Math 490 Capstone Weekly Report Week Number: 6

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My goals for this week were to:

1. Understand the Yoneda lemma.

2. Understand adjunctions.

3. Figure out how to TeX commutative diagrams and start adding them to the definitions.

I made the following progress on these:

Still hectic, but definitely making headway on the Yoneda lemma and adjunctions. I can now see how one could take a locally small category C and embed it in the functor category of presheaves on C, with each object in the source going to a presheaf that captures the set of morphisms from all other objects to that object in the target, and that sends a morphism in the source to a natural transformation between presheaves in the target. That's not a very good sentence, but it does make sense to me now.

I've also figured out how to TeX some basic diagrams, though I haven't added any to my notes yet.

I have the following questions and concerns I want to discuss with my capstone advisor:

The big question for me right now is "should I continue?" I've got five weeks left. With my outline and my bibliography done, that's five weeks to shore up my understanding of the concepts, add commutative diagrams to my definitions, and think about my presentation. Or it's five weeks to keep learning stuff.

Some tentative goals for the coming week are:

1. Finish my definitions and look them over for obvious typos and mistakes.

2. Add commutative diagrams to my definitions.

3. Figure out what's next: do I go big or do I take the easy win?