemical Engineering

Cameron Murdock - Electrical Engineering

Nathan Myers - Chemical Engineering

Adam Niemet - Mechanical Engineering

Thomas Nitchman - Electrical Engineering

Sam Nordquist - Chemical Engineering

Alex Nuttman - Civil Engineering

Adam O'Keeffe - Biological Engineering

Bryan Ortiz - Electrical Engineering

Michael Ortman - Mechanical Engineering

William Overstreet - Mechanical Engineering

Andrew Owens - Electrical Engineering

Nathan Park - Mechanical Engineering

Brian Patterson - Electrical Engineering

Patrick Paulus - Mechanical Engineering

Hannah Pearson - Computer Science

Joseph Pengilly - Chemical Engineering

Samantha Peters - Biological Engineering

Logan Petersen - Chemical Engineering

Eric Willace Pitman - Chemical Engineering

Benjamin Plaster - Chemical Engineering

Anthony Ponzini - Biological Engineering

Paden Putnam - Mechanical Engineering

Austin Quinn - Civil Engineering

Quinton Reese - Mechanical Engineering

Alexandria Rockwell - Biological Engineering

Rachel Rosasco - Biological Engineering

Andrew Rose - Computer Science

Paden Rumsey - Computer Science

Kierra Ryan - Mechanical Engineering

Hanna Salian - Computer Science

Troy Sanders - Mechanical Engineering

Samuel Schaffer - Electrical Engineering

Maximilian Schnitker - Electrical Engineering

Jiachen Shen - Electrical Engineering

Sanjeet Shrestha - Materials Science & Engineering

Tyler Smisek - Mechanical Engineering

Cade Smith - Mechanical Engineering

Keely Snow - Chemical Engineering

Timothy Sonnen - Computer Science

Cameron Spaulding - Mechanical Engineering

Zachary Spence - Computer Science

Judah Stelck - Chemical Engineering

Conor Swanstrom - Mechanical Engineering

Ian Tanimoto - Computer Science

Thomas Thuneman - Materials Science & Engineering

Nicholas Tobe - Mechanical Engineering

Kadeem Torgeson - Civil Engineering

Marshall Townsend - Mechanical Engineering

Minh Tran - Chemical Engineering

Hunter Trulock - Mechanical Engineering

Brenton Van Leeuwen - Electrical Engineering

Benjamin VanSant - Mechanical Engineering

Trang Vu - Chemical Engineering

Phillip Walters - Chemical Engineering

Matthew Waltz - Computer Engineering

Haotian Wang - Electrical Engineering

Joshua Warnick - Mechanical Engineering

Lise Welch - Computer Science

Michael Wendell - Mechanical Engineering

Alexander Wezensky - Computer Science

Erin Wheless - Chemical Engineering

Nathaniel Wiedenmeyer - Mechanical Engineering

Jack Williams - Chemical Engineering

Dakota Wilson - Civil Engineering

Mingyang Xu - Electrical Engineering

Wang Xu - Electrical Engineering

Qinlin Xu - Electrical Engineering

James Young - Computer Science

Yue Yu - Electrical Engineering

Huijie Zhang - Mechanical Engineering

Zhiyan Zhou - Electrical Engineering

The Grand Challenge Scholars Program

Now in its second year the University of Idaho's Engineering Grand Challenge Scholars Program is the only undergraduate program in Idaho established to educate a new generation of engineers expressly equipped to tackle the most pressing issues facing society in the 21st century.

U of I Grand Challenge Scholars presenting at the 25th annual Engineering Design EXPO.



Mark Currier
Materials Science Engineering
Snohomish, Washington

Photolithographic techniques for semiconductors

This research project will explore the possibilities of patterning nanoparticles of a tin selenide semiconductor. The impacts of the research will span many applications and contribute to an ever-growing need for semiconductor research.



Allison Ellingson
Electrical Engineering
Boise, Idaho

Improving Tissue Preparation to Preserve Inhibition in Adult Cerebellar Brain Slices

To study how neurons work together, it is necessary to isolate pieces of brain tissue in a way that preserves connectivity and function. This project endeavors to identify optimal tissue preparation procedures to improve the viability and function of neurons in the cerebellum to study this network.



Steven Haener
Mechanical Engineering
Boise, Idaho

Making Stronger Wheat

The main focus of this project is to build a machine that can measure how much force a stalk of wheat can take before breaking. The design that we decided would work best is a rolling trailer with a force sensor fastened to the front



Anson Lunstrum
Mechanical Engineering
Nampa, Idaho

3D Printed Eye Phantom for Astronaut MRI study

Nearly half of all astronauts who have experienced long duration space flight have suffered severe eye damage. Using Magnetic resonance (MR) images of a group of astronauts, these visual changes can be quantified, and an optic phantom is necessary to validate the MR data coming from multiple sources.



Jackie Martinez-Alvarez
Chemical Engineering and Chemistry
Milton Freewater, Oregon

Emotiv Game Development

Students in Moscow High School's computer science class are partnering with Martinez-Alvarez and professor of chemical and materials engineering Gautam Kumar to develop a game based application for an Emotiv mobile EEG device.



Dustin Pierce
Biological Engineering and Computer Science
Sandpoint, Idaho

Mesenchymal Stem Cell Delivery of Carbon Nanotubes

This project shows the migration of carbon nanotube (CNT) and human mesenchymal stem cell (hMSC) complexes toward a tumor mimicking chemo-attractant. The CNT-hMSCs were previously attached as a master's thesis. This study also shows the intermediate carbon nanotube complexes through FT-IR. Carbon nanotubes have potential in photothermal therapy.



Kenny Sheffler
Electrical Engineering
Potlatch, Idaho

Biogas Feasibility Study for the University of Idaho and the City of Moscow

Biogas production feasibility was determined from using the University of Idaho and the City of Moscow's organic wastes as a source of energy. Biogas production estimation and an economic analysis was conducted. This renewable energy has great relevance to campus sustainability.



Bishal Thapa
Biological Engineering
Jharuwarashi, Nepal

Nitrofertilizer Pump

This project focuses on the production of nitrate and nitrite using non-thermal liquid plasma technology (NLP) and investigation in its efficiency and development of models to demonstrate nitrogen cycle with emphasis on nitrogen fixation. The research aspect will focus on development of nitrogen fixation device using NLP.

Academy of Engineers

Every fall, the University of Idaho, College of Engineering recognizes a new class of inductees into its Academy of Engineers.

Members of the Academy of Engineers are individuals that have been selected for their personal contributions to engineering achievement, leadership, engineering education, and service to the profession and society.

We salute our Academy of Engineers leaders for their lifetime commitment to advancing the quality of life through achievement and innovation. **Learn more at uidaho.edu/aoe**



Class of 2017



James R. Arnold



Mark L. Bathrick



Candis S. Claiborn



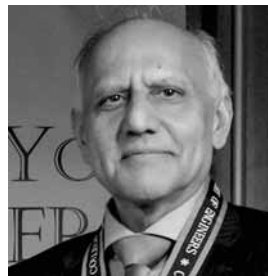
D. Mark Durcan



Byrant W. Lemon



Thomas J. Mueller



Yogendra N. Sarin



Patrick R. Taylor



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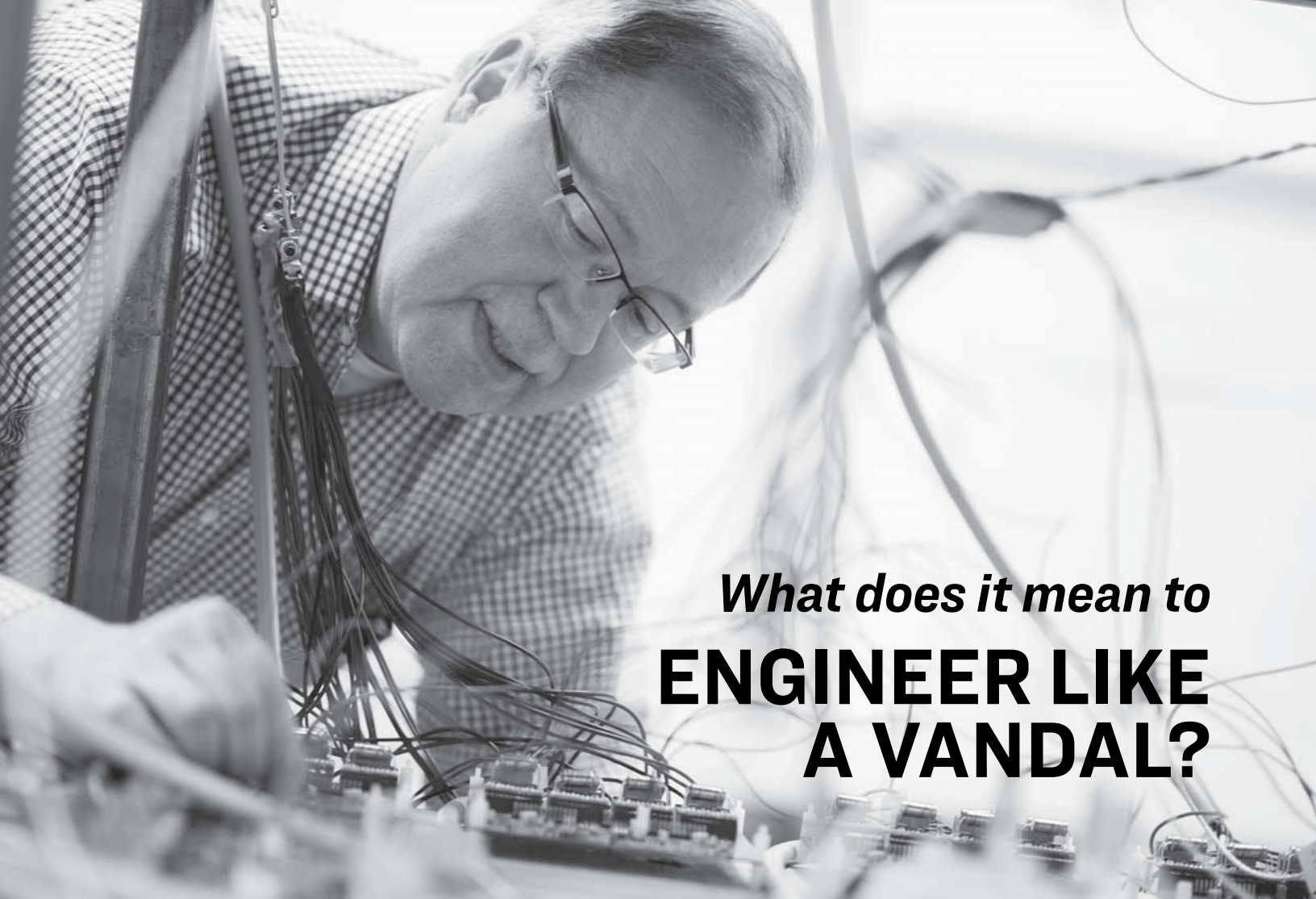
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What does it mean to **ENGINEER LIKE A VANDAL?**

