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Learning about learning, using machine learning

With the added stress of the COVID-19 pandemic and shift to virtual learning, students in the 2020-2021 academic year faced unique challenges in their first-year calculus experience, including not only struggle with mathematical concepts, but also with motivation, mental health, and access to resources. As part of a self-affirmation exercise, students in a large enrollment first-year calculus course were asked to highlight something they felt proud about at the end of the term. By leveraging techniques from natural language processing and machine learning, we used the results of this exercise to learn about the student experience. In this talk, I will discuss how n-grams and support vector machines were implemented in combination with qualitative coding to classify over 1600 student open-ended text responses into 7 broad themes, and how the insights gained from this process were used to support the next cohort of students in the course.