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# Information Science and Technology Seminar Speaker Series and Data Science at Scale Summer School Speaker Series

**Mike Kirby**
**University of Utah**

## Lessons from the Search For "Verifiable Visualizations"

**Wednesday, August 27, 2014**

**3:00 - 4:00 PM**

**TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)**

**Abstract:** Visualization is often employed as part of the simulation science pipeline. It is the window through which scientists examine their data for deriving new science, and the lens used to view modeling and discretization interactions within their simulations. We advocate that as a component of the simulation science pipeline, visualization itself must be explicitly considered as part of the Validation and Verification (V&V) process. In this talk, we define V&V in the context of computational science, discuss the role of V&V in the scientific process, and present arguments for the need for "verifiable visualization". Using paradigms expressed within the CS&E community, we will attempt to express what a common "V&V in V" language might look like. We will present three verification case studies applied to visualization: verification of geometric accuracy in the isosurface extraction process, verification of topological consistency in the isosurface extraction process, and verification of the volume rendering visualization pipeline. We conclude with some lessons learned in our search for "verifiable visualizations".

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The primary collaborators on this work are Dr. Tiago Etiene and Prof. Claudio Silva (NYU).

**Biography:** Robert M. (Mike) Kirby: Robert M. Kirby received the M.S. degree in applied mathematics, the M.S. degree in computer science, and the Ph.D. degree in applied mathematics from Brown University, Providence, RI, in 1999, 2001, and 2002, respectively. He was promoted and received tenure at Utah in 2008. During his 2008-2009 sabbatical year, he taught a Michaelmas term course in High-Performance Scientific Computing at the Cavendish Laboratory at Cambridge University, UK and for the academic year was the Leverhulme Visiting Professor of Aeronautics at Imperial College London, UK. He is currently a (Full) Professor of Computing and Associate Director with the School of Computing, University of Utah, Salt Lake City, where he is also an Adjunct Professor in the Departments of Bioengineering and Mathematics and a member of the Scientific Computing and Imaging Institute. His current research interests include scientific computing and visualization.

For more information contact the technical host Curt Canada, cvc@lanl.gov, 665-7453.

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