It means being committed to solving problems even in the remote wilderness

Herb Hess was summoned to bring electricity to U of I's most remote research facility — in the 2.4 million-acre Frank Church-River of No Return Wilderness — with the purpose of increasing research on the area's one-of-a-kind ecology.

He spent years installing renewable energy systems at Army bases in combat zones. Once exposed to Idaho's pristine wilderness, though, he recognized the need to engineer clean energy systems to protect the environment.

To date, he and his students' electrical systems have tripled research at the facility. They're preserving the environment with their upgrades — all reliant on sun, wind and water — and they're helping researchers safeguard the largest wilderness area in the lower 48.

uidaho.edu/remote-power

“We have a completely renewable energy system out there and they’re able to conduct a wide range of research. Making as much progress in renewable energy is one of my goals as a professor. And with the attitudes that come out of places like the University of Idaho, we will succeed.”

Herbert Hess
*Professor of Electrical and
Computer Engineering*

CIVIL AND ENVIRONMENTAL ENGINEERING

BEST HILL BOOSTER PUMP STATION

This purpose of this project is to design a booster pump station at the Best Hill Water Tank in Coeur d'Alene. The design will include booster pump selection, station design, and site grading.

TEAM

Morgen Dieckmann - Civil & Environmental Engineering
Marco Godinez - Civil & Environmental Engineering
Josh Graff - Civil & Environmental Engineering
Josh Krause - Civil & Environmental Engineering

CLIENT/SPONSOR

J-U-B Engineering, Inc.

ADVISOR(S)

Fritz Fiedler

MENTOR(S)

Erik Coats

COMMONWEALTH LAKE PARK PEDESTRIAN BRIDGE

Our project is to assess the site conditions at Commonwealth Lake Park in Beaverton, Oregon and to replace the existing pedestrian bridge with an ADA compliant pedestrian bridge.

TEAM

Justin Bilbrey - Civil & Environmental Engineering
Monica Erickson - Civil & Environmental Engineering
Zachary Farman - Civil & Environmental Engineering
Kyle Miley - Civil & Environmental Engineering

CLIENT/SPONSOR

3J Consulting

ADVISOR(S)

Fritz Fiedler

MOSCOW WELL 10

Moscow Well 10 is a new, undeveloped well on the west side of town. For our project we will aid in well 10's development by: selecting a pump for the well, designing a Process and Implementation Diagram (P&ID), and designing a storm water system.

TEAM

Gabe Housh - Civil & Environmental Engineering
Sheila McAtee - Civil & Environmental Engineering
Eric Weimer - Civil & Environmental Engineering

CLIENT/SPONSOR

J-U-B Engineering, Inc.

ADVISOR(S)

Fritz Fiedler

Erik Coats

RIO GRANDE DAM LOW LEVEL OUTLET WORKS

Due to excessive vibrations of the current gate flow control system during operations, the existing outlet is unable to meet its full discharge requirements. The objective of this project is to relocate and redesign the low level outlet to provide reliable operation up to 2,500 cfs. The new outlet system will consist of piping, valves, and a valve house downstream of the existing gates. In addition, a transition between

the existing outlet tunnel and new outlet structure, and downstream channel protection will be designed.

TEAM

Nathan Bemis - Civil & Environmental Engineering
Katie Dillon - Civil & Environmental Engineering
Alex Nuttman - Civil & Environmental Engineering
Dakota Wilson - Civil & Environmental Engineering

CLIENT/SPONSOR

Deere & Ault Consultants, Inc.

ADVISOR(S)

Fritz Fiedler
Erik Coats
Sunil Sharma

TILDEN SUBSTATION

Design and plan an electrical substation along with the required distribution and transmission lines to service an information data center in Reno, NV.

TEAM

Cody Barrick - Civil & Environmental Engineering
Lucas Cressler - Civil & Environmental Engineering
Lina Hassan - Civil & Environmental Engineering
Colter Hathaway - Civil & Environmental Engineering

CLIENT/SPONSOR

Power Engineers, Inc.

ADVISOR(S)

Fritz Fiedler

USTICK & LAKE INTERSECTION IMPROVEMENT

The City of Caldwell has planned to improve the intersection of Ustick Road and Lake Avenue in Caldwell, Idaho. The project objective is to design a larger capacity intersection to meet increasing traffic volume while improving traffic operations, safety, and accessibility.

TEAM

Andrew Blanchard - Civil & Environmental Engineering
Sean Kelly - Civil & Environmental Engineering
Daniel Logan - Civil & Environmental Engineering
Braiden Markham - Civil & Environmental Engineering

CLIENT/SPONSOR

Six Mile Engineering

ADVISOR(S)

Fritz Fiedler

WATER FOR FAMILIES "WHERE THERE IS NOTHING"

Students partner with a small Bolivian community to design and construct a sustainable freshwater distribution system. This project team is a part of the Humanitarian Engineering Corps, a student-led nonprofit based at the University of Idaho.

TEAM

Nick Brouillard - Civil & Environmental Engineering
Cat Feistner - Civil & Environmental Engineering
Kenny Sheffler - Electrical & Computer Engineering
Lindsey Smoot - Civil & Environmental Engineering
Chaney Wood - Civil & Environmental Engineering

CLIENT/SPONSOR

U of I Humanitarian Engineering Corps

ADVISOR(S)

Fritz Fiedler

CHEMICAL AND MATERIALS ENGINEERING

99.9% HIGH PURITY NITROGEN GENERATOR

The small-scale generation of nitrogen from atmospheric air utilizing a pressure swing adsorption approach will offer a stand-alone system that provides an inert sweep gas for a depolymerization process. The system will continuously produce high purity nitrogen while being reliable, versatile, and economical.

TEAM

Alen Korjenic - Chemical & Materials Engineering
Eric Pitman - Chemical & Materials Engineering
Sanjeet Shrestha - Chemical & Materials Engineering
Amanda Vu - Chemical & Materials Engineering

CLIENT/SPONSOR

KapStone

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

Wudneh Admassu
Dave MacPherson

BENCH TOP TO INDUSTRY: ULTRA-HIGH TEMPERATURE (UHT) STARCH PASTEURIZATION UNIT

Designed and fabricated a benchtop system to continuously pasteurize starch solutions at 150°C for 2 seconds. This system is able to pasteurize 1 liter per minute of sample and features an automated energy-saving pre-heat/cool down heat exchanger as well as the UHT heat exchanger.

TEAM

Leif Krapas - Chemical & Materials Engineering
Andrea Mansfeld - Chemical & Materials Engineering
Judah Stelck - Chemical & Materials Engineering
Minh Tran - Chemical & Materials Engineering

CLIENT/SPONSOR

Tate & Lyle PLC.

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

Charles Cornwall
Dave MacPherson

COPPER RECOVERY FROM SPENT HOOF BATH SOLUTIONS

Copper sulfate solutions used to treat hoof diseases in the livestock industry cost millions of dollars per year. It is desirable to find a cost-effective procedure for recovering copper, a valuable metal, from these solutions. The copper recovery process designed includes copper liberation from the biosolids matrix using an innovative oxidant system and copper ion recovery via electrowinning. This process provides an alternative disposal pathway for hoof bath solutions and recovery of a valuable metal resource.

TEAM

Abdulaziz Alotaibi - Chemical & Materials Engineering
Jonathan Counts - Chemical & Materials Engineering
E. Karl Haakenson - Chemical & Materials Engineering
Phillip Walters - Chemical & Materials Engineering

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U of I Department of Chemical & Materials Engineering

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

Charles Cornwall
Dave MacPherson
Batric Pesic

GYPSOS SULFATE REMOVAL FROM MINE-IMPACTED WATERS

An intricate process was designed and constructed to demonstrate an economical and environmentally friendly system that can reduce the sulfate concentration in mine-impacted water from around 1800 mg/L to less than 250 mg/L. Implementing this process in the mining industry would prevent sulfate from negatively affecting the environment.

