基于多传感器融合的鸡蛋裂纹系统性识别　Systematic Recognition Research of Egg Crack　Based on Multi-sensor Fusion

刘鹏 屠康 潘磊庆 刘明 詹歌

南京农业大学

关键词：　　鸡蛋 裂纹 支持向量机 判别模型 多传感器融合

摘　要：　　通过图像分析、敲击振动和电子鼻3种传感器分别输出与鸡蛋外部常规裂纹、外部细小裂纹和内部裂纹有关的无损检测参数并进行实验，设计一组针对鸡蛋裂纹程度的支持向量机判据。用该判据并结合实验数据构建一对多的支持向量数为4的鸡蛋裂纹判别模型。模型性能参数（模型拟合度为0.9735，收敛误差在0.0001以内）和验证性实验（对确定的5种裂纹状态判别准确率均可达90%）表明该模型具有可信的结构和较好的判别能力。The egg crack detection is one of the most important parts in the non-destructive detection of egg. The non-destructive testing parameters related the egg's external conventional cracks, the external minimal cracks and internal cracks were extracted through image analysis, impact excitation frequency analysis and electronic nose pattern recognition respectively. A non-destructive testing criterion was designed according to the eggs　cracks based on experimental research. The criterion was used to build the 'one-to-many　support vector discriminated model in eggs　crack combined with experiment data. Performance parameters of the model (the model fitting degree was 0.973　5, the convergence error was less than 0.000　1) and the confirmatory test (the discriminated accuracy in the five cracks status was more than 90%) indicates that the model has credible structure and good discriminated ability.

查看全文（请使用Adobe Acrobat 6.0版本浏览）　返回首页　引用本文