UROP in Categorical Information Theory

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Category theory is often considered a very abstract branch of mathematics, but it also has practical applications. In fact, there is a strong link between categories and databases, which allows real-world situations to be modeled using categories. Communication between disparate entities, each having a base of knowledge (category), can be maintained by functors.

This UROP project starts by understanding the fundamental connection between categories and information. There are many directions in which to proceed after that, depending on the students interest. These subjects range from theoretical to applied.

As for background, the student should have seen categories and functors before (though if the student is willing to do extra work, he or she can pick them up as we go), and preferably be excited about them. The student should also be hard-working, have a desire to learn, and be able to ask good questions.