

# Tutorial Proposal for ITiCSE 2002

## **Title**

Collaborative Teaching and Learning of Object-Oriented Modelling using Ideogramic UML

## **Organizers**

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Klaus Marius Hansen has a M.Sc. in computer science from the University of Aarhus. He is currently pursuing a Ph.D. in the area of object-oriented modelling. He is also a product manager at Ideogramic ApS responsible for their UML products. His CV is online at <http://www.daimi.au.dk/~marius/who.html>.

Anne Vinter Ratzer is employed as a software designer at Ideogramic ApS. In her Master's thesis work from the University of Aarhus, she focussed on the use of design principles in advanced user interface design. She was previously employed on the CPN/2000 project (<http://www.daimi.au.dk/CPnets/CPN2000/>) that created an advanced Coloured Petri Net editor based on novel interaction techniques.

## **Category**

Half-day.

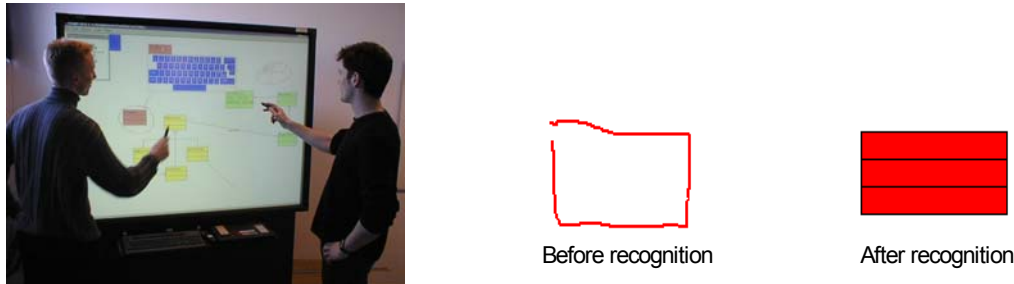
## **Tutorial Description**

Modelling enjoys a central position in object-oriented software development. Unfortunately, techniques for modelling, and the industry standard Unified Modelling Language (UML) in particular, have been criticized as being too complex in teaching situations. The tutorial will present a mixture of techniques for overcoming this complexity in teaching and learning UML modelling based on the use of the Ideogramic UML tool (<http://www.ideogramic.com/products/>) for gesture-based, collaborative modelling.

## **Overview**

The tutorial will discuss common problems with introducing object-oriented modelling. The presented teaching techniques and examples will make use of *Ideogramic UML*: a tool for collaborative and individual UML modelling. Its most effective use is on an electronic whiteboards (Figure 1, left), and it is operated using gestures drawn with a pen

or a mouse (Figure 1, right). Drawing a box, e.g., creates a class and drawing a line between two classes creates an association between those classes.



**Figure 1. Ideogrammic UML. Left: Collaborative Modelling. Right: Gesture Recognition**

Throughout the tutorial, we will discuss attack problems of *extent*, *complexity*, and *usability* of modelling notations by focussing on four types of teaching scenarios:

1. *Lecture use.* A lecturer explains modelling using Ideogrammic UML. As on an ordinary whiteboard there is a close connection between the lecturer's actions and the results of these actions.
2. *Peer instruction use.* Teaching assistants and students use Ideogrammic UML to present and develop solutions interactively.
3. *Peer group use.* Students use Ideogrammic UML when working in project groups, solving an exercise collaboratively.
4. *Individual use.* Ideogrammic UML is used on an ordinary PC as a modelling tool combined with all the scenarios above.

At the end of the tutorial, participants should have insight into collaborative teaching techniques for modelling, have ideas for exercises and assignments, and know how Ideogrammic UML can be used concretely to teach modelling.

Part of the tutorial will be hands-on experience with gesture-based modelling. The equipment needed for the set-up is relatively inexpensive: a projector, a desktop computer, and an electronic whiteboard. The electronic whiteboard consists of a device that can be attached to an ordinary whiteboard and it is available from a number of manufacturers such as tool-tribe ([www.tool-tribe.com](http://www.tool-tribe.com)), Mimio ([www.mimio.com](http://www.mimio.com)), and eBeam ([www.e-beam.com](http://www.e-beam.com)) with prices starting at 500 US\$. All participants are provided with free educational licenses for Ideogrammic UML.

### **Equipment Needed**

We will bring a projector, electronic whiteboard equipment, and laptop computers. The electronic whiteboard equipment needs to be attached to an ordinary whiteboard (at least 2 meters x 1,5 meters in size) and the projector needs to be able to be placed so that it can project onto the whiteboard.

### **Additional Information**

Ideogrammic UML: <http://www.ideogrammic.com/products/>.

Research background and related papers: <http://www.daimi.au.dk/~knight/>.