TEAM

Abdullah Alnafisah - Chemical & Materials Engineering
Nigel Hebbeln - Chemical & Materials Engineering
Lillian Malloy - Chemical & Materials Engineering
Nathan Myers - Chemical & Materials Engineering
Sam Rasmussen - Chemical & Materials Engineering

CLIENT/SPONSOR

IEE/WERC Design Contest

ADVISOR(S)

Matthew Bernards

MENTOR(S)

David MacPherson

INCREASING POLYSTYRENE RECYCLING WITH SMALL SCALE DEPOLYMERIZATION REACTORS

Only six percent of plastic ever produced has been recycled. A problem with polystyrene recycling is its low density makes it not economically feasible to transport to recycling centers. A small scale depolymerization reactor which could be distributed widely throughout municipalities to increase recycling of polystyrene was fabricated and tested.

TEAM

Hussain Aljasim - Chemical & Materials Engineering
Maichen Carnes - Chemical & Materials Engineering
Preston Goodall - Chemical & Materials Engineering

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KapStone

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

Charles Cornwall
Connor Hill
David MacPherson



What does it mean to **ENGINEER LIKE A VANDAL?**

It means pioneering solutions that will change lives for the better

Achilles tendon tears in athletes can be career ending — and life changing for outdoor enthusiasts enjoying Idaho’s rugged wilds.

In hopes of finding a solution to those traumatic scenarios, Nate Schiele and his student research team are working to engineer tendon tissue through stem cell differentiation.

If successful, doctors could eventually extract stem cells from a patient, differentiate them toward tendon cells in the lab, place them on an engineered tissue scaffold, and suture them back into the patient. When that day comes, we could see the end to devastating tendon injuries.

uidaho.edu/building-a-better-tendon

“For people who have had major trauma, like an Achilles tendon rupture, we aim to replace or augment that injured tissue with a mechanically functional tendon replacement with cells that act like tendon cells.”

Nate Schiele
Assistant Professor
of Biological Engineering

LABRAT, LEAD ACID BATTERY RESEARCH AND TESTING

Using GUITAR-coated ceramic fibers as the battery plate additive, the positive and negative active material was investigated and optimized. This data yielded a design and economic analysis for a facility capable of producing two million improved performing automotive batteries per year.

TEAM

Neale Ellyson - Chemical & Materials Engineering
Aaron Hope - Chemical & Materials Engineering
Thomas Thuneman - Chemical & Materials Engineering

CLIENT/SPONSOR

University of Idaho Office of Undergraduate Research

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

John Canning
Jared Wo

PRODUCTION OF LIQUID FILLED POLYMER MICROSPHERES

A system to create liquid filled polymer microspheres utilizing a piezoelectric droplet generator and photopolymerization was fabricated. These microspheres are intended for use as drug delivery capsules, specifically for long term dosage of pharmaceuticals via diffusion through the polymer microsphere.

TEAM

Cortney Hudson - Chemical & Materials Engineering
Samuel Nordquist - Chemical & Materials Engineering
Keely Snow - Chemical & Materials Engineering
Erin Wheless - Chemical & Materials Engineering

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U of I Department of Chemical & Materials Engineering

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

Charles Cornwall
David MacPherson
Emily Mariner

USING NIR SPECTROSCOPY TO CONTROL COFFEE ROASTS

A person's sensory perceptions judge coffee roast level is subjective, causing difficulties in comparisons and control of roasted products. Near-infrared (NIR) spectroscopy feedback of beans in the roasting process could reduce roasting variabilities. An improved roaster control method using onboard NIR monitoring for home roasters has been developed.

TEAM

Saad Alanazi - Chemical & Materials Engineering
Amanda Murdock - Chemical & Materials Engineering
Logan Peterson - Chemical & Materials Engineering
Austin Porter - Chemical & Materials Engineering

CLIENT/SPONSOR

U of I Department of Chemical & Material Engineering

ADVISOR(S)

Matthew Bernards
David Drown

MENTOR(S)

Charles Cornwall
David MacPherson
Nathan Yergenson

Interdisciplinary Project Focus

BIOLOGICAL ENGINEERING

BIOCHAR PRODUCTION SYSTEM

Lumber mills produces hundreds of tons of waste woody biomass that has almost no economic value. Turning these bio waste to biochar is economically and environmentally beneficial. Our team's mission is to develop and prototype a scalable model to retrofit existing boilers in lumber mills to turn wood waste into valuable biochar.

TEAM

Jake Hall - Biological Engineering
Adam O'Keeffe - Electrical & Computer Engineering
Rachel Rosasco - Biological Engineering
Will Seegmiller - Mechanical Engineering
Joe Stanley - Mechanical Engineering

CLIENT/SPONSOR

IAC - U.S. Department of Energy

ADVISOR(S)

Steven Beyerlein
Dev Shrestha

MENTOR(S)

Brian Hanson

PHOTOBIOREACTOR FOR MICROALGAE CULTIVATION

Microalgae is the fastest growing organism and can contain up to 60% lipid than can be turned into biodiesel. The team has designed and produced a bench scale photo-bioreactor (PBR) system to grow algae for research.

TEAM


Lucas Becia - Biological Engineering
Samuel Funk - Biological Engineering
Matthew Jungert - Biological Engineering
Sage Pratt - Mechanical Engineering
Nate Weidenmeyer - Mechanical Engineering

CLIENT/SPONSOR

U of I College of Engineering

ADVISOR(S)

Dev Shrestha



***What does it
mean to***
**ENGINEER
LIKE A
VANDAL?**

**It means taking a chance and
working with a grand purpose**

In Jackie Martinez's hometown, many kids don't graduate from high school, let alone go onto college. Instead, they seek immediate income to combat abject poverty.

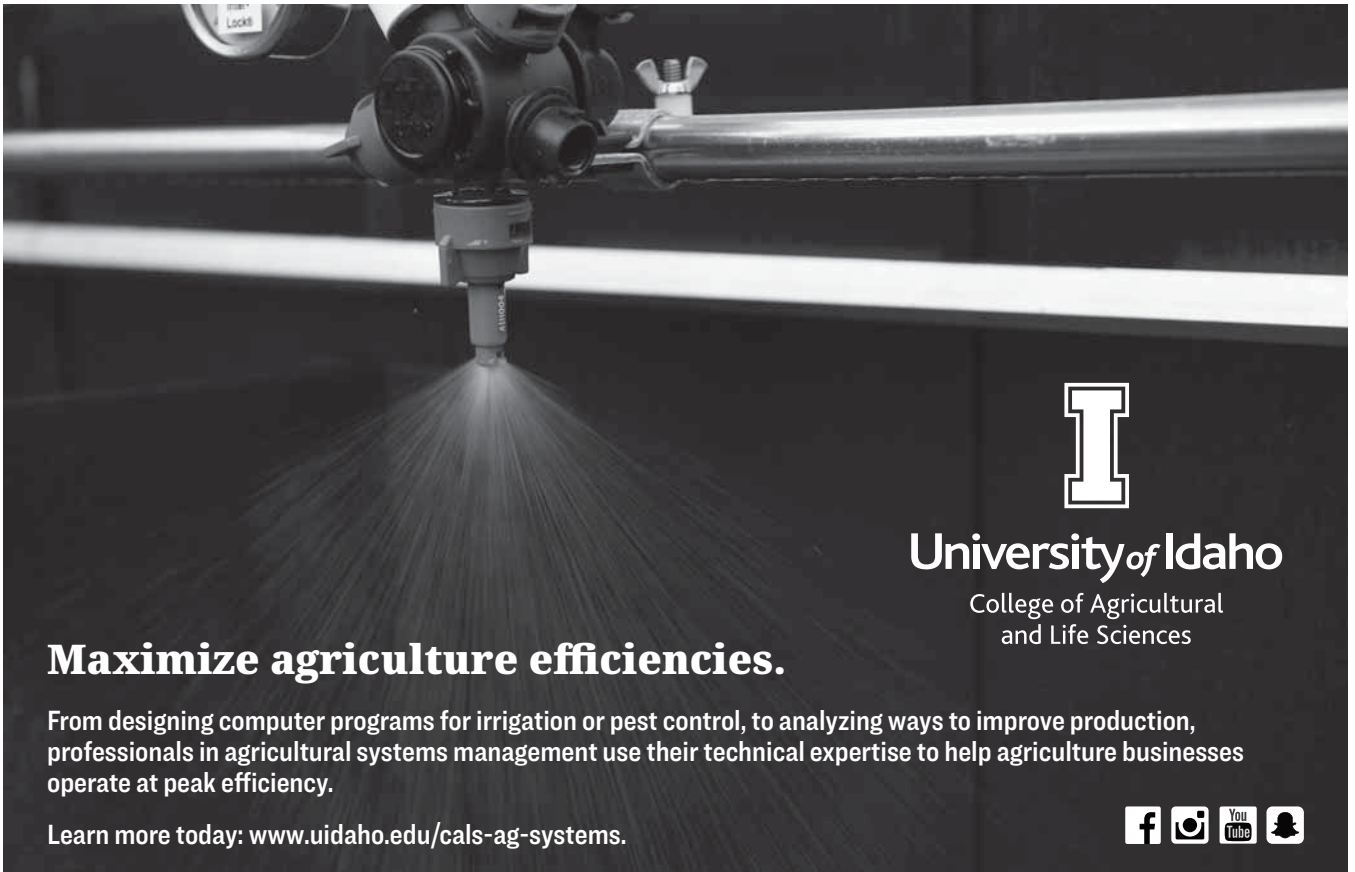
Martinez took a risk as a first-generation college student to pursue ground-breaking research as a U of I Grand Challenge Scholar. Martinez is a two-time winner of the Grand Challenge Pitch event and a promising chemical engineering researcher.

