

CAREER Builders

Three faculty members receive prestigious NSF grants

Wednesday, July 6, 2022



Three UNH assistant professors have received prestigious Faculty Early Career Development Program, or CAREER, awards from the National Science Foundation. With the five-year grants, totaling \$2.6 million, the researchers aim to improve how algebra is taught, enhance a computer-based method of machine learning and understand soil microbes in thawing permafrost. The awards, to [Marek Petrik](#) of computer science, [Sheree Sharpe](#) of mathematics and statistics and [Jessica Ernakovich](#) of natural resources and the environment, have significant teaching and outreach components, providing experiences for undergraduate and graduate students to engage in the research.

The National Science Foundation describes its CAREER awards as its “most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.”

“We are so pleased for these faculty members, and we are looking forward to watching their discovery and innovation benefit our students and the state of New Hampshire as their careers continue to develop here at UNH,” says Marian McCord, senior

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vice provost for research, economic engagement and outreach.



SHEREE SHARPE. PHOTO BY BROOKS PAYETTE.

Sheree Sharpe, assistant professor of mathematics and statistics, will use her five-year, \$1 million CAREER grant to analyze existing research to better understand the generalizable themes of four constructs — parental

involvement, school climate, algebra teaching approach and student engagement — on algebra achievement for students in grades K through 12, while accounting for differences across socioeconomic status, gender and racial/ethnicity lines. Her goal is to use qualitative and quantitative meta-research to develop an Educational Learning Environment (ELE) framework and transform research into practice in K-12 mathematics education.

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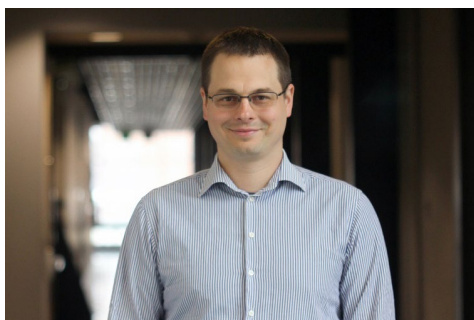
Jessica Ernakovich, assistant professor of natural resources and the environment, received a \$1.1 million CAREER award to continue her work building a research, teaching and outreach program focused on soil microbes in the



JESSICA ERNAKOVICH. PHOTO BY DAVID VOGT.

Arctic's permafrost. Ernakovich will study how the microbes behave as the permafrost thaws and how the rate of their consumption of organic matter, which has been stored in the vast layer of frozen soil for millennia, is impacting the emission of greenhouse gases into the atmosphere — a phenomenon, she says, that's little understood and could contribute significantly to

global warming. [Read more.](#)



MAREK PETRIK. PHOTO BY BROOKS PAYETTE.

With his \$575,866 CAREER award, **Marek Petrik**, an assistant professor of computer science, will address challenges related to applying reinforcement learning — a computer-based method that rewards

desired behaviors and punishes undesired ones — to real-world scenarios in which catastrophic failure is unacceptable. Petrik will conduct theoretical and algorithmic research with his UNH students and collaborators from academic institutions and industrial research labs. [Read more.](#)

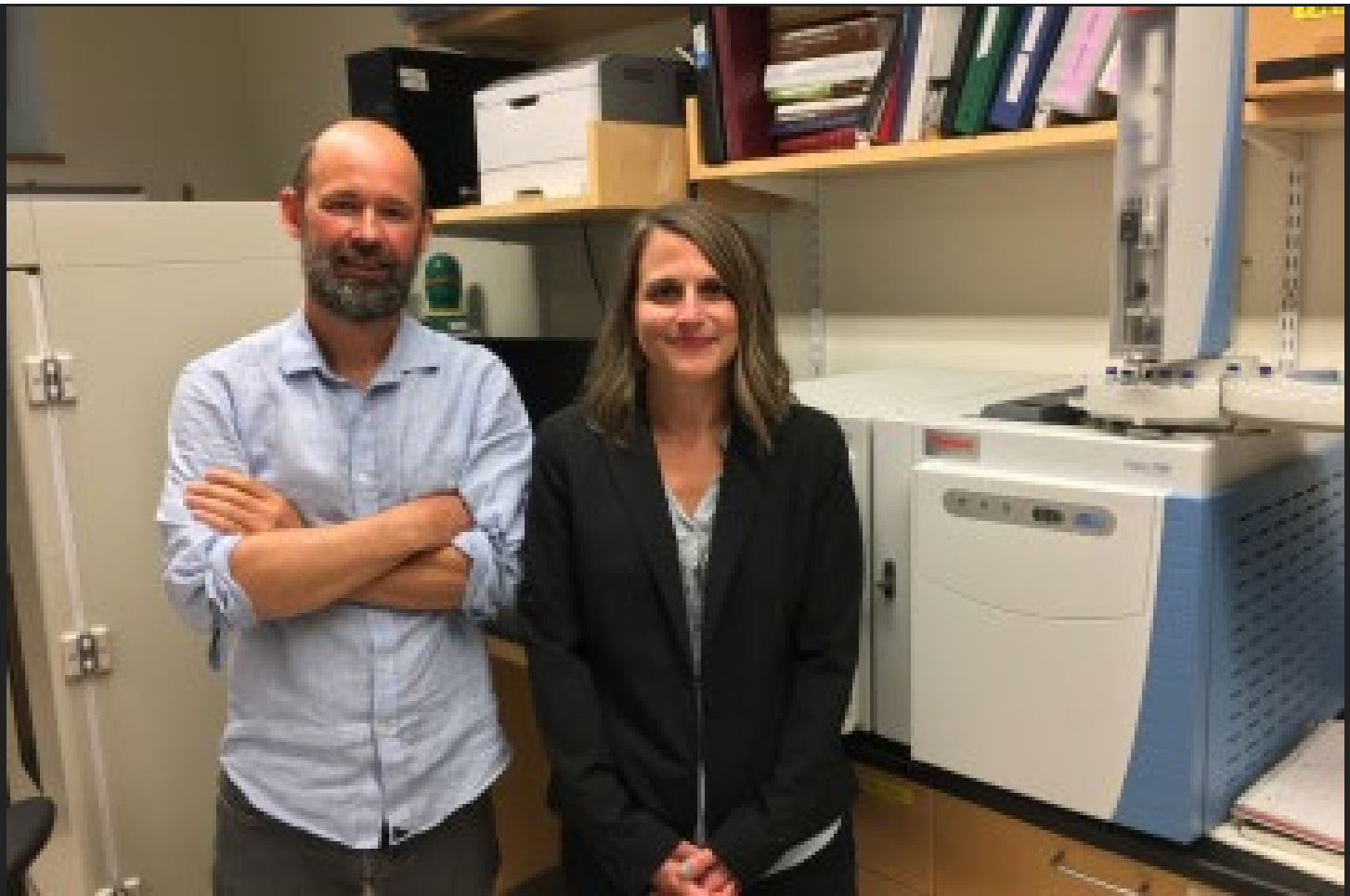
Since the NSF CAREER program began in 1995, 35 UNH faculty have received these awards. Eligible faculty interested in applying to the NSF CAREER program can contact the [UNH Office of Research and Large Center Development](#) for information and assistance.

