SpaceGlue: Linking Spaces for Adaptive and Situational Service Location

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Abstract. We propose and describe a networking technology called SpaceGlue for locating, communicating with, and interacting with services/people in a ubiquitous computing environment. In SpaceGlue, service components are embedded in a local communication area called a *ubiquitous space* and collaboratively provide an application. A user can locate desired service components offered in the local space by sending a query within the space. To allow users to discover service components that match their preferences in remote spaces, SpaceGlue dynamically links or "glues" together different spaces based on relationships among spaces that are estimated from the behavior history of many users. For example, if many users often visit a cafe and theater on the same day, these two spaces creates bonds to each other, reflecting the strong relationship among them. This lets users in the theater discover services in the cafe. We propose an algorithm for manipulating bonds to enable adaptive service location. We designed and implemented SpaceGlue using a distributed service platform called Ja-Net and showed that SpaceGlue is useful for adaptively locating services through simulation.