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Citation for published version

Kölling, Michael and Brown, Neil C.C. (2012) Teaching with Greenfoot and the Kinect – A Novel Way to Engage Beginners. In: SIGCSE 2012, March 2012, Raleigh, North Carolina, USA.

DOI

Link to record in KAR

<https://kar.kent.ac.uk/38982/>

Document Version

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Workshop title: Teaching with Greenfoot and the Kinect – A Novel Way to Engage Beginners

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ABSTRACT

The Microsoft Kinect is a sensor module that allows accurate tracking of humans moving in front of it. Greenfoot is an introductory Java programming environment that makes it easy to create animated graphical projects.

By combining Greenfoot and the Kinect students can write programs where the user's body is used for input. Users interact with games by waving their hands, jumping, running, dancing, These kinds of programs are incredibly good fun and engage target groups who would not normally be interested in programming.

The workshop is aimed at teachers of introductory programming courses (high school/university) who have some programming experience and want to incorporate new kinds of projects into their teaching. Laptop recommended but not required. Kinect hardware will be provided.

INTENDED AUDIENCE

The target audience is teachers of introductory programming courses. This specifically includes teachers at the high school level. The workshop is aimed at teachers who have a basic understanding of programming, ideally in Java, or a similar programming language.

The material in the workshop is suitable to allow teachers to convey generic programming concepts to their students. The workshop should be interesting to everyone who wants to teach fundamental programming principles using engaging examples.

PRESENTERS - SHORT BIO

Michael Kölling has many years of experience teaching and researching in the field of object orientation and the pedagogy of programming. He has published numerous papers, at SIGCSE and elsewhere, about computer science education, and especially the teaching of object orientation. Michael is also the lead developer of the BlueJ and Greenfoot environments and co-author of a successful introductory Java textbook. He is a Professor at the University of Kent, where he leads the Programming Education Technology Group.

Michael is a regular presenter of workshops and seminars, including workshops at past SIGCSE conferences. Past workshops have received highly positive feedback.

Neil Brown is a Research Associate in the Programming Education Technology Group at the University of Kent, working on design and implementation of the Greenfoot and BlueJ projects. Neil is an experienced presenter of workshops, including Greenfoot/Kinect workshops similar to the one proposed, with highly positive participant feedback. Neil is also the author of the Greenfoot/Kinect integration software.

MATERIALS PROVIDED

We will provide the Kinect hardware for the workshop. At the time of writing, we are not certain of the exact number of Kinect modules we can provide. We will have between 4 and 10 Kinect modules available for participants. (Participants will work in groups of 2 to 5 for the practical work, depending on numbers.)

We will also provide software (Greenfoot, Kinect driver software, and a Greenfoot Kinect library), detailed installation instructions and – if necessary – support for installation.

Further, each participant will receive:

- a handout including a summary of the main points presented;
- a copy of the presentation slides;
- API documentation for Greenfoot programming.

ROUGH AGENDA

- 1 INTRODUCTION (5 min)
- 2 DEMO: GREENFOOT / KINECT (15m)
- 3 SHORT INTRODUCTION TO GREENFOOT PROGRAMMING (10 min)
- 4 THE GREENFOOT KINECT API: a short introduction (5 min)
- 5 WRITING YOUR FIRST KINECT PROJECT – HANDS-ON (60 min)
- 6 REFLECTION / DISCUSSION (10 min)
- 7 DEVELOPING A SECOND KINECT PROJECT – HANDS-ON (60 min)
- 8 QUESTIONS/DISCUSSION/RESOURCES (15 min)

(Everything after the first 30 minutes is mostly hands-on practice.)

AV REQUIREMENTS

Data projector for presenter. Internet access (wireless or wired) for presenter. Power for participants' laptops and Kinect modules (more power sockets than participants!)

If possible: wireless internet access for participants.

SPACE AND ENROLLMENT RESTRICTIONS

Max 20 participants.

OTHER CRITICAL INFORMATION

We are in conversation with Microsoft about providing Kinect modules. We are hopeful that we will have one Kinect for every two participants. We also have 4 Kinect modules that we can bring in as backup. If we have only four Kinect modules, we would like to restrict participant numbers to 16.