

SOFTWARE SECURITY IN INDUSTRIAL AUTOMATION

Measures against piracy and sabotage

Summarized under the heading “Industry 4.0“, technologies like robotics and software control of production facilities grow together and therefore call for additional security measures. The increased application of IT and a larger degree of interconnectedness make systems more vulnerable to manipulation. On top of that, companies need to protect the intellectual property applied in their systems. Methods whose security is comprehensible have the advantage that their security features can be publicly discussed which leads to greater transparency and inspires trust.

The demo “Software Security in Industrial Automation“ shows the protection of a robot control system. A tamper-resistant USB dongle is used as a hardware anchor to provide the necessary cryptographic mechanisms. The protected control system works only along with the dongle. If the dongle is missing, the software holds no value and does not work. The system and all components involved in the process are deactivated. Therefore, attackers cannot copy the software or analyse its internals making it more difficult to manipulate or sabotage the system. The monitor shows the interaction of the protected control software with the secure hardware.



The so-called software security measure BlurryBox® was developed by FZI, KIT and Wibu-Systems AG in the context of KASTEL, a competence centre for applied security technology. It placed first in the German Prize for IT-Security 2014. What is new is that the security measures follow Kerckhoffs’s principle: The security of the approach does not rely on it being kept secret, instead, only the cryptographic keys need to be protected. The software protection method is provably secure, therefore, its security features are comprehensible.



Furthermore, FZI and SCHUNK, a German manufacturing company, jointly develop software for mobile gripper systems in innovative service robotics components, for example the demonstrated 5-Finger Hand SVH or the high-performance powerball-arm LWA 4P.

CONTACT PERSON

Matthias Huber | mhuber@fzi.de | Phone +49 721 9654-666
Arne Rönnau | roennau@fzi.de | Phone +49 721 9654-228

ABOUT THE FZI

The FZI Research Center for Information Technology at the Karlsruhe Institute of Technology is a non-profit institution for applied research in information technology and technology transfer. Its task is to provide businesses and public institutions with the latest research findings in information technology. For more information visit: www.fzi.de