# NDSU | COLLEGE OF ENGINEERING

# COLLEGE HAPPENINGS

October 29, 2019

## FROM THE DEAN

**Communicating Our Research**

This morning I was talking with our distinguished seminar speaker about recent developments in quantum computers and artificial intelligence. These are areas outside of my technical expertise, but as dean, I often get to talk with alumni and friends who come from a wide variety of technical backgrounds. I was able to better engage in that conversation not from reading technical journal papers on the topics, but by reading articles intended for a broader audience.

Recently I've been reflecting on the importance of being able to communicate our science and engineering to a lay audience, so that connections across disciplines can be fostered. Addressing a non-expert audience (whether in writing or in a presentation) requires that we take their technical knowledge into account, and use familiar language. It requires distilling our message, making the science accessible for a variety of audiences (sometimes by telling stories about our work), so that it is accessible and powerful.

This year, faculty and staff in the College of Engineering have already produced over 100 technical papers. All these papers say volumes about who we are and what we do as a college. Of course, these technical papers are targeted at scientists and engineers in our fields of research, which constitute a very important audience. Indeed, archival papers are the crown jewels of communication about what goes on in the College of Engineering, but other avenues are important, too. Examples of the many other ways that we communicate the story about the work we are doing include writing a blog post, giving a presentation to a lay audience, or providing input for a news article. Some of our faculty are very accomplished at these, and I encourage all of us to see if we can raise our game a little, in this regard. Our reputation depends on it, and talking about our work to different audiences at different levels can play a critical role in closing the gap between the public and scientific community. Doing so may also lead to significant professional payoff, by building connections to work collaboratively across disciplinary boundaries. To help you with task, Kyle Bosch has created the Breakthrough Alert announced at the bottom of each College Happenings newsletter. Breakthrough Alerts are a short and concise 350-500 word summary of research that has been published in a journal and linked online. The Breakthrough Alert is written by faculty with the goal of making the research understandable to the general public. Breakthrough Alerts are distributed to targeted local, state, national, and international media, posted to NDSU and College of Engineering news websites and shared on social media. An online form is available to easily guide faculty when summarizing the published research.

Generally speaking, there is a trade-off between the depth of content of a message, and the breadth of the audience that it can reach. The papers that are our stock in trade contain a full-depth scientific message, and they are read by relatively few. Writing anything less than a full scientific publication is a big challenge for most scientists and engineers. Leaving out any detail runs counter to our training and instincts, but as you work on communicating for a broader audience consider what the American humorist Don Marquis is reputed to have said: "If you make people think they're thinking, they'll love you; But if you really make them think, they'll hate you."

## IN THE NEWS

[NDSU to offer robotics minor](#)

[NDSU president gets new perspective from Shadow a Student Challenge](#)

[A Bison abroad – Q&A with Kade Leier in Sweden](#)

[Transportation scholarships awarded](#)

[Transportation leaders receive honors](#)

[Transfer student: 'Faculty really nurture your skills.'](#)

[Challey Institute Faculty Fellows named](#)

## CONGRATULATIONS

**Jeremy Straub** from the **Department of Computer Science** was named to the inaugural group of Challey Institute Faculty Fellows. The fellows for NDSU's Sheila and Robert Challey Institute for Global Innovation and Growth will contribute to the mission of the institute by engaging in policy-relevant research, educating and training students and informing the general public on issues related to the institute's mission.

Please let *College Happenings* know about honors, awards, new grants and other announcements so we can share them with other faculty and staff.

## UPCOMING EVENTS

Tuesday, October 29, **College of Engineering Distinguished Lecture Series**. Paul Dlugosch, BS '89, electrical engineering, and president and CEO of Natural Intelligence Semiconductor, will present "Neuromorphic Computing: How AI is driving a revolution in processing architectures." 3:30 p.m. in Family Life Center, room 124.

Friday, November 1, **Mechanical Engineering Seminar**. "Wrinkling of Electrospun Polymer Nanofibers" by Mojtaba Ahmadi. 12:00 – 12:50 p.m. in Dolve 118.

Friday, November 1, **ABEN Seminar**. "Agricultural Systems Research to Improve Sustainability" by David Archer from the USDA-ARS Northern Great Plains Research Laboratory. 3:00 p.m. in ABEN 201.

Monday, November 4, **Promotion-to-Professor Panel Session**. A panel of recently promoted faculty will discuss the promotion to full professor process, all faculty and academic administrators are invited to attend. 11:30 a.m. – 1:00 p.m., Memorial Union Meadow Lark room. [Register here.](#)

Monday, November 4, **Innovation Challenge Project Showcase**. 4:00 p.m. in the Memorial Union Great Plains Ballroom.

