1086-G5-1677 **Joshua J Thompson*** (joshthom@nmu.edu). *From Videos to Vectors: What if Ax=b meant Ax=Me?* Preliminary report.

We all know that students learn best when they are interested in and interact with the mathematics in front of them. Motivated by this we explore the successes and pitfalls of teaching a Linear Algebra course from the point of view that vectors are digital images, quite possibly one's own.

Given that a typical digital image is stored as a three-dimensional matrix of pixel values, we reshape a set of images into a set of vectors in R^n where n is quite large. Reframing vectors as images breathes new life into established notions of distance, norm and subspace. The class then computes which two students are most similar (or dissimilar) in appearance. Students literally see the effect of projecting one's own vector onto their classmates' subspace. Eigenfaces are computed which not only pique interest by their ghostly nature, but also reflect an active area of research in the image processing community. Interacting with the mathematics this way entices students to dive deeper into the theory because it is their own images in their hands. (Received September 24, 2012)