

Coach Mike

Virtual Human Museum Guide
2010-present

Summary

A National Science Foundation-funded collaboration between the University of Southern California Institute for Creative Technologies and the Boston Museum of Science, Coach Mike is a virtual human who “works” at the museum’s Robot Park exhibit teaching visitors how to program a robot. A recent evaluation conducted by the Institute for Learning Innovation found that Coach Mike’s presence in Robot Park leads to more productive interactions with the exhibit.

Background

Coach Mike was inspired by Professor Michael Horn at Northwestern University who created Robot Park so that museum visitors could have a fun and intuitive way to learn programming. Visitors to Robot Park who had the help of museum volunteers tended to stay longer and do more programming than those who did not have a guide. So, working with museum staff, ICT researchers built Coach Mike to simulate some of these interactions.

Technologies

A pedagogical manager acts as the hub by monitoring physical inputs from the exhibit, triggering virtual human actions, assessing user actions, and providing learning support. Coach Mike’s animations run on ICT’s SmartBody system and in the Gamebryo game engine. He speaks via synthesized speech.

Coach Mike uses the techniques of artificial intelligence to support visitors: he estimates their knowledge, can judge when programs are correct (or not), and is willing to give feedback and suggestions. Pedagogical decisions are driven by a rule-based cognitive model of coaching that models a frequently changing world state. Built to simulate museum staffs’ strategies, the model encodes a variety of tutoring and motivation tactics to orient people to the exhibit, encourage them to try new things, suggest specific problems, and give knowledge-based feedback on their programs. A general aim is to balance the importance of exploration and play with the goal of giving feedback and guidance for specific challenges. Coach Mike’s help is always delivered in entertaining and encouraging ways that seek to maximize visitor engagement.



At the University of Southern California Institute for Creative Technologies leaders in artificial intelligence, graphics, virtual reality and narrative advance low-cost immersive techniques and technologies to solve problems facing service members, students and society.