INM Research Report on Keith Andrews

by

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1   Details of Person

- **Full Name**:

  Keith Andrews

- **Current Affiliation**:

  Institute for Information Systems and Computer Media (IICM), Graz University of Technology, Austria [IICM, 2012].

- **Field(s) of Computer Science**

  Information visualisation, usability [IICM, 2012].

- **Highest Academic Degree**

  Where and what subject did the person study? (highest academic degree, if they studied at all)

  Keith Andrews did his PhD degree in Computer Science at Graz University of Technology [IICM, 2012].

2   Details of Papers

- **Most recent publication in IEEE Explore Digital Library**

  The most recent publication (paper) in the IEEE Explore digital library of which Keith Andrews is a (co-)author and which has at least 4 pages is Andrews [2002]:

  - **Author(s)**: Keith Andrews.
  - **Title of Paper**: Visual Exploration of Large Hierarchies with Information Pyramids.
  - **Where Published**: Proc. Sixth International Conference on Information Visualisation (IV'02), London, UK.
  - **Month and Year of Publication**: July 2002.
  - **Pages numbers**: 793–798.
  - **DOI**: doi:10.1109/IV.2002.1028871
  - **Number of pages**: 6.
  - **MD5 checksum of PDF**: D1ADF48AFA32BD13067C62FD526C2AC6

  [This is *not* actually my most recent paper in IEEE Explore, but assume for the purposes of this example that it is.]

- **Most recent publication in ACM Digital Library**

  The most recent publication (paper) in the ACM Digital Library of which Keith Andrews is a (co-)author, the publisher is ACM, and which has at least 4 pages is Andrews [2006]:

  - **Author(s)**: Keith Andrews.
  - **Title of Paper**: Evaluating Information Visualisations.
  - **Where Published**: Proc. AVI 2006 Workshop on BEyond time and errors: novel evaLuation methods for Information Visualization (BELIV'06).
  - **Month and Year of Publication**: May 2006.
  - **Pages numbers**: 1–5.
  - **DOI**: doi:10.1145/1168149.1168151
  - **Number of pages**: 5.
  - **MD5 checksum of PDF**: 75FA92FB4F895E09517AA700C916E2D9

  [This is *not* actually my most recent paper in ACM Digital Library, but assume for the purposes of this example that it is.]

3 Summary of Research Paper

This section summarises the paper "Visual Exploration of Large Hierarchies with Information Pyramids" by Keith Andrews [Andrews, 2002].

The paper describes a new technique to visualise hierarchical structures called *information pyramids*. The discussion of related work includes WebTOC, which uses expandable outline views like the traditional Windows Explorer. Tree maps and the more recent Market Maps are similar to information pyramids, in that they initially display the entire hierarchy. Tree maps do so by recursively partitioning 2d rectangles into smaller rectangles, whilst maintaining their relative proportions. The Hyperbolic browser uses a node-link layout in hyperbolic space. Cone trees and the File System Navigator are both similar to information pyramids in that they use 3d, but they rely on node-link layouts rather than inclusion to indicate the parent-child relationships.

Information pyramids is a new technique which relies on recursive partitioning of a plateau in 3d. As Andrews [2002, page 794] succinctly puts it:

> "The information pyramids approach utilises three dimensions to compactly visualise large hierarchies. A plateau represents the top of the hierarchy (or root of the tree). Other, smaller plateaus arranged on top of it represent its subtrees. Separate icons are used to represent non-subtree members of a node such as files or documents. The general impression is that of pyramids growing upwards as the hierarchy grows deeper."

The information pyramids technique has been implemented in two versions in Java. The 3D Explorer uses green pyramids and allows the user to freely explore the generated landscape. The more recent Java Pyramids Explorer uses a purple-shaded landscape which combines a traditional tree-view synchronised with a pyramids visualisation and restricts the user to zooming and some rotation in the pyramids view.

References

Andrews, Keith [2002]. "Visual Exploration of Large Hierarchies with Information Pyramids". In: *Proc. Sixth International Conference on Information Visualisation (IV'02)*. London, UK: IEEE Computer Society Press, July 2002, pages 793–798. doi:10.1109/IV.2002.1028871.

Andrews, Keith [2006]. "Evaluating Information Visualisations". In: *Proc. AVI 2006 Workshop on BEyond time and errors: novel evaLuation methods for Information Visualization (BELIV'06)*. Venice, Italy: ACM Press, May 2006, pages 1–5. ISBN 1595935622. doi:10.1145/1168149.1168151.

IICM [2012]. *Keith Andrews*. Institute for Information Processing and Computer-Supported New Media (IICM), Graz University of Technology, Austria. Oct. 29, 2012. http://www.iicm.tugraz.at/keith.