WRITTEN [Beth Potier](#) | Communications and Public Affairs |

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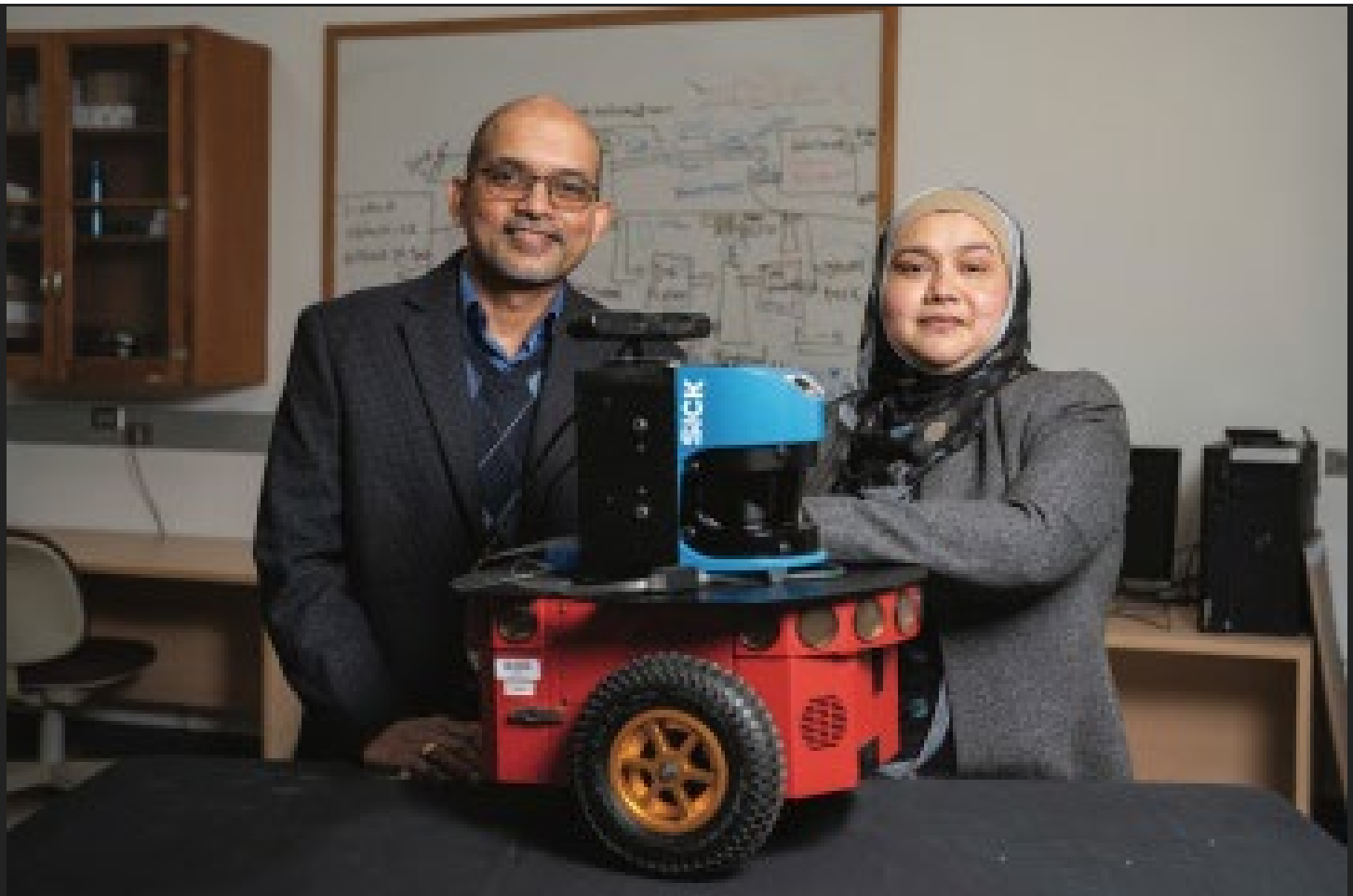
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