Distributed by UW News Service September 9, 2024

Link to original story: <https://www.uwec.edu/stories/uwec-student-researchers-use-ai-help-improve-medical-patient-care>

UWEC student researchers use AI to help improve medical patient care

**Story by UW-Eau Claire**

Computer science major Brayden Mau understands there is no margin for error in his student-faculty research into the use of artificial intelligence to provide Mayo Clinic Health System physicians with quicker and easier analysis of medical reports.

“These are patient diagnoses we are talking about,” says Mau, a third-year University of Wisconsin-Eau Claire student from Kimberly. “It’s real human lives we’re talking about.”

Mau and Blugold Alex Rolli are collaborating with Dr. Rahul Gomes, associate professor of computer science, and Mayo Clinic Health System professionals on an AI model to summarize and extract important information from lengthy colonoscopy reports. The project integrates AI into medical practice to save time and money while improving patient care.

The research started in February 2024 with an idea from Dr. Sushil Garg, a Mayo Clinic Health System gastroenterologist in Eau Claire who was looking for a way to free up physicians’ time as their workloads increase. Dr. Rajeev Chaudhry, director of AI and bioinformatics at Mayo Clinic Health System, was supportive of the research and “agreed it is an important problem that needs to be solved,” Garg says.

Blugolds Mau and Rolli used machine learning knowledge distillation techniques — compressing a large, complex model into a smaller, simpler model — to generate a condensed colonoscopy report with fewer parameters such as the number of polyps discovered. The document can highlight specific factors that could reduce the time spent poring over a full report to find the vital information needed for a patient diagnosis.

The undergraduate researchers are working to validate the accuracy and completeness of the model before developing a user interface that could be used by physicians and, one day, by patients.

“I was surprised at how they could follow instructions and execute them because the concepts of deep learning and large language models are pretty new,” Gomes says of the student researchers. “The fact that they started from scratch about what deep learning models are, they were pretty quick to grasp those concepts. They were pretty quick at figuring out how things can be done.”

Sarah Harper, operations manager for the Mayo Clinic Health System AI and biomedical informatics team, says the Blugold student researchers “really hit the ground running” to work on important issues for the healthcare organization.

“It’s been great for these physicians who have these innovative ideas but didn’t have access to that engineering expertise until Alex and Brayden came along to take their idea and translate it into reality,” Harper says. “I’m really proud to watch these two grow and make a meaningful difference in our community practice.”

Gomes calls the research “a very holistic experience that students are getting,” as undergraduates are mentored in deep learning by the UW-Eau Claire faculty member while Mayo Clinic Health System software engineers mentor them on best practices for integrating and optimizing the system safely and effectively.

The research experience has taught Mau how to take what he learns in his UW-Eau Claire classes and apply it to healthcare industry work. The research allows students to “get our hands dirty” and tackle real-life challenges, Mau says.

“I’ve learned how to create all these different things in class, but I had never really seen how they can be combined into one project, or how they can be used in different scenarios and adapted to what you need them to do,” Mau says. “It’s not really something you can teach in class. I feel like it’s a very important step in just learning more about the computer science field.”

Garg praised Mau for his intelligence and work ethic.

“I think Brayden Mau is a brilliant guy,” Garg says. “He’s a down-to-earth guy who just gets things done. I just tell him what I’m thinking and he can just translate it. I think the students getting UW-Eau Claire training have bright futures.”

Research projects that advance patient outcomes are at the core of the partnership between UW-Eau Claire and Mayo Clinic Health System, Gomes says.

“It’s a research experience but also we want to directly impact patients in a positive way,” Gomes says. “The students are getting to learn how to use an AI system to create these models, but at the same time they are working with software engineers to understand how it can be deployed in the real world.”