Martinez wants to find a method for delivering drugs through the blood-brain barrier. The results would treat people suffering from brain tumors, Alzheimer's or epilepsy. Most importantly, it would be affordable for people in need, like those in her Hispanic community.

uidaho.edu/jackie

*"I want to give back to my
community. Seeing what their
needs are and how they can't get
certain things because they're too
expensive or because they don't
have health insurance — that's
one of my biggest motivators."*

Jackie Martinez
Chemical Engineering Major



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Ambassadors make a difference while learning invaluable career and life skills.

Ambassadors receive opportunities to develop communication and leadership abilities, exercise professionalism, network with professionals and establish working relations with college and university faculty, students, staff and administrators. Ambassadors participate in recruitment and promotional activities, as well as alumni events – including assisting with EXPO.

Current Class of Engineering Ambassadors



Avery Brock



Emily Chambers



Brandon Hilliard



Hailey Johnson



Bethany Kersten



Andrea Mansfield



Ethan Overfelt



Nick Sentierii

TEAM CRUMBLETECH'S TEMPERATURE ARRAY

Biomass needs size reduction as pre-treatment before converting it to ethanol for fuel. The crumble head can get too hot if too much biomass is fed or the teeth are worn out. Our team is sponsored by 'Forest Concepts LLC.' to develop a non-contact temperature sensor to monitor temperature rise in those crumble heads. The team has developed an IR sensor array to profile the temperature along the scrubber head.

TEAM

Abdulaziz Alazemi - Biological Engineering
Feifan Deng - Mechanical Engineering
Jake Miller - Mechanical Engineering
Anthony Ponzini - Electrical & Computer Engineering

CLIENT/SPONSOR

Forest Concepts

ADVISOR(S)

Dev Shrestha

Interdisciplinary Project Focus

COMPUTER SCIENCE

APPLICATION FOR SPEECH VISUALIZATION

Our team's project was to create an audio visualization application with phoning level speech recognition. The program provides feedback through multiple visualization methods, such as graphs and text. The program is designed to serve as a base for future speech therapy applications.

TEAM

Simon Barnes - Computer Science
Emma Bateman - Computer Science
Joshua Bonn - Electrical & Computer Engineering

CLIENT/SPONSOR

Micron

ADVISOR(S)

Feng Li

PERSONALITY ANALYSIS USING MACHINE LEARNING

Our overall project is to design software that can perform personality analysis on a large amount of text samples that we have mined from social media. There are three aspects to this project; web/data mining, a local database, and a machine that is trained using the mined data.

TEAM

Seth Forrest - Computer Science
Paden Rumsey - Computer Science
Austin Sass - Computer Science
Lise Welch - Computer Science

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U of I College of Engineering

ADVISOR(S)

Bruce Bolden

PROJECT A.R.M.: ASSISTIVE REHABILITATION MONITOR

Individuals recovering from post-stroke arm impairments can spend more time conducting therapeutic exercises at home than during supervised in-clinic sessions. To facilitate better qualitative and quantitative monitoring of therapy, the goal of the project is to develop a system that will track arm movements, including repetitions of prescribed exercises.

TEAM

Matthew Holman - Computer Science
Jacob Middleton - Mechanical Engineering
Ruth Park - Computer Science
Quinton Reese - Mechanical Engineering
Alexanderia Rockwell - Biological Engineering

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U of I College of Engineering

ADVISOR(S)

Bruce Bolden
Joel Perry

MENTOR(S)

Melissa Bogert

PROJECT VERITAS

Design and implementation of a secure database that communicates securely and dynamically with a web interface. The database is fully encrypted with read only access from the web interface. The interface follows accessibility standards and works on a range of hardware. Communications are encrypted in both directions.

TEAM

Joel Doumit - Computer Science
Animesh Pattanayak - Computer Science
Jocelyn Stadler - Computer Science
Alex Wezensky - Computer Science

CLIENT/SPONSOR

Pacific Northwest National Laboratory (PNNL)

ADVISOR(S)

Bruce Bolden

SIGHTLESS NAVIGATION AND PERCEPTION (S.N.A.P)

Our goal is to create an easily distributable standard testing environment for gathering data and metrics to find the best possible acoustic navigation algorithm

TEAM

Dylan Carlson - Computer Science
Dustin Fox - Computer Science
Andrew Rose - Computer Science

CLIENT/SPONSOR

Personal Project

ADVISOR(S)

Bruce Bolden



What does it mean to
**ENGINEER LIKE
A VANDAL?**

It means applying research that makes local and global impacts

It stands to reason that sustainable roadways go hand-in-hand with a people's livelihood. In fact, many of the international students working on pavement engineering research under Assistant Professor Emad Kassem see strong transportation networks as central to their countries' economic growth.

It's why several of them pursued the field in the first place. And at U of I, they found hands-on opportunities for research — making quieter pavement, extending its service life and increasing skid resistance.

After applying their research findings here in Idaho, many hope to advance the transportation infrastructure of their home countries, widening U of I's impact across the globe.

www.uidaho.edu/paving-the-way

“Doing research, they really get a chance to apply what they’ve learned and how they can contribute to continual improvements to our field. I hope my students will take their knowledge and build on it to better the next generation.”

Emad Kassem
Assistant Professor
of Civil Engineering

POWERING EDUCATION

Idaho Power's Solar 4R Schools educates students about renewable energy by placing solar installations on school property.

idahopower.com/solar4rschools



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College of Letters, Arts
and Social Sciences

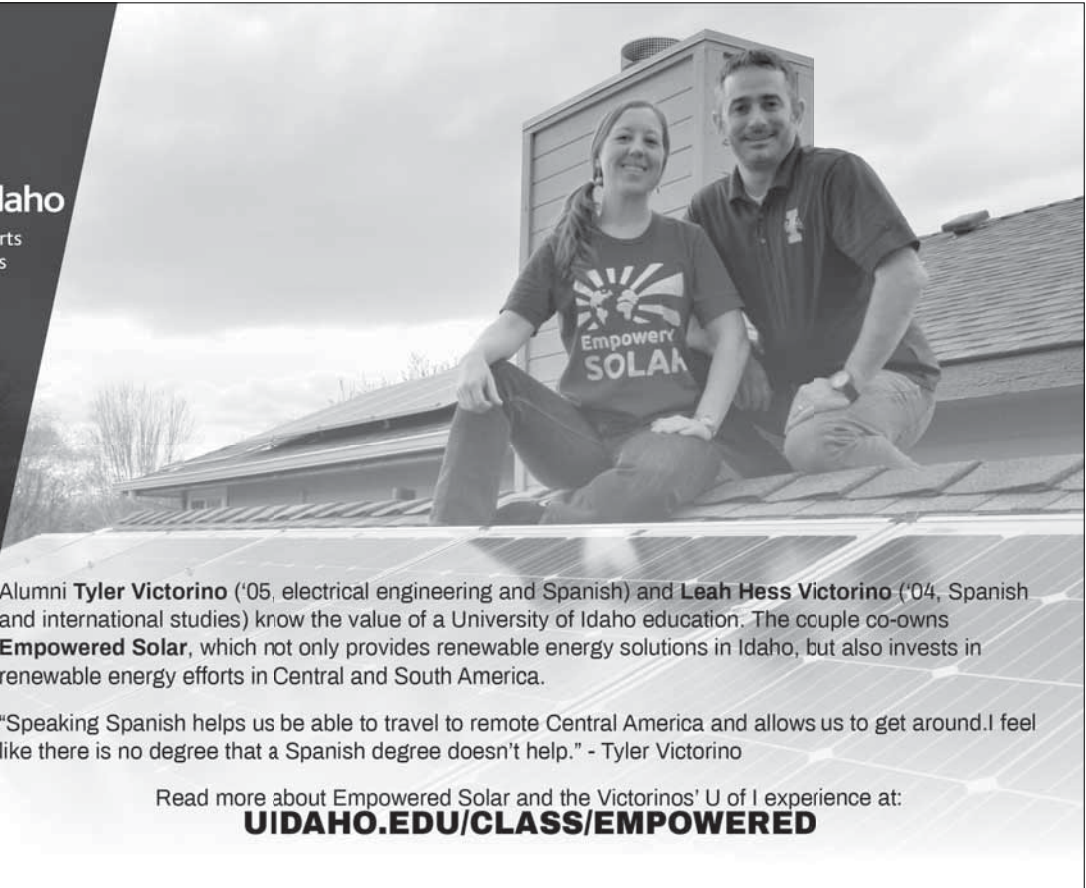


UIDahoCLASS

Alumni **Tyler Victorino** ('05, electrical engineering and Spanish) and **Leah Hess Victorino** ('04, Spanish and international studies) know the value of a University of Idaho education. The couple co-owns **Empowered Solar**, which not only provides renewable energy solutions in Idaho, but also invests in renewable energy efforts in Central and South America.

