

Extending the Next Generation Robot Laboratory to Increase Diversity in Undergraduate CS Programs

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Learning, Labor & Service



Maria Gini,
Department of Computer Science and Engineering,
University of Minnesota

Jan Pearce,
Department of Mathematics and Computer Science,
Berea College

Karen Sutherland,
Department of Computer Science,
Augsburg College

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Objectives:

- To increase confidence through hands-on programming experiences.
- To solve real-world and open-ended problems.
- To foster cooperation by working in groups.

Process:

We are developing programming modules designed to encourage undergraduates majoring in fields such as health professions, business, art, and education to take more computer science courses. The approach is centered around using the AIBO Sony robot dogs at the very beginning of the computer science curriculum.

Abstract

By developing new CS course materials starting at the very beginning of the curriculum, this collaborative project is designed to increase the interest of women and other underrepresented groups in studying Computer Science and to provide them with tools that will help throughout their undergraduate years. The course materials are based upon Pyro, an easy to use programming system for robots written in Python and are designed for multiple robotics platforms such as Sony AIBOs and eROSIs. eROSIs are an inexpensive but powerful miniature robotic platform developed at the University of Minnesota and which are being considered for the monitoring of highly sensitive areas of populations such as elderly or disabled patients in residential care.

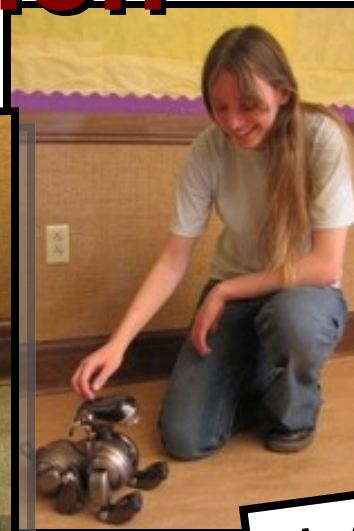


Institutions



The project team comes from three different types of institutions, so the materials created are being tested in different situations and should prove readily adaptable for a wide variety of educational environments.

Motivation



“Activities we have done over the last year using AIBOs with people of different ages, from elementary school to graduate students, and of different backgrounds, from computer illiterate to expert programmers, have shown consistently that people get engaged with the AIBOs in a way that is hard to duplicate with any other technology.”

Aims

- To place importance on the underlying design of algorithms regardless of programming language used.
- to increase student learning by reinforcing the concepts covered in class in a way very different from the usual lab assignment of writing small bits of code.
- To obtain feedback from the students on their reactions to working with the robots in this type of laboratory setting.



Sample

Steps:

- Learn about methods to assess ADHD. Find an expert to help you.
- Design a simple game using the AIBO around an existing method used to assess ADHD.
- Evaluate the game with someone not from your group.
- Ask an expert to give you feedback.

Topic: Include AIBO in an evaluative game to assess Attention Deficit Hyperactive Disorder (ADHD) in children.



Contacts and More Information

Maria Gini, gini@cs.umn.edu

Department of Computer Science and Engineering,
University of Minnesota

Jan Pearce, pearcej@berea.edu

Department of Mathematics and Computer Science,
Berea College

Karen Sutherland, suther@navigation.augsburg.edu

Department of Computer Science,
Augsburg College

“Using the Sony AIBOs to Increase Diversity in Undergraduate CS Programs,” M. Gini, J. Pearce, and K. Sutherland, to appear in the *Proc. of the Conference on Intelligent Autonomous Systems*, IAS-9, Japan, March 2006.

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