ようこそNIIアイランドへ - the Global Lab

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実生活

セカンド・ライフ

...「セカンド・ライフ」上に作られたシミュレーション・実験プラットホームは、サイバースペースでの私たちの暮らし方－仮想世界でいかに意思疎通し、交流し、協力するか－を変えることができ、現実の世界を経験したり改善したりすることもできる。


緊急にお願い

NII

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This research proposes a novel type of test-bed and simulation environment for sensor-based applications which is multi-user capable and extensible by new simulators and provides a three dimensional interaction.

Our approach introduces a flexible architecture for an extensible test-bed for sensor-based applications. It employs Second Life to model an easily customizable three-dimensional environment with various interaction possibilities.

**Current approaches**
- Development and testing of new systems is realized in different ways, ranging from
  - real-world testing and
  - miniature mock-ups for prototyping to
  - software-based simulators.
- Some of the existing test-beds make use of simulators for the sensor devices to support the development.

**Drawbacks**
- Real-world testing requires significant resources and appropriate infrastructure
- Miniatures (e.g., made of wood or Lego) still rely on real sensors and have limitations in terms of fixed spatial structure and given equipment
- Software-based simulators so far are in two dimensions and not multi-user capable

To our knowledge, our contribution is the first to propose an easy-to-use architecture that allows developers of sensor-based systems to utilize existing systems and simulators in combination with the virtual environment of Second Life.

**3D interaction**
- The test-bed can be experienced immersively
- Anyone can interact with the environment in form of an avatar
- 3D content can be created easily
- Spatial characteristics of sensors and sensor networks can be modeled more accurately. These characteristics can also be visualized to identify problems and interferences,
- Sensor models and other objects can be moved easily and intuitively by ‘direct’ (avatar-mediated) manipulation, their parameters can also be changed by editing the object properties through the user interface of Second Life.

**Extensibility**
- New sensor types, such as temperature sensors, accelerometers, or light sensors, can be included.

**Additional features**
- ‘Bots’ can be programmed to simulate inhabitants of sensor-based environments
- Avatar behavior can be recorded and replayed