"Speaking Spanish helps us be able to travel to remote Central America and allows us to get around. I feel like there is no degree that a Spanish degree doesn't help." - Tyler Victorino

Read more about Empowered Solar and the Victorinos' U of I experience at:
UIDAHO.EDU/CLASS/EMPOWERED



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VANDALFORGE PRINTER SOFTWARE

Our team is customizing existing open-source 3D plastic printing software for use with the UI VandalForge 3D metal printer. The goals of this project are simplifying the graphical user interface by focusing on the main controls and adding functionality for devices and peripherals.

TEAM

Jonathan Buch - Computer Science
Tim Clemans - Computer Science
Michael Madsen - Computer Science
James Young - Computer Science

CLIENT/SPONSOR

U of I College of Engineering

ADVISOR(S)

Michael Maughan

MENTOR(S)

Andre Corpus

VIRTUAL CONTROL SYSTEM NETWORK

We will create a virtual control system network to simulate large-scale, reconfigurable industrial control systems for testing and research.

TEAM

Joey Chereck - Computer Science
Gabe Gibler - Computer Science
Ben Merritt - Computer Science

CLIENT/SPONSOR

Pacific Northwest National Laboratory (PNNL)

ADVISOR(S)

Bruce Bolden

WIRELESS TOWER OF LIGHTS

The University of Idaho's Tower Lights system currently runs on unused Cat 5 wiring in the Theophilus Tower. Our team has renovated the outdated Tower Lights control system into a battery powered wireless system.

TEAM

Adrian Beehner - Computer Science
Andrew Butler - Computer Science
Kevin Dorscher - Computer Science
Paul Martin - Computer Science

CLIENT/SPONSOR

U of I College of Engineering

ADVISOR(S)

Bruce Bolden

Interdisciplinary Project Focus

ELECTRICAL AND COMPUTER ENGINEERING

MITIGATING CYBERATTACKS CAUSED BY FAST ACTING HARDWARE

This project goal is to design a nearly undetectable hardware trojan capable of disabling targeted integrated circuits by breaking down the circuit at the transistor level and developing defensive schemes to prevent a widespread flash fatal trojan attack.

TEAM

Hector Cruz - Electrical & Computer Engineering
Dustin Mallett - Electrical & Computer Engineering
Brenton Van Leeuwen - Electrical & Computer Engineering
Rafael Alves Watanabe - Electrical & Computer Engineering

CLIENT/SPONSOR

U of I Department of Electrical and Computer Engineering

ADVISOR(S)

Saied Hemati
Herbert Hess
Feng Li

MODELING AND MEASUREMENT OF PERMITTIVITY FOR NEAR SPACE COMMUNICATIONS

Designing a circuit and package that can measure the permittivity, permeability, and conductivity of free space as a function of altitude, temperature, and pressure.

TEAM

Jeffrey Craig - Electrical & Computer Engineering
Ryan May - Electrical & Computer Engineering
Brett Morris - Mechanical Engineering
Cameron Murdock - Electrical & Computer Engineering
Ben VanSant - Mechanical Engineering

CLIENT/SPONSOR

NASA

ADVISOR(S)

Feng Li
Ata Zadehghol

NON-WIRE SOLUTIONS TO TRADITIONAL POWER GRID UPGRADES

Utilizing locational value and integration capacity analysis in current power grids we are looking into non-wire solutions to traditional upgrade projects. These non-wire solutions are aimed at reaching a compromise with residents to ensure a power quality that is unmatched in the least intrusive method possible.

TEAM

Barjas Alruwaili - Electrical & Computer Engineering
Tianyi Chen - Electrical & Computer Engineering
Nick Flynn - Electrical & Computer Engineering
Maximilian Schnitker - Electrical & Computer Engineering

CLIENT/SPONSOR

Avista Utilities

ADVISOR(S)

Feng Li
Herbert Hess
Brian Johnson

MENTOR(S)

Yacine Chakhchoukh
Jacob Dolan



What does it mean to **ENGINEER LIKE A VANDAL?**

It means collaborating to develop creative and entertaining applications

A fluorescent light show. A robotic drumset. A piano that moves in 360 revolutions. These are the hallmarks of a U of I football game halftime show.

All it took for the performance to materialize was the wide-ranging interests of a computer science student with a knack for music — and a relationship fostered between Associate Professor of Computer Science Bob Rinker and Athletic Band Director Spencer Martin.

The co-collaborators are always cooking up new performances. This year's development involves sunglasses with microprocessors and high-powered LED lights worn by the 230-member marching band.

uidaho.edu/light-it-up

“Computer scientists, for the most part, don’t work in a vacuum. They’re solving somebody else’s problem — creating a database, or a webpage, or a new refrigerator that needs a screen in the middle of it. There’s always an application.”

Bob Rinker
*Associate Professor of Computer Science
and Advisor to U of I’s Association of
Computing Machinery*

SOLAR POWERED FLYWHEEL ENERGY STORAGE SYSTEM

The objective is to develop a model of a PV (Photovoltaic) panel array using MATLAB and to then verify that model using hardware. The PV panel array will be used to supply power to a Flywheel Energy Storage System that NASA is developing for energy storage on the lunar surface.

TEAM

Sean Daniel - Electrical & Computer Engineering
Haotang Wang - Electrical & Computer Engineering
Mingyang Xu - Electrical & Computer Engineering

CLIENT/SPONSOR

NASA

ADVISOR(S)

Feng Li

MENTOR(S)

David Arnett

TATER (TAMPER ANALYSIS VIA TRANSIENT ELECTROMAGNETIC RESPONSES)

This project monitors and characterizes the electromagnetic emissions of a microprocessor during boot to determine potential foreign modification in either software and/or hardware. The product consists of a system with an antenna, amplified in conjunction with a data acquisition platform to a Linux machine for processing by a custom algorithm.

TEAM

Roy Cochran - Electrical & Computer Engineering
Matthew Covalt - Electrical & Computer Engineering
Lydia Engerbretson - Computer Science
Hannah Pearson - Computer Science
Matthew Waltz - Computer Science

CLIENT/SPONSOR

Idaho Scientific

ADVISOR(S)

Feng Li

VOLTAGE SOURCE CONVERTER FAULT PROTECTION

The objective of this senior design project is to design and test a power system protection scheme that combines voltage and possibly measurements from different locations in or near a wind farm to detect, identify and determine an approximate location for electrical faults.

TEAM

Mao Ding - Electrical & Computer Engineering
Thomas Nitchman - Electrical & Computer Engineering
Bryan Ortiz - Electrical & Computer Engineering
Li Yue - Electrical & Computer Engineering
Zhou Zhiyan - Electrical & Computer Engineering

CLIENT/SPONSOR

Schweitzer Engineering Laboratories

ADVISOR(S)

Feng Li

Herbert Hess

Brian Johnson

MENTOR(S)

Hari Challa

Interdisciplinary Project Focus

MECHANICAL ENGINEERING

ADVANCED COMMUNICATIONS SYSTEM FOR SUBORBITAL FLIGHT

Team ACOM is developing the next generation communication system for NASA's tube-deployed re-entry vehicles (TDRV's) and small-form satellites. Additionally, the team is adapting the design of the TDRV's for housing this system.

TEAM

Byron Bowles - Mechanical Engineering
Tysen Buster - Mechanical Engineering
Melissa Dow - Electrical & Computer Engineering
Peter Fetros - Electrical & Computer Engineering
Trevor Morse - Computer Science
Hanna Salian - Computer Science

CLIENT/SPONSOR

NASA Ames / Idaho Space Grant Consortium

ADVISOR(S)

Feng Li

AEROGEL INSULATION STUDY

Aerogel is known for its light weight and superior insulation properties. the goal of this project is to test the insulation ability of Aerogel by gathering performance data. A temperature gradient will be observed and compared between aerogel and standard insulation.

TEAM

Austin Anderson - Mechanical Engineering
Xi Chen - Biological Engineering
Cameron Moore - Mechanical Engineering
Yue Yu - Electrical & Computer Engineering

CLIENT/SPONSOR

U of I Department of Mechanical Engineering

ADVISOR(S)

Beth Rezaie

MENTOR(S)

Dave Hamilton

Scott Smith

AN AERODYNAMIC STUDY OF BULK COMMODITY TRAILERS

Our mission is quantifying fuel economy impacts of different aerodynamic features on tractor trailers based on wind tunnel testing with scale models.

TEAM

Jake Frost - Mechanical Engineering
Brandon Hilliard - Mechanical Engineering
Liam Johnson - Mechanical Engineering

CLIENT/SPONSOR

Western Trailers

ADVISOR(S)

Steve Beyerlein

MENTOR(S)

Sarah Willis

BOEING SIDEWALL LIGHTING INSTALLATION

The sidewall lighting installation for the Boeing 737 is a time-consuming and exhausting process for production line workers. Our objective is to propose hardware modifications and alternative assembly procedures that make this process faster and more ergonomic.

TEAM

Mariana Burdelis - Electrical & Computer Engineering
Alexandra Edwards - Mechanical Engineering
Michael Ortman - Mechanical Engineering

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ADVISOR(S)

Steve Beyerlein

MENTOR(S)

Sarah Willis

CLEAN SNOWMOBILE CHALLENGE

The U of I Clean Snowmobile Challenge (UICSC) team, made up of freshmen through senior students, modifies a modern snowmobile in an attempt to improve emissions, reduce noise, and increase fuel economy. Each year their entry competes in an International Collegiate Competition in Houghton, Michigan.

