A vision for education: transforming how formal systems are taught within mass lectures by using pen technology to create a personalized learning environment.

Summary: This work-in-progress outlines both a key opportunity to understand the loss of STEM students as well as our vision for a transformative learning tool in development called Logic Sketch. Logic Sketch will use pen technology to provide a personal learning experience for every student in a mass lecture. It will monitor each student’s progress, and offer supplementary instruction and exercises that are specifically tailored to individual needs. By instilling a deeper understanding of how to work with formal systems, we expect to reduce math anxiety. This may aid in overcoming the problem of the underrepresented majority: the demographic that constitutes the majority of university students (females and non-white males) is underrepresented in STEM disciplines. The target demographic is over represented in mass lectures on logic. Thus, we are in a position to better understand a number of ill understood factors such as the extent to which math anxiety inhibits a student’s willingness to pursue a STEM degree.

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