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| **Presenter** | **Sam Moore** |
| **Title** | **Number Representations and Precision in Vector Graphics** |
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| **Abstract** | Early document formats such as PostScript were motivated by a desire to print text and visual information onto a static paper medium.  Although documents are increasingly viewed digitally, modern standards including PDF and SVG are still largely based upon this model.  Digital document viewers are able to scale a subregion of the document to fit the display. However, coordinates of graphics primitives are  typically represented with IEEE-754 floating point numbers. This places limits on the precision with which primitives in the document can be specified and rendered.  We have implemented a minimal SVG viewer, with which we have compared a number of approaches to achieving arbitrary precision document formats. We demonstrate the trade off between performance and precision with alternative number representations including arbitrary precision floats, rationals, and IEEE-754 fixed precision floats. We also consider approaches to increasing the precision that can be attained with IEEE-754 floats. |
| **Degree** | Bachelor of Science (Physics) and Engineering (Mechatronics) |
| **Supervisors** | Prof. Tim French and Dr. Rowan Davies (School of Computer Science and Software Engineering) |
| **Work Experience** | Dec 2011 - Mar 2012 - Centre for Atomic and Molecular Surface Physics |