TEAM

Brooke-Lynn Andrade - Mechanical Engineering
Adam Boggs - Mechanical Engineering
Nik Chappée - Mechanical Engineering
Anthony DeSantis - Mechanical Engineering
Grace Frazier - Mechanical Engineering
Brian Gift - Electrical & Computer Engineering
Davis Hill - Mechanical Engineering
Mark Jaskowski - Mechanical Engineering
Ellin Karl - Mechanical Engineering
Alex Kiss - Mechanical Engineering
Jared Kellerer - Mechanical Engineering
Conner Krezman - Mechanical Engineering
Jason Maas - Mechanical Engineering
Carlos Munoz - Physics
Colin Parke - Mechanical Engineering
Patrick Paulus - Mechanical Engineering
Kyle Rauch - Mechanical Engineering
Jacob Roy - Mechanical Engineering
Cade Smith - Mechanical Engineering
Justin Stephens - Mechanical Engineering
Ian Sullivan - Mechanical Engineering
Austin Trail - Electrical & Computer Engineering
Luz Villagomez - Mechanical Engineering
Levi Vogel - Mechanical Engineering
Alexis Wilson - Electrical & Computer Engineering

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ADVISOR(S)

Steve Beyerlein
Dan Cordon

MENTOR(S)

Tyler Young

COFFEE ROASTER FILTRATION SYSTEM

Our project team is designing and testing an affordable air filtration system for industrial coffee roasters that will reduce odors and visible smoke.

TEAM

Adam Niemet - Mechanical Engineering
Patrick Paulus - Mechanical Engineering
Samantha Peters - Biological Engineering
William Overstreet - Mechanical Engineering

CLIENT/SPONSOR

Diedrich Roasters

ADVISOR(S)

Steve Beyerlein

MENTOR(S)

Melissa Bogert

COMBAT FOOD INSECURITY

In order to help combat food insecurity, it is our team's goal to create a marketable product that is accurate, durable, and user friendly to the agricultural industry that will allow plant breeders to create stronger plants that will thrive in harsher growing conditions.

TEAM

Spencer Hauck - Mechanical Engineering
Justin Nesbitt - Biological Engineering
Andrew Owens - Electrical & Computer Engineering
Josh Warnick - Mechanical Engineering

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ADVISOR(S)

Daniel Robertson

MENTOR(S)

Colton Bailey

COMPACT ROBOTIC WHEEL DRIVE

The goal of this project is to design a compact electric drive unit for automated material handling equipment. The design utilizes a custom 6:1 planetary gearbox and high torque-density motor which reduces the overall size of the drive unit while delivering the required torque and speed outputs.

TEAM

Daniel Hien - Mechanical Engineering
Brad Morris - Mechanical Engineering
Gabe Riggs - Mechanical Engineering
Jacob Riggs - Mechanical Engineering

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Bastian Solution

ADVISOR(S)

Matthew Swenson

MENTOR(S)

Colton Bailey



What does it mean to
**ENGINEER LIKE
A VANDAL?**

It means seeing potential in what others discard

For Kenny Sheffler, the old adage rings true. He sees potential in other people's trash — specifically, food scraps, livestock waste, yard clippings and sludge from the wastewater treatment plant.

He's taking stock of these organic materials, produced by city residents and university students, to assess whether they offer up enough raw material to feed an anaerobic digester and turn into biogas — which could potentially offset natural gas used at U of I's steam plant — and create fertilizer from the remaining compost.

It's a clean energy system he learned about while studying abroad in Fiji, and he wants to apply it globally in his future professional practice.

uidaho.edu/kenny

***“Everybody has waste and it
has to be dealt with in some
way. You might as well benefit
from your own waste.”***

Kenny Sheffler
Electrical Engineering Major

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DESIGN INTENT

This project is an exploration of the essence of design, where we focus on the why as well as the how of design. Areas of inquiry include Stirling engine design and fabrication, reverse engineering legacy designs, and exploration of an artifact of antiquity.

TEAM

Byron Bowles - Mechanical Engineering
Matthew Dieckman - Mechanical Engineering
Brandon Hilliard - Mechanical Engineering
Thomas Moore - Mechanical Engineering
Micheal Ortman - Mechanical Engineering
Austin Phillips - Mechanical Engineering
Paden Putnam - Mechanical Engineering
Kierra Ryan - Mechanical Engineering
Nicholas Shaber - Mechanical Engineering
Marshall Townsend - Mechanical Engineering

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ADVISOR(S)

Edwin Odom

MENTOR(S)

Coleton Bailey
Alex Olson
Sarah Willis

DISCOVER BOT: DISCOVERY CENTER TELEROBOTICS EXHIBIT

Our goal is to develop a single-user prototype of a telerobotic master/slave system and validate its function and durability. This robot has 7 degrees of freedom and is controlled from a distance to interact with its surroundings.

TEAM

Joe Carter - Computer Science
Brian Girtf - Electrical & Computer Engineering
Nathan Park - Mechanical Engineering
Kierra Ryan - Mechanical Engineering
Tim Sonnen - Computer Science
Marshall Townsend - Mechanical Engineering
Qinlin Xu - Electrical & Computer Engineering

CLIENT/SPONSOR

Discovery Center of Idaho

ADVISOR(S)

Steven Beyerlein
Joel Perry

MENTOR(S)

Sarah Willis

INCONEL TUBING PRE-PULLOUT GRINDING AND VISUAL TEST SYSTEM

The goal of the project is to dramatically improve the sample preparation procedure for tubing cutouts prior to executing pullouts. The team has developed a more ergonomic and consistent way to provide grinding of the tubing material, while also providing a visual feedback mechanism for the operators.

TEAM

Matt Dieckmann - Mechanical Engineering
Conor Swanstrom - Mechanical Engineering
Hunter Trulock - Mechanical Engineering

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ADVISOR(S)

Matthew Swenson

MENTOR(S)

Coleton Bailey

INL GRINDER WATER FILTRATION SYSTEM

The objective of the project is to redesign the water circulation system for a sample preparation grinder/polisher in the Hot Fuel Examination Facility (HFEF) at Idaho National Laboratory. The upgraded solution includes a new pump and filter system which optimizes functionality and servicability.

TEAM

Drew Fagan - Mechanical Engineering
Jerry Kahn - Mechanical Engineering
Thomas Moore - Mechanical Engineering
Troy Sanders - Mechanical Engineering

CLIENT/SPONSOR

Idaho National Laboratory

ADVISOR(S)

Matthew Swenson

MENTOR(S)

Alex Olson

ME 301 FINAL PROJECTS

Student teams in the introductory solid modeling class will demonstrate CAD artifacts from their final projects. The final project involves reading and interpreting legacy drawings of a model internal combustion engine in order to build a 3D model of the assembly and create detailed drawings for manufacturing.

TEAM

ME 301 Students - Mechanical Engineering

CLIENT/SPONSOR

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INSTRUCTOR/ADVISOR(S)

Chris Bitikofer
Tony Branz
Parker Hill
Joel Perry

MENTOR(S)

Kevin Brewer
Davis Hill
Bryce Jensen
Taylor Spence
Makynzie Zimmer



What does it mean to **ENGINEER LIKE A VANDAL?**

It means sharing experience, talent and curiosity to build community

For over a decade, the percentage of African-Americans graduating with engineering bachelor's degrees has been declining. It's a statistic that Tavera Freeman, who built her own computer at age 15 and taught herself how to code, wants to change.

Freeman is a Grand Challenge Scholar conducting STEM projects with underrepresented youth at area schools. She's also using her computer skills to research whether certain characteristics of cerebrospinal fluid might be early indicators of Lou Gherig's disease.

Ultimately, Freeman hopes to save lives — by identifying disease and reversing statistics, sooner.

uidaho.edu/tavera

“A significantly disproportionate percentage of African-American students by fourth grade don't like math. And if you don't like math, you're not likely to pursue STEM. Simple things like tutoring can help students see opportunities that are available to them.”

Tavera Freeman
Computer Engineering Major

ME 421 FINAL PROJECTS

Student teams in the advanced solid modeling technical elective will show off a variety of final projects.

TEAM

Brian Aldrimk - Mechanical Engineering
Tysen Buster - Mechanical Engineering
Timothy Butler - Mechanical Engineering
Chase Dinning - Mechanical Engineering
Thomas Entwit - Mechanical Engineering
John Gergen - Mechanical Engineering
Nikki Imanaka - Mechanical Engineering
Jerry Kahn - Mechanical Engineering
Oscar Lopez - Mechanical Engineering
Bradley Morris - Mechanical Engineering
Michael Odell - Mechanical Engineering
David Severud - Mechanical Engineering
Braden Sprenger - Mechanical Engineering
Michael Wendell - Mechanical Engineering
Thomas White - Mechanical Engineering

CLIENT/SPONSOR

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INSTRUCTOR/ADVISOR(S)

Coleton Bailey
Sarah Willis

PORTABLE BIODIESEL

Design, package, and fabricate a portable biodiesel production system that implements variable mixing ratios, flow rates, and active/passive safety features. This will be a portable showcase for plasma reactor demonstration.

