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Designing Games for Children with developmental disabilities in Ambient Intelligence Environments

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Abstract. This paper presents the design process and deployment of interactive games for children within an Ambient Intelligence (AmI) environment. Designing and creating games under the perspective of Ambient Intelligence has the potential to provide enhanced indoor playing experiences to children, as well as maintaining and expanding the applicability of each game as a tool in early intervention services such as preschool and special education. The developed games build on knowledge stemming from the processes and theories used in Occupational Therapy, are capable of monitoring and following the progress of each young player, adapt accordingly and provide important information regarding the abilities and skills of a child and his development over time. The design has been conducted in collaboration with occupational therapists so as to embed aspects of their work and therapeutic procedures.

Keywords: Ambient Intelligence, Interactive Games, Developmental Disorders, Early Intervention Services, Occupational Therapy

1 Introduction

Ambient Intelligence (AmI) refers to electronic environments that are sensitive and responsive to the presence of people. According to [1], the AmI paradigm builds upon pervasive computing, ubiquitous computing, profiling, context awareness, and human-centric interaction design. AmI environments offer opportunities that support the learning needs of children and integrate ICT into playing at home and schools in a variety of ways. [2]. A large number of ICT products is available to young children that incorporate interactivity as part of a move towards pervasive or ubiquitous computing in which technology blends into the environment and is not necessarily visible (e.g., [3], [4], [5], [6]).

Occupational Therapy (OT) is a client-centered health profession concerned with promoting health and well-being through occupation. Early Childhood occupational therapists (OTs) support and promote the development and engagement of infants, toddlers, and preschoolers, and their families or other caregivers, in everyday routines that include play, rest and sleep, activities of daily living, education, and social
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