POSITION ANNOUNCEMENT

Postdoctoral Scholar

Salary Range: $3,838 - $5,335 per month

THE INSTITUTE OF TRANSPORTATION STUDIES, UNIVERSITY OF CALIFORNIA, IRVINE invites applications for two post-doctoral positions in INTELLIGENT TRANSPORTATION SYSTEMS (ITS). The appointments are to be within the Postdoctoral Scholar series; salary will be determined based on capabilities and experience. The anticipated starting date of the positions is 1 January 2004; the appointments will be for six months, with the possibility of renewal pending the availability of funding for the positions.

Position 1: The Postdoctoral Scholar will hold the primary responsibility for the research development of a self-organizing, distributed traffic information system based upon vehicle-to-vehicle communication technologies. The research involves utilizing a simulation framework based on the Paramics microscopic traffic simulation model to examine critical questions related to communication requirements and traffic engineering benefits. Specifically, the research will test new mathematical formulations used to model traffic information propagation both in freeway and arterial networks via information exchange among vehicles capable of inter-vehicle communication (IVC) within the simulation framework. Results on IVC success probability, IVC bandwidth/data rate and traffic information propagation distance obtained from the simulation studies are to be generated and analyzed under incident-free and incident conditions for various roadway formats and parameter combinations. The Postdoctoral Scholar will be responsible for providing research, guidance and evaluation for simulation studies relative to the traffic modeling and microsimulation activities associated with this project. Candidates for the position should have demonstrated capabilities in the following areas: stochastic network analysis, traffic microsimulation, applied mathematics and computation focusing on transportation. A strong interest in the application of advanced computing and numerical techniques toward real-world problem-solving is required. A Ph.D. in one of the following fields is required: Transportation Engineering, Electrical Engineering, Computer Engineering/Science, or Civil Engineering.

Position 2: The Postdoctoral Scholar will hold the primary responsibility for the research development of an integrated traffic control strategy for corridor networks based on real-time adaptive control and an imbedded travel demand model. The research will build upon a recently-proposed Mixed Integer Model
(MIM) emanating from the theory of mathematical logic and will culminate in an application of the control strategy on an existing corridor network. The research will involve a logic-based formulation for the control strategy model that can be used for the development of a specially-tailored branch-and-bound algorithm for the problem of optimal signal control. The solutions are to be analyzed relative to the effectiveness, adaptability, and versatility of the control strategy as applied to a dual ring, 8-phase, variable cycle controller, as well as the quality of the decisions ordered by solving an optimal signal control problem. The Postdoctoral Scholar will be responsible for providing research, guidance and evaluation for the traffic modeling and theoretical development activities associated with this project. Candidates for the position should have demonstrated capabilities in the following areas: optimal control, stochastic network analysis, demand modeling, traffic microsimulation, applied mathematics and computation focusing on transportation. A Ph.D. in one of the following fields is required: Transportation Engineering, Operations Research, Computer Engineering/Science, or Civil Engineering.

The positions will be filled as soon as an appropriate candidate is identified; evaluation of candidates will begin immediately. Please submit a complete resume with at least three references by November 30, 2004 to Professor Will Recker, Director, Institute of Transportation Studies, University of California, Irvine, CA 92697-3600.

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