TEAM

Khalid Aldossari - Electrical & Computer Engineering
Abdullah Aldoussari - Electrical & Computer Engineering
Kevin Miklos - Mechanical Engineering
Tyler Smisek - Mechanical Engineering

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Dan Cordon

MENTOR(S)

Chad Dunkel

ROBOCODO: POST-SURGICAL ELBOW REHABILITATION DEVICE

The project goal is to create a robotic device that a therapist can use to perform a semiautonomous humeroulnar distraction (mobilization of the elbow joint after surgery). The device would allow therapists to focus on other aspects of the rehabilitation process, decreasing therapy time, and maximizing recovery outcome.

TEAM

John Gergen - Mechanical Engineering
Logan Hammons - Mechanical Engineering
Megh Hester - Mechanical Engineering
Jiawei Liu - Electrical & Computer Engineering
Abby Raveling - Biological Engineering
Jiachen Shen - Electrical & Computer Engineering

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Tecnalía

ADVISOR(S)

Joel Perry

MENTOR(S)

Melissa Bogert

SEL THERMAL CARD GUIDE

Our team is combining experimental studies of heat conduction, thermal simulations, and design for manufacturing to propose new card guides that maximize heat transfer from circuit boards to the chassis that contains them.

TEAM

Marc Dobson - Mechanical Engineering
Collin Mabe - Mechanical Engineering
Nick Tobe - Mechanical Engineering
Michael Wendell - Mechanical Engineering

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Schweitzer Engineering Laboratories (SEL)

ADVISOR(S)

Steve Beyerlein

MENTOR(S)

Alex Olson

TWO-STROKE EXHAUST DESIGN

The goal of this project is to create a custom exhaust system for a reduced-speed, two-stroke snowmobile. This includes a tuned exhaust pipe, a custom muffler, addition of a catalytic converter, and an exhaust throttle to regulate backpressure.

TEAM

Phoenix Duncan - Mechanical Engineering
Jason Maas - Mechanical Engineering
Cade Smith - Mechanical Engineering

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U of I Clean Snowmobile Challenge Team

ADVISOR(S)

Dan Cordon

U OF I STEAM PLANT COMBUSTION INSTRUMENTATION

Design and integrate a pre-combustion measurement system on the U of I Steam Plant. This iteration of the project will focus on wood chip mass flow fuel moisture content.

TEAM

Ancheng Hou - Electrical & Computer Engineering
Stafford-Ames Morse III - Mechanical Engineering
Paden Putnam - Mechanical Engineering
Wang Xu - Electrical & Computer Engineering

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U of I Steam Plant

ADVISOR(S)

Dan Cordon

MENTOR(S)

Alex Olson



What does it mean to **ENGINEER LIKE A VANDAL?**

It means giving purpose to your passion

Claire Majors has always been an explorer. From camping for five months a year while her dad worked as a forester. To living in Bolivia while her parents managed an orphanage. To roaming her family's 50-acre farm.

But it was at the Smithsonian museums when Majors realized what a career-bound explorer looks like. And she promptly sought an engineering degree.

Through U of I's Humanitarian Engineering Corps, Majors melded her two passions and traveled to a rural Bolivian village to install potable water systems. She fulfilled her love for adventure and gave community members access to a basic human need.

uidaho.edu/claire

"It was sort of an ah-ha moment for me that today's adventurers are engineers," Majors said. "They're the ones making breakthroughs and discoveries, and that was really cool to realize."

Claire Majors
*Mechanical Engineering Major
Class of '17, Current Biological
Engineering Graduate Student*



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VANDALFORGE METAL ADDITIVE MANUFACTURING - HARDWARE

Prototype metal parts can be labor intensive to fabricate. Our goal is to develop an affordable wire-arc additive manufacturing machine capable of producing on-demand parts, with reduced effort and costs. Our design is a modular prototype to enable this capability at the University of Idaho and allow for future iteration.

TEAM

Zach Hacker - Mechanical Engineering
Nathan Pabst - Mechanical Engineering
Sam Schaffer - Electrical & Computer Engineering

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ADVISOR(S)

Michael Maughan

MENTOR(S)

Melissa Bogert
Matthew Buchanan
Andre Corpus

WIRELESS FORKLIFT HEIGHT ENCODER

The objective of the project is to develop a forklift sensor which displays the exact height of the forks to an operator. The interdisciplinary team has created a solution which measures the height of the forks, operates wirelessly while harvesting its own energy and transmitting data to the truck for display to the operator.

TEAM

Brett Harned - Electrical & Computer Engineering
Matthew Harned - Mechanical Engineering
Austin Phillips - Mechanical Engineering
Preston Rhodes - Mechanical Engineering

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ADVISOR(S)

Matthew Swenson

DEVLIEG INNOVATIONSCHOLAR PROJECTS

CARD PLAYING ROBOT ARM

Our goal is to create a robot arm that can play the card game Crazy 8s. The arm will use computer vision to identify cards and then will decide what card from its hand is best to play next. The robot will be able to play against 4 opponents.

TEAM

Joseph Dennison - Electrical & Computer Engineering
Katy Doty - Electrical & Computer Engineering
Jessy Faulkner - Mechanical Engineering
Marshall Townsend - Mechanical Engineering
Jacob Middleton - Mechanical Engineering
Kierra Ryan - Mechanical Engineering

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Jonathan Petersen

EDUCATIONAL MODULES FOR COLLEGE OF ENGINEERING AMBASSADORS

This project is aimed at developing educational modules and engaging demonstrations for the College of Engineering Ambassador team to present to potential students.

TEAM

Emily Chambers - Mechanical Engineering
Hope De Avila - Biological Engineering
Brian Guiana - Electrical & Computer Engineering
Emily Kaschmitter - Biological Engineering
Dustin Mallett - Electrical & Computer Engineering
Keegan Miley-Hunter - Electrical & Computer Engineering
Judah Stelck - Chemical & Materials Engineering
Sara Murphy - Biological Engineering
Isabell Strawn - Biological Engineering

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Jonathan Petersen

REGENERATIVE ELECTRIC GO-KART

Our goal is to design and build an electric go-kart with a modular regenerative braking system. This serves as a test bed for multiple energy storage solutions, and allows us to determine the best regenerative braking configuration for any application.

TEAM

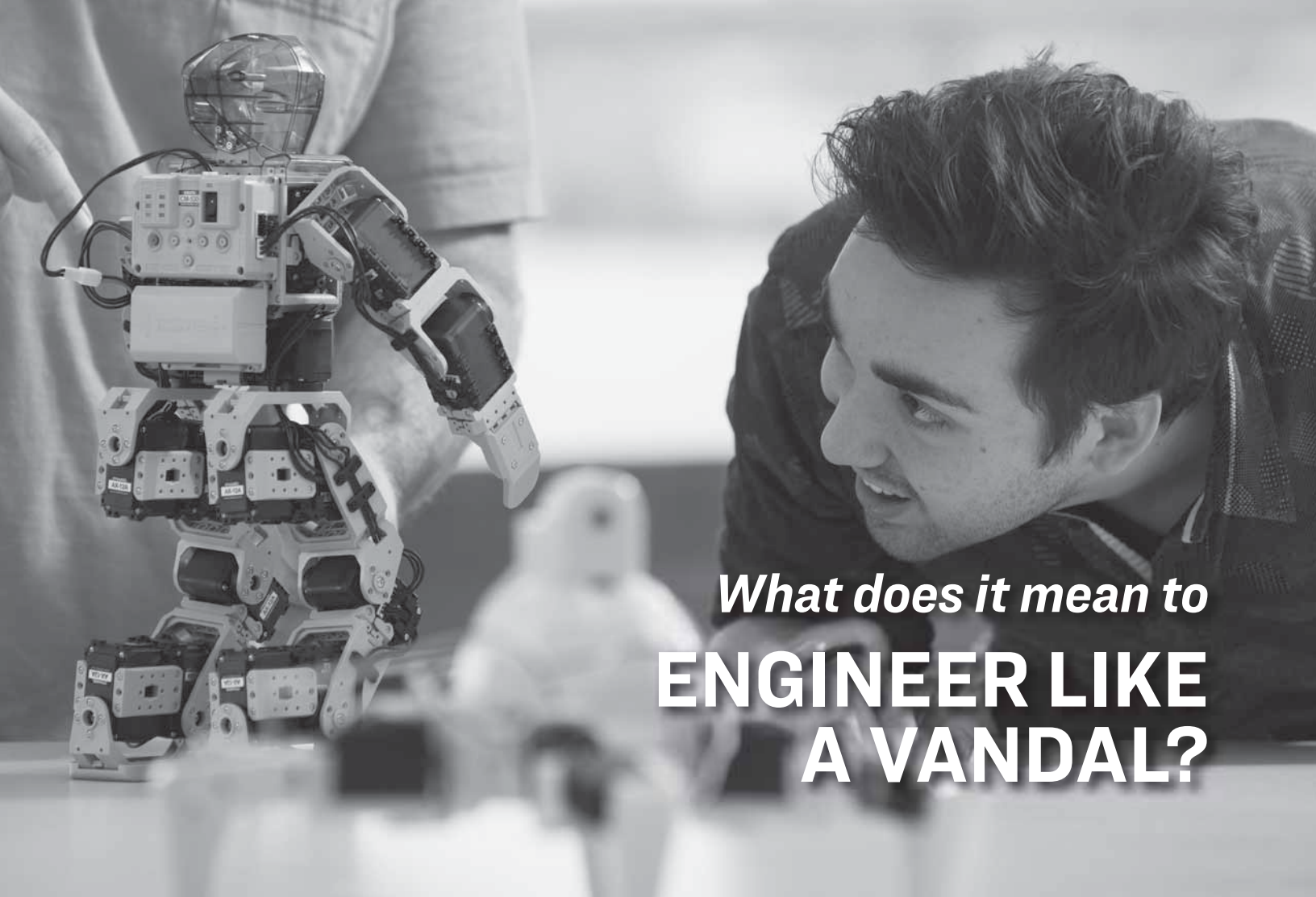
Jack Gonzalez - Mechanical Engineering
Collin Heist - Electrical & Computer Engineering
Logan Lee - Electrical & Computer Engineering
Anston Lunstrum - Mechanical Engineering
Reilly Neel - Mechanical Engineering
Mitchell Patterson - Electrical & Computer Engineering
Kiana Pitman - Electrical & Computer Engineering
Sam Schaffer - Electrical & Computer Engineering
Braden Sprenger - Mechanical Engineering

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ADVISOR(S)

Jonathan Petersen



What does it mean to **ENGINEER LIKE A VANDAL?**

It means to take a leap of faith to risk success

A native of Silver Valley, Idaho Adrian Beehner wanted to stay close to home while working on his education.

