Novelty detection of foreign objects in food using multi-modal X-ray imaging - DTU Orbit (03/11/2018)

**Novelty detection of foreign objects in food using multi-modal X-ray imaging**

In this paper we demonstrate a method for novelty detection of foreign objects in food products using grating-based multimodal X-ray imaging. With this imaging technique three modalities are available with pixel correspondence, enhancing organic materials such as wood chips, insects and soft plastics not detectable by conventional X-ray absorption radiography. We conduct experiments, where several food products are imaged with common foreign objects typically found in the food processing industry. To evaluate the benefit from using this multi-contrast X-ray technique over conventional X-ray absorption imaging, a novelty detection scheme based on well known image- and statistical analysis techniques is proposed. The results show that the presented method gives superior recognition results and highlights the advantage of grating-based imaging.

**General information**

State: Published
Organisations: Department of Applied Mathematics and Computer Science, Image Analysis & Computer Graphics, Statistics and Data Analysis, Technische Universität München
Contributors: Einarsdottir, H., Emerson, M. J., Clemmensen, L. K. H., Scherer, K., Willer, K., Bech, M., Larsen, R., Ersbøll, B. K., Pfeiffer, F.
Pages: 39-47
Publication date: 2016
Peer-reviewed: Yes

**Publication information**

Journal: Food Control
Volume: 67
Issue number: September
ISSN (Print): 0956-7135
Ratings:
  BFI (2018): BFI-level 1
  Web of Science (2018): Indexed yes
  BFI (2017): BFI-level 1
  Scopus rating (2017): CiteScore 4.06 SJR 1.502 SNIP 1.69
  Web of Science (2017): Impact factor 3.667
  Web of Science (2017): Indexed yes
  BFI (2016): BFI-level 1
  Scopus rating (2016): CiteScore 3.86 SJR 1.492 SNIP 1.709
  Web of Science (2016): Impact factor 3.496
  Web of Science (2016): Indexed yes
  BFI (2015): BFI-level 1
  Scopus rating (2015): CiteScore 3.65 SJR 1.498 SNIP 1.73
  Web of Science (2015): Indexed yes
  BFI (2014): BFI-level 1
  Scopus rating (2014): CiteScore 3.27 SJR 1.38 SNIP 1.717
  Web of Science (2014): Impact factor 2.806
  Web of Science (2014): Indexed yes
  BFI (2013): BFI-level 1
  Scopus rating (2013): CiteScore 3.14 SJR 1.278 SNIP 1.728
  Web of Science (2013): Impact factor 2.819
  ISI indexed (2013): ISI indexed yes
  Web of Science (2013): Indexed yes
  BFI (2012): BFI-level 1
  Scopus rating (2012): CiteScore 3.1 SJR 1.245 SNIP 1.931
  Web of Science (2012): Impact factor 2.738
  ISI indexed (2012): ISI indexed yes
  Web of Science (2012): Indexed yes
  BFI (2011): BFI-level 1
  Scopus rating (2011): CiteScore 2.9 SJR 1.209 SNIP 1.723