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Meel, David E.; Hern, Thomas A.

Tool building: web-based linear algebra modules.

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We present in this paper several interactive web-based tools for visually exploring various linear algebra concepts, tools that are not constrained by the requirement of owning particular software. By building these tools with JavaSketchpad, the only requirement for a user is a Java-enabled browser. In particular, we present three tools, GridMaster, Transformer2D, and Eigenizer, and a couple of bonus items for advanced linear algebra. Each of these tools permits students to interact with both algebraic and geometric representations of concepts such as change of bases, coordinate systems, linear transformations, eigenvalues, and eigenvectors. We include student reactions to enhance the discussion and identify the effects of using such tools as part of linear algebra explorations. (Authors' abstract)

Classification: H65 N85

Keywords: linear algebra; geometric visualization; linear transformation; eigenvalues; computer software; internet