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Measuring Visual Expertise in Fluid Dynamics[1]

JEAN HERTZBERG, TIM CURRAN, KATHERINE GOODMAN, University of Colorado, Boulder — What role does visual expertise play in the learning of abstract physics? In surveys for the Flow Visualization course at the University of Colorado, Boulder, students often commented positively about a new awareness of fluid dynamics in everyday life. Could this new awareness, termed visual expertise, be measured in some way? Working with research psychologists at CU Boulder, who had already been working in this area on projects such as face recognition, a study was developed. This study had subjects with no prior fluid dynamics expertise classify flow images as either turbulent or laminar. The first group was given *error-driven learning*; that is, they had to guess the correct category for each image, were given feedback as to whether they had guessed correctly, and after a period of training, were tested on both the training images and a set of similar but new images. A second group was given simple instruction for the training images; that is, they were shown the image along with the name of the correct category, before being tested on both training images and new images. Preliminary results of the pilot study are presented, along with next steps.

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