Wednesday, November 13, **CoE Faculty Council Meeting**. 3:00 – 4:00 p.m. CME Auditorium.

Thursday, November 14, **Vettel IME Family Fellowship Announcement**. 4:15 p.m. in the McGovern Alumni Center.

Friday, December 20, **2019 Winter Commencement**. 2:00 p.m. at the SHAC. Please complete and submit the **Faculty/Staff Commencement Participation Form** by **Monday, December 2 at 5 p.m.** if you plan to participate in the Commencement procession.

## NEW FACULTY FELLOWSHIP

IME alumnus Matt Vettel (BSIE '90) and his wife, Jenna, have recently established the Vettel IME Family Fellowship. This fellowship will support faculty and educational excellence in the Department of Industrial and Manufacturing Engineering. Faculty fellowships are awarded to faculty to advance research, education and outreach.

Investing in faculty is one of the most transformative ways that philanthropy can impact our college. That's why gifts like this one are so important to our college mission, and why we've made securing endowed chairs, professorships and faculty fellowships a fundraising priority.

Please mark your calendar now and plan to join us as we celebrate the generosity of Matt and Jenna Vettel at a recognition event on Thursday, November 14 at 4:15 p.m. in the McGovern Alumni Center.

## NEW ROBOTICS MINOR

The North Dakota State Board of Higher Education Academic and Student Affairs Committee approved the College of Engineering's new robotics minor program. The minor will be available starting in Fall 2020 for any student majoring in the various engineering or computer science programs in the College.

To complete the minor, students will choose courses from those already being offered, including core courses in programming, controls and robot applications, and measurements and actuation systems.  In addition, a new introduction course will be required of all students that introduces fundamentals of robotics students. This course will be designed to have extensive hands-on activities to sufficiently engage students so that they can directly relate what they learn to real life applications.

## SHOWCASE OF STUDENT WRITING

If you assign writing in your undergraduate courses, now is the time to sign up your students for participation in the **Fifth Annual Showcase of Student Writing**, scheduled for Monday, December 9th.

**If you are interested in having your students participate, please fill in your information on this Google form.** You will need to provide the class, # of students/groups, project name and 100-word description, and information about equipment you will need—tables, display walls, power strips, etc.

If you aren't sure how your course might fit into the Showcase, please contact Lisa Arnold or Bruce Maylath for more information.

## FUNDING OPPORTUNITIES

**Microsoft: AI for Earth Grants**

AI for Earth awards grants to support projects that use AI to change the way people and organizations monitor, model, and manage Earth's natural systems. There are four areas of focus for this program:

1. **Climate**: The changing climate threatens human health, infrastructure, and natural systems. AI can give people more accurate climate predictions to help reduce the potential impacts.
2. **Agriculture**: By 2050, farmers must produce more food, on less arable land, and with less environmental impact to feed the world's increasing population. AI can help people monitor the health of farms in real time.

3. **Biodiversity**: Species are going extinct at an alarming rate. AI can help accelerate the discovery, monitoring, and protection of biodiversity across our planet.
4. **Water**: In the next two decades, demand for fresh water is predicted to dramatically outpace supply. AI can help people model Earth's water supply to help us conserve and protect fresh water.

AI for Earth grants provide access to Microsoft resources to support projects that change the way people and organizations monitor, model, and manage Earth's natural systems. Microsoft can support projects in three ways:

1. Data Labeling Grants
2. Azure compute credits grants
3. Special Grants with partner organizations

See the AI for Earth website for more information.

*Proposal deadlines: January 6, 2020; April 6, 2020; July 6, 2020; October 5, 2020*

**DaCCoTA Community Engagement Clinical Translational Research (CTR) Scholars Program**

The DaCCoTA Professional Development Core has just released their request for applications (RFAs) for the DaCCoTA Community Engagement Clinical Translational Research (CTR) Scholars Program.

The DaCCoTA Community Engagement CTR Scholars Award is designed for early career investigators and provides 50% release time as well as up to $50,000 to support their research efforts. The application deadline is November 29th, 2019. You can visit the website for more information.

