

Running support system of the urgent vehicle which utilized ITS and a study of the most suitable placement of a fire department

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2003 Fiscal Year Final Research Report Summary

Running support system of the urgent vehicle which utilized ITS and a study of the most suitable placement of a fire department

Research Project

Project/Area Number

14350276

Research Category

Grant-in-Aid for Scientific Research (B)

Allocation Type

Single-year Grants

Section

一般

Research Field

交通工学・国土計画

Research Institution

KANAZAWA University

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2002 – 2003

Keywords

Reliability of travel time / Uncertainty of travel time / Fire spreaded simulation / An urgent vehicle(a fire engine / an ambulance) / A road network at the time of a disaster / Pelri-net simulation / 同時多発型火災

Research Abstract

In this study, we developed the system which predicted outbreak of a simultaneous frequent occurrence fire and the situation of spread of a fire. In addition, we evaluated access characteristics of an emergency vehicle at the time of an earthquake disaster, and having considered the allocation of cars of an urgent vehicle(a fire fighting pump car, an ambulance) of each fire department place by reliability analysis of a road network.

We developed the system which predicted the area where an access characteristic of an urgent vehicle for a road network of normal time(in normal) was low by using the reliability analysis system. And we predicted how a road network was damaged at the time of an earthquake disaster and developed the model in order to built a road network. But, about the prediction model of a refuge traffic action, we built a system with a multi-agent of adaptation model. We developed the model that predicted how it occurred and how spread with time where a simultaneous frequent occurrence fire at the time of an earthquake occurred.

We get possible to calculate the area where a fire fighting vehicle must arrive at early by utilizing an above system. We developed a traffic micro-simulation system with Petri-net simulator to run a general vehicle and a first aid vehicle at the time of an earthquake disaster.

Research Products (36 results)

AllOther

AllPublications

[Publications] 高山純一, 田中悠祐, 中山晶一郎: "救急車の走行時間信頼性からみた救急力評価に関する研究"土木計画学研究・論文集. Vol.19. 237-244 (2002) ▼

[Publications] Nakayama, S., J.Takayama, Y.Yamashita: "Application of Neural Networks to Discrete Choice Behavior Analysis in Transportation Engineering" To be presented at joint the 1st ICSC and IS and the 3rd IS on Advanced Intelligent Systems. (2002) ▼

[Publications] Takayama, J., S.Nakayama: "A Transportation Network Simulation Model with Absorbing Markov Process OD Estimation." Proceedings of the International Symposium on Transport Simulation. 171-181 (2002) ▼

[Publications] 木俣昇, 西村武敏: "バス交通流シミュレーションへのペトリネットシミュレータの適用化研究"土木計画学研究・論文集. Vol.19. 793-802 (2002) ▼

[Publications] 二神透, 木俣昇: "ペトリネットシミュレータの避難シミュレーションへの適用化研究"土木計画学研究・講演集. 26巻(CD-ROM版). no.330 (2002) ▼

[Publications] 柳沢吉保, 高山純一, 内蔵学: "緊急情報による迂回経路の選択行動分析と誘導効果指標の提案"土木計画学研究・講演集. 26巻(CD-ROM版). no.186 (2002) ▼

[Publications] 柳沢吉保, 高山純一, 内蔵学: "緊急情報による迂回経路への誘導効果に関する分析評価システム"交通工学研究発表会論文報告集. Vol.22. 189-195 (2002) ▼

[Publications] 中山晶一郎, 高山純一, 笠島崇弘: "旅行時間の不確実性を考慮した交通ネットワーク均衡:二項分布とポアソン分布を用いた確率ネットワーク均衡モデル"土木計画学研究発表会・講演集. 第26巻(CD-ROM版). no.71 (2002) ▼

[Publications] 高山純一, 中山晶一郎, 小松孝輝, 加藤千宗: "高速道路における通行止発生時のドライバーの行動分析と最適迂回路情報に関する研究"交通工学研究発表会論文報告集. Vol.22. 177-180 (2002) ▼

[Publications] 中山晶一郎, 高山純一, 佐藤達生: "マルチエージェントによる道路交通システムの動的分析:10D2リンクネットワークを例に"土木計画学研究・講演集. 第27巻(CD-ROM版). no.206 (2003) ▼

[Publications] 中山晶一郎, 高山純一: "リンク交通量間の相関を考慮した交通ネットワーク分析におけるパラメータ推定法:ポアソン確率ネットワーク均衡を用いて"土木計画学研究・講演集. 第28巻(CD-ROM版). no.284 (2003) ▼

[Publications] 中山晶一郎, 高山純一, 長尾一輝: "正規分布に従う交通量を持つ交通ネットワーク均衡モデル"土木計画学研究・講演集. 第28巻(CD-ROM版). no.285 (2003) ▼

[Publications] 柳沢吉保, 高山純一, 繁野祐治: "緊急情報による迂回経路への誘導効果に関する分析評価システムの開発"長野工業高等専門学校紀要. Vol.37. 83-90 (2003) ▼

[Publications] 二神透, 木俣昇: "倒壊建物と炎上車両を考慮した地震火災危険分析"土木計画学研究・講演集. 第28巻(CD-ROM版). no.150 (2003) ▼

[Publications] 中川周郎, 二神透, 柏谷増男: "ブローブ・ピークルを用いた中山間地域の道路ネットワーク作成に関する研究"土木計画学研究・講演集. 第28巻(CD-ROM版). no.152 (2003) ▼

