

[1]余建星,田佳,谭振东.深水平台施工过程中自然风险定量评估[J].自然灾害学报,2007,01:113-118.

YU Jian-xing, TIAN Jia, TAN Zhen-dong. Quantitative risk evaluation of natural disasters in construction of deepwater platform [J]., 2007, 01: 113-118.



深水平台施工过程中自然风险定量评估 (PDF)

《自然灾害学报》[ISSN:/CN:23-1324/X] 期数: 2007年01期 页码: 113-118 栏目: 出版日期: 1900-01-01

Title: Quantitative risk evaluation of natural disasters in construction of deepwater platform

作者: [余建星](#); [田佳](#); [谭振东](#)
天津大学建筑工程学院/港口与海洋天津市重点实验室 天津300072

Author(s): [YU Jian-xing](#); [TIAN Jia](#); [TAN Zhen-dong](#)
Tianjin Key Laboratory of Harbor and Ocean/School of Civil Engineering, Tianjin University, Tianjin 300072, China

关键词: [海洋工程](#); [海洋灾害](#); [风险概率](#); [BP神经网络](#); [Levenberg-Marquardt算法](#)

Keywords: [oceanographic engineering](#); [marine disaster](#); [risk probability](#); [BP neural network](#); [Levenberg-Marquardt algorithm](#)

分类号: P75

DOI: -

文献标识码: -

摘要: 在分析现有风险理论的基础上,结合海洋施工实际,提出了一种对海洋施工自然风险进行定量评估的模型。根据目标系统各风险事件与影响因素之间存在高度非线性复杂映射的特点,提出了利用BP神经网络拟合方法,对主要风险事件发生概率进行量化的模型。针对传统的梯度下降优化算法收敛速度慢的特点,采用可避免计算Hesse矩阵的Levenberg-Marquardt算法来训练神经网络。这一模型可以模拟专家评价,并准确地按照专家的评定法则进行估算,具有一定的通用性。

Abstract: Based on the existing risk theory and combined with the practice of oceanic construction, this paper introduced a new model for quantitative assessment of natural risk in oceanic construction. To deal with the complex nonlinear mapping between the risk events and their influencing factors, the BP neural network simulation was applied to quantifying the risk probability of each risk event. Because of slow speed of the traditional arithmetic for training the network, a new numerical optimization technique was used to accelerate the convergence of the backpropagation. And the Levenberg-Marquardt iteration, which can avoid to compute Hessian matrix, is adopted as the learning rule to train the samples of this feed forward network. This model, practically universal in this field, can simulate experts' estimates and calculate the risk probability according to standard rules of assessment.

导航/NAVIGATE

[本期目录/Table of Contents](#)

[下一篇/Next Article](#)

[上一篇/Previous Article](#)

工具/TOOLS

[引用本文的文章/References](#)

[下载 PDF/Download PDF\(1184KB\)](#)

[立即打印本文/Print Now](#)

[推荐给朋友/Recommend](#)

统计/STATISTICS

摘要浏览/Viewed 42

全文下载/Downloads 23

[评论/Comments](#)



- [1] 余建星,李成.主成分分析法在海洋工程系统风险分析中的应用[J].海洋技术,2003,(3):76-80.
- [2] 张圣坤,白勇,唐文勇.船舶与海洋工程风险评估[M].北京:国防工业出版社,2003.
- [3] 刘普寅,吴孟达.模糊理论及其应用[M].长沙:国防科技大学出版社,1998.
- [4] 昃文涛,陈万金.企业事故损失计算方法的研究[J].排灌机械,1999,(2):56-60.
- [5] Yu Jianxing,Tan Zhendong.Application of Risk Probability Evaluation Method to Offshore Platform Construction[J].Transactions of Tianjin University.2005,(4):303-307.
- [6] 闻新,周露,李翔,等.MATLAB神经网络仿真与应用[M].北京:科学出版社,2003.
- [7] Matine T Hagan,Howard B Demuth,Mark Beale.Neural Network Design[M].Beijing:China Machine Press,2002.
- [8] 李士勇.模糊控制、神经控制和智能控制论[M].哈尔滨:哈尔滨工业大学出版社,1996.

备注/Memo: 收稿日期:2006-12-8;改回日期:2007-1-5。

基金项目:国家自然科学基金资助项目(50579047);教育部博士总基金项目(20030056045)

作者简介:余建星(1958-),男,教授,主要从事大型工程结构可靠性与风险评估研究.E-mail:yjx2000@eyou.com
