

# Tinmith Backpack 2006 and Outdoor Augmented Reality Applications

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## ABSTRACT

*This demonstration presents our latest mobile outdoor augmented reality system and applications that currently run on it. Our previous backpack designs were simple collections of commercial components arranged onto a frame, optimised for flexibility in changes rather than size. Our new design is made up of many custom components as well as highly modified commercial components to reduce its size, and is wearable using only a belt if desired. The new design uses technologies such as wireless to reduce size and weight, and user interfaces to configure the system when no input devices are available. We will demonstrate applications such as our Tinmith mobile outdoor augmented reality system and our ARQuake game.*

## 1 INTRODUCTION

In this demonstration, we will present the latest design of our mobile outdoor augmented reality (AR) system with head mounted display (HMD), the Tinmith Backpack 2006. This system has been designed from the ground up to be as small and light as possible, while including the highest performance components currently available. Our previous systems were designed for flexibility and experimentation, with various standard components arranged onto a frame with large cables and connectors. These older systems were similar in design to what other research groups have produced. Designs that allow flexible changes are prone to being quite large and bulky however, with much space lost to the cables, connectors, and cases. Recently, we have found that the components we have been using for our research have been static enough that we have been able to commit to a design that can be miniaturised. While there are a number of wearable computer systems that can be purchased which are quite small, they are not designed for high-end augmented reality applications that demand intensive graphics processing and integrated tracking, such as our Tinmith-Metro 3D modelling application.

During our demonstration, we will show the system running live to attendees at the conference. In the past we have demonstrated our older systems and attracted a large number of people during the demo sessions. Attendees will get to observe the system in use from external screens but also get to try out the system themselves. We will be demonstrating the Tinmith-Metro 3D modelling application that uses interactive gloves to create 3D geometry and control an AR system in real time, and the ARQuake game that allows users to play against computer generated monsters.

## 2 REQUIREMENTS

We will need a standard-sized demo area. We will bring all the equipment necessary and all we require is a single AC power point to plug our computers into. Most of our demo will be performed by a person wearing the computer so there is not a requirement for a large desk. A standard sized desk big enough to support some laptops and some paperwork would be sufficient. Our demo is fully self-contained and does not require network access or special environmental conditions.

## 3 MORE INFORMATION

More information about the lab is available from <http://wearables.unisa.edu.au> and <http://www.tinmith.net>

Specific videos about the backpack can be found at <http://www.tinmith.net/wayne/videos2006>



**Figure 1 – The current Tinmith Backpack 2006 design presented in this demonstration. All components are fully contained within either the belt-mounted main case or the helmet. Hot swappable batteries allow continuous operation.**