[Publications] 木俣昇, 松井竜太郎: "背景画像上でのバス交通計画のペトリネットシミュレーション技術"土木情報利用技術論文集. Vol.12. 207-216 (2003) ▼

[Publications] 木俣昇, 中村彰彦: "社会基盤の風土イメージ形成評価支援のための動的彩色型ペトリネットシミュレータ研究"土木情報利用技術論文集. Vol.12. 245-256 (2003) ▼

[Publications] 佐々木麻衣, 木俣昇, 境野庄司, 大我晴敏: "土地可燃性評価情報の地図化システムの改善"土木情報システム講演集. Vol.27. 21-24 (2002) ▼

[Publications] Jun-ichi Takayama, Yusuke Tanaka, Shoichiro Nakayama: "A Study on the Travel Time Reliability of Emergency Vehicles for Serious Patients -The Case of Kanazawa City"Infrastructure Planning Review. Vol.19. 237-244 (2002) ▼

[Publications] Nakayama, S., J.Takayama, Y.Yamashita: "Application of Neural Networks to Discrete Choice Behavior Analysis in Transportation Engineering"Presented at joint the 1st ICSC and IS and the 3rd IS on Advanced Intelligent Systems. (CD-ROM). (2002)

[Publications] Takayama, J., S.Nakayama: "A Transportation Network Simulation Model with Absorbing Markov Process OD Estimation."Proceedings of the International Symposium on Transport Simulation. 171-181 (2002)

[Publications] Noboru Kimata, Taketoshi Nishimura, Issei Yotsufuji: "Application Study of Petri-Net Simulator to Bus Traffic Simulation"Infrastructure Planning Review. Vol.19. 793-802 (2002)

[Publications] T.Futagami, N.Kimata: "Application Study of Petri Net Simulator for Human Evacuation Behavior Simulation"Proceedings of Infrastructure Planning. Vol.26(CD-ROM no.330). (2002)

[Publications] Yoshiyasu Yanagisawa, Jun-ichi Takayama, Manabu Uchikura: "Performance Analysis and Estimating the Effect of Dynamic Route Guidance Sysytem"Proceedings of Infrastructure Planning. Vol.26(CD-ROM no.186). (2002)

[Publications] Yoshiyasu Yanagisawa, Jun-ichi Takayama, Manabu Uchikura: "Performance Analysis of Dynamic Route Guidance Sysytem with Accident Information"Proceedings of the 22nd Annual Meeting of Japan Society of Traffic Engineers. Vol.22. 189-192 (2002)

[Publications] Shoichiro Nakayama, Jun-ichi Takayama, Takahiro Kasajima: "A Stochastic Network Equilibrium Model Considering Travel Time Uncertainty"Proceedings of Infrastructure Planning. Vol.26(CD-ROM no.71). (2002)

[Publications] J.Takayama, S.Nakayama, K.Komatu, Y.Katou: "A Study on driver behavior analysis and optimum detour information in the case of expressway closure"Proceedings of the 22nd Annual Meeting of Japan Society of Traffic Engineers. Vol.22. 177-180 (2002)

[Publications] Shoichiro Nakayama, Jun-ichi Takayama, Tatsuo Sato: "A Dynamical Analysis on Road Transportation Systems with Multi-Agent Simulations : The Case of a 1 OD 2 Link Network"Proceedings of Infrastructure Planning. Vol.27(CD-ROM no.206). (2003)

[Publications] Shoichiro Nakayama, Jun-ichi Takayama: "A Parameter Estimation Method for Traffic Equilibrium Analysis Considering Links' Correlations : Use of Stochastic User Equilibrium with Poisson Flows"Proceedings of Infrastructure Planning. Vol.28(CD-ROM no.284). (2003)

[Publications] Shoichiro Nakayama, Jun-ichi Takayama, Kazuki Nagao: "A Stochastic Network Equilibrium Model with Gaussian Flows"Proceedings of Infrastructure Planning. Vol.28(CD-ROM no.285). (2003)

[Publications] Yoshiyasu Yanagisawa, Jun-ichi Takayama, Yu-ji Shigeno: "Development of Detour Route Guidance Sysytem when Accident Information is Available"Memoirs of Nagano National College of Technology. Vol.37. 83-90 (2003)

[Publications] T.Futagami, N.Kimata: "Analysis of Fire Risk considering Collapsed Structures and Automobiles under a Great Earthquake"Proceedings of Infrastructure Planning. Vol.28(CD-ROM no.150). (2003)

[Publications] S.Nakagawa, M.Kashiwadani, T.Futagami: "A Study on Planning against Disaster with Probe-Vehicle in Intermediate and Mountainous Area"Proceedings of Infrastructure Planning. Vol.28(CD-ROM no.152). (2003)

[Publications] Noboru Kimata, Ryutaro Matsui: "Development of Bus Traffic Alternative Simulation on Its background Image by Petri Net Simulator"Journal of Civil Engineering Information Processing System in 2003. Vol.12. 207-216 (2003)

[Publications] Noboru Kimata, Akihiko Nakamura: "Study on Dynamic Colored Petri-net Simulator for Evaluation Support System of Infrastructure Planning from Regional Climate Creation Viewpoint"Journal of Civil Engineering Information Processing System in 2003. Vol.12. 245-256 (2003)

[Publications] Mai Sasaki, Noboru Kimata, etc: "Improvement of Information Mapping System for Regional Vulnerability to Fire Spreading"Proceedings of the 27^<th> symposium on Civil Engineering Information Processing System. Vol.27. 21-24 (2002)

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