The growing demand for flexible and modular production and logistics systems increasingly requires methods and technologies to ensure reliable interaction with the environment. Such technologies can be served by fast and accurate vision sensor data analysis. Classical applications for image processing and computer vision in production and logistic systems, like defect detection or object recognition, are still focused in many fields of research. In real-world scenarios, complex algorithms are often limited by their computational complexity and related runtime. Graphical Processing Units (GPUs) have demonstrated great potential accelerating runtime intensive algorithms in many fields. However, their suitability and reliability in production and logistic systems have to be evaluated. Similar constraints also hold for other multi-core architectures like DSP or FPGA technologies.

Besides real-time requirements, costs for hardware and sensors play an important role. Current low-cost sensor techniques combining 2D and 3D information like Microsoft Kinect or ASUS Xtion PRO offer great potential in various fields of applications. This includes motion detection, tracking or identification of humans or logistic objects for surveillance or robotic tasks, as well as quality inspection combining texture and range images.

A major focus in production and logistic research is the paradigm of self-organization. Fulfilling the requirements for autonomous decision making, decentralized information gathering is a key factor. Smart Cameras equipped with an on-board computing facilities are able to acquire and directly interpret images in real-time. This opens a wide range of applications in production and logistic scenarios and networks.

In many complex networks pure camera hardware and image processing techniques are often not sufficient. This arises from various aspects, like occlusion, illumination conditions or costs. Therefore, information from different kinds of sensors (RFID, GPS, etc.) combined with image information are able to improve the reliability and profitability of future production and logistic systems.

The aim of this Special Issue is to establish new fields for real-time image processing and computer vision applications in production and logistic networks. This includes recent results from research and development in academia and industry with respect to real-time image processing with application-related algorithms and architectures.

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Submission should address topics that include, but are not limited to the following topics as related to production and logistics applications (P&L):

**Applications**

- Quality and Surface Inspection
- Bulk Handling
- Human-Machine Interaction
- Material Handling by Robots
- Security and Surveillance (in P&L)
- Localization, Tracking and Identification of Humans and Objects
- Multi-Sensor Systems
- Smart Warehouse by Vision
- Autonomous Vehicles (in P&L)
- Sign and Label Recognition
- Cyber Physical Systems (CPS)

**Algorithms**

- Abnormality and Defect Detection
- Object Recognition and Tracking
- Face and Gesture Recognition (for P&L)
- Sensor Data Fusion
- Camera Pose Estimation for Industrial Robots
- Model Fitting
- Registration and Segmentation
Platforms and Hardware

- GPU
- FPGA, ASIC, DSP
- Special Hardware Architectures (Raspberry Pi, Pandaboard, etc.)
- Cross-Platform Applications
- Smart Cameras
- Low-Cost Sensors
- Smart Phones

Important Dates

Submission of full-length papers: **15.06.2013**
Notification of initial editorial decisions: 15.7.2013
Submission of revised papers: 15.09.2013
Notification of final editorial decisions: 01.12.2013

Publication of special issue papers will occur online first through Springer Online-First soon after acceptance notification, return of copyright form and proof-read corrections while the print version will appear later depending on the number of previously accepted papers in the production pipeline.

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