After finishing his associate's degree at North Idaho College, Beehner took a leap. He applied and was accepted to the newly announced four-year U of I computer science program in Coeur d'Alene. His leap paid off. Beehner will receive his bachelor's degree in May as the program's first graduate.

Beehner has had the opportunity to work alongside U of I faculty as they grow the program located in the Innovation Den in downtown Coeur d'Alene. He's worked on a series of robotics projects including programming a 300-pound robot named Baxter to pour a cup of coffee.

uidaho.edu/adrian

*"I loved the opportunity to be able
to do this. It's been such a great
experience. Seeing this program
grow has been so amazing. I hope I
can give back to that in the future."*

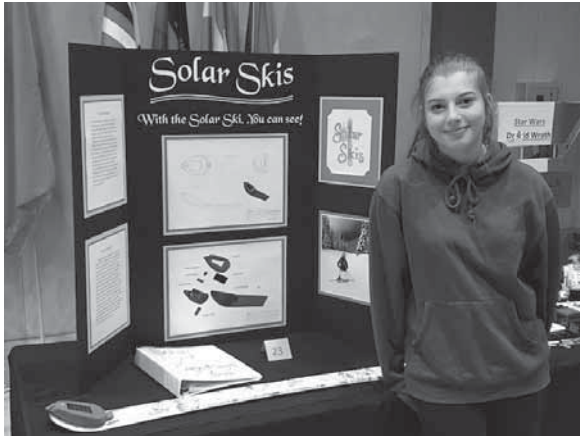
Adrian Beehner
*First graduate of U of I
Computer Science
in Coeur d'Alene*

EXPO Welcomes 2018 Invent Idaho Finalists

Invent Idaho is a program conceived in 1989 for students in grades 1-12 to provide a forum for thousands of young inventors.

Invent Idaho is the only program of its kind in Idaho. Young inventors participate in progressive levels of competitions, including three regional events held across Idaho, culminating in an Invent Idaho State Finals event. This year's finals took place on the University of Idaho Moscow campus. Learn more about Invent Idaho at www.inventidaho.com.

For the past three years College of Engineering Dean Larry Stauffer has invited the Invent Idaho finalists to participate in Engineering Design EXPO in recognition of their accomplishments. The student's ingenuity represents the next 25 years in engineering.



SOLAR SKIS

Emory Feyen

Solar Skis are designed with solar lights on the tip to enhance visibility during low light and flat light conditions.



WINTER WARMER

Addison Forsman

Winter Warmer is an adaptation of a boot dryer into a snow clothes dryer. If you love to play in the snow but hate wet snow clothes this invention is for you. It uses warm air to dry the clothes evenly and is safe for kids to use.



THE WIRELESS ENERGY TRANSMITTER

Quinn Holt

The Wireless Energy Transmitter is a system that utilizes interfacing with a Tesla coil to create solar energy within easily installed power cubes. Energy can then be provided for various pluggable devices or fixtures. It would be used in commercial, residential, or remote sites.

2018 EXPO Organizing and Development Team



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*Marketing Communications
Manager - EXPO Organizing Chair*



SUE BRANTING

*Department of Computer
Science Manager*



JOHN CREPEAU

*Associate Dean for
Undergraduates*



DAN CORDON

*Mechanical Engineering
Faculty & Capstone Advisor*



PAULETTE HOUSE

Director of Student Services



BOBBI HUGHES

*Assistant Dean for
Development*



STACY RAUCH

*Associate Director of
Development*



PATTY RIEDL'

Administrative Coordinator



SANDY SPEAR

*Alumni and Donor
Relations Coordinator*



MATTHEW SWENSON

*Mechanical Engineering
Faculty & Capstone Advisor*



MARIE WAGNER

*Student Services & Programs
Coordinator*



SEAN WILLIAMS

Web Technician

Planning Engineering Design EXPO is a yearlong activity. To explore future opportunities to support the University of Idaho's Engineering Design EXPO contact the College of Engineering Development team at 208-885-5201 or email us at expo@uidaho.edu. We look forward to talking with you about how you can help support EXPO and our current and future students.

Special thanks to University Communications and Marketing and the Creative Services unit for their invaluable assistance with creating Engineering Design EXPO promotional content and event materials.

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Itron
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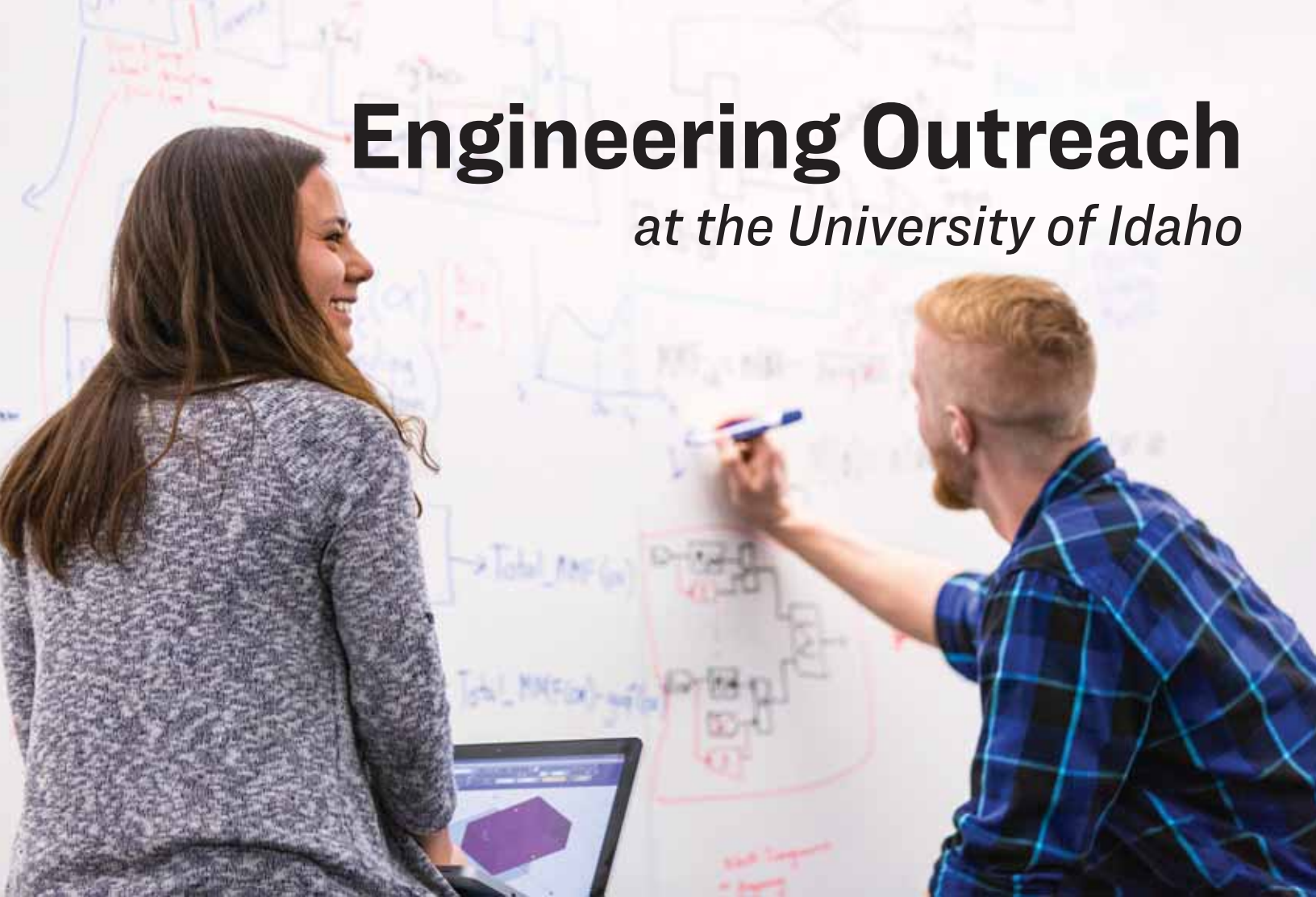
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