## RECENTLY FUNDED GRANTS

- Ravi Kiran Yellavajjala (PI). Acquisition of Global Navigation Satellite System to Prepare NDSU Students for Surveying Jobs. $33,574 from the NDSU Foundation and Alumni Association. 11/01/2019 – 01/01/2020.
- Anne Denton (CPI). NDSU EPSCoR Internal Funding – Seed Award. $4,744 from ND EPSCoR. 10/18/2019 – 05/31/2020.
- Trung Le (PI). NDSU EPSCoR Internal Funding – Seed Award. $10,000 from ND EPSCoR. 10/15/2019 – 05/31/2020.
- Fardad Azarmi (PI). NDSU EPSCoR Internal Funding – Seed Award. $10,000 from ND EPSCoR. 10/15/2019 – 05/31/2020.
- Houjun Yang (PI). NDSU EPSCoR Internal Funding – Seed Award. $10,000 from ND EPSCoR. 10/15/2019 – 05/31/2020.
- Trung (Tim) Le (PI). NDSU EPSCoR Internal Funding – Undergraduate Research. $4,944 from ND EPSCoR. 10/15/2019 – 05/31/2020.

## RECENTLY SUBMITTED PROPOSALS

- Wenjie Xia (PI), Long Jiang (CPI). Collaborative Research:  Machine Learning Guided Design of Polymer-Grafted Cellulose Nano composites to Approach Theoretical Limits of Mechanical Properties. $334,428 from the National Science Foundation. 07/01/2020 – 06/30/2023.
- Jordi Estevadeordal (PI). Experimental Investigation of Dynamic Stall by Effect of Sweep on a Pitching Finite-Aspect-Ratio Wing. $47,080 from the U.S. Air Force. 11/01/2019 – 01/15/2020.
- Nurun Nahar (PI), Kenneth Hellevang (CPI). Feasibility of Storing Soybeans in Commercial Grain Bags in North Dakota Climate. $33,402 from the ND Soybean Council. 07/01/2020 – 06/30/2021.

- Kenneth Hellevang (PI), Momono Ewumnua (CPI). Evaluating the Allowable Storage Time of Two Soybean Varieties at Two Moisture Levels at Typical Storage Temperatures. $34,875 from the ND Soybean Council. 07/01/2020 – 06/30/2021.
- Ademola Monsur Hammed (PI), Nurun Nahar (CPI), Xiangfa Wu (CPI). Development of bioengineering grade nanofibers using biochemical crosslinked soy biopolymers. $32,740 from the ND Soybean Council. 07/01/2020 – 06/30/2021.
- Nita Yodo (PI), David Grewell (CPI). Cost Effective Soy-Based Garden Pots. $65,192 from the ND Soybean Council. 07/01/2020 – 06/30/2021.

## RECENT PUBLICATIONS

*For 2019, 116 publications by authors with the College of Engineering affiliation have appeared in various journals, according to the ISI Web of Science and submissions from faculty. Here are some of the most recent publications:*

- Ahmadianfar, Iman, Mehdi Jamei, and Xuefeng Chu. n.d. "Prediction of Local Scour around Circular Piles under Waves Using a Novel Artificial Intelligence Approach." *Marine Georesources & Geotechnology*. https://doi.org/10.1080/1064119X.2019.1676335.
- Gros, Collin, and Jeremy Straub. 2019. "Video Recordings of Male Face and Neck Movements for Facial Recognition and Other Purposes." *Data* 4 (3): 130. https://doi.org/10.3390/data4030130.
- Hosseini-Farid, Mohammad, Mohammadreza Ramzanpour, Mariusz Ziejewski, and Ghodrat Karami. 2019. "A Compressible Hyper-Viscoelastic Material Constitutive Model for Human Brain Tissue and the Identification of Its Parameters." *International Journal of Non-Linear Mechanics* 116 (November): 147–54. https://doi.org/10.1016/j.ijnonlinmec.2019.06.008.
- Lyu, Xiaofeng, Yanchao Li, Na Ren, Chenhao Nan, Dong Cao, and Shuai Jiang. 2020. "Optimization of High-Density and High-Efficiency Switched-Tank Converter for Data Center Applications." *IEEE Transactions on Industrial Electronics* 67 (2): 1626–37. https://doi.org/10.1109/TIE.2019.2898589.
- Zhang, Fan, Majd F. Sakr, Kai Hwang, and Samee U. Khan. 2019. "Empirical Discovery of Power-Law Distribution in MapReduce Scalability." *IEEE Transactions on Cloud Computing* 7 (3): 744–55. https://doi.org/10.1109/TCC.2017.2669320.

See your name on this list? Help us get the word out about your amazing work by submitting it as a **Breakthrough Alert**. **This online form** is an easy, step-by-step guide for summarizing published research for the general public.

*College Happenings* is distributed to the NDSU College of Engineering staff and faculty every other Tuesday.

Read past issues of *College Happenings* here.

Deadline for submissions to *College Happenings* is 12:00 p.m. Fridays.

Contact kyle.bosch@ndsu.edu to submit items for *College Happenings.*

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