

Crane Control Using Real-Time Location Systems

A crane-control system that allows an operator to drive a crane with simple gestures

From the College of Mechanical Engineering at the Georgia Institute of Technology, Dr. William Singhose and Dr. Chen Chih Peng have explored methods to control cranes to avoid the issues relating to user difficulty when operating them. The technology developed from this research is a crane-control system that allows an operator to drive a crane with simple gestures, for example, by moving his or her hand in free space. One version of this method, which uses a handheld tag, has been implemented on an industrial bridge crane at the Georgia Institute of Technology. The controller uses a Real-Time Location System (RTLS) based on RFID technology to track the position of the tag, which is then used to drive the crane. In principle, any RTLS system that is capable of detecting operator gestures, be it by hand, head, or other body parts, could be used.

Summary Bullets

- Relatively simple technology
- Saves time that would be spent training operators
- Can be applied to existing cranes

Solution Advantages

- Relatively simple technology
- Saves time that would be spent training operators
- Can be applied to existing cranes
- Simplifies control of Payload Oscillation

Potential Commercial Applications

- Any crane application

Background and More Information

The payload oscillation, inherent to all cranes, makes it challenging for human operators to manipulate payloads quickly, accurately, and safely. Furthermore, typical crane-control interfaces require the operator to push buttons, depress levers, or move joysticks. These devices do not have an intuitive correspondence with the resulting crane motion. Therefore, the operator must undergo extensive training and practice to obtain proficiency in crane operation.

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IP Status

: US9132997

Publications

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Images

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