Claims

1. A traffic signal control system comprising multiple agents for controlling a plurality of signal junctions, an agent comprising one or more traffic signals at each signal junction to provide local control at each junction where a traffic light is positioned; the system comprising:

a signal group oriented multi-agent control ~~scheme~~ system, each agent adapted to operate independently and ~~represents~~ representing one or more traffic signals at a signal junction;

means for each agent for determining traffic conditions at its signal junction and traffic conditions of neighbouring agents; and

means for applying fuzzy logic in signal control operations, wherein the signal control operation is based on traffic conditions at each agent and one or more neighbouring agents, such that the control operation is distributed to each agent to control each of said plurality of signal junctions; and characterised in that the fuzzy logic is based on a real-time model of the traffic situation at each of said plurality of signal junctions, wherein the modelling represents the current traffic state of each junction; and wherein the real-time modelling data comprises visual data and numeric data at each junction being transmitted to a remote server, wherein the server further comprises means for translating the visual data and numeric data into a 2D or 3D real time model of the traffic at the junction.

2. The traffic signal control system as claimed in claim 1 wherein each agent comprises means for calculating relevant queues and approaching vehicles in a particular direction based on timings to downstream agents, wherein the downstream agent sums the upstream vehicles with a given weight, such that when a threshold is reached indicating large volumes of traffic said agent provides priority access for said vehicles.

3. The traffic signal control system as claimed in claims 1 or 2 wherein signalling information in said system is sent using User Datagram Protocol, UDP, packet information.

~~4. The traffic signal control system as claimed in any preceding claim comprising means for performing real-time traffic modelling at each junction.~~

~~5. The traffic signal control system as claimed in claim 4 wherein said means for performing real-time traffic modelling comprises means for transmitting real-time traffic modelling data to a server.~~

~~6. The traffic signal control system as claimed in claim 5 wherein the real-time traffic modelling data comprises visual data and numeric data at a junction.~~

~~7. The traffic signal control system as claimed in claim 6 comprising means for translating the visual data and numeric data into a 2D or 3D real time animation of the junction at a remote interface.~~

~~8~~4. The traffic signal control system as claimed in claims ~~6 or 7~~ 1 wherein the numeric data comprises traffic performance data of travel times, delays, queues and stops.

~~9~~5. The traffic signal control system as claimed in any of claims ~~5~~ 1 to ~~8~~ 4 wherein the data is transmitted in raw mode and/or aggregated mode, wherein the aggregated mode collects average numbers for each signal junction for a given time frame and the raw mode sends one message per each vehicle trip.

~~10~~6. The traffic signal control system as claimed in any preceding claim wherein each agent comprises remote access adapted to allow for maintenance and upgrading of each agent from a remote location and/or wherein each signal group agent controls the traffic signals at an individual junction and/or wherein each agent comprises means for providing junction management to provide an active junction that can have continuously different phases that it can decide on, based on traffic flow and priorities and/or comprising means such that each signal group is made aware of each traffic situation for each approach route controlled by an agent.

~~11. The traffic signal control system as claimed in any preceding claim wherein each signal group agent controls the traffic signals at an individual junction.~~

~~12. The traffic signal control system as claimed in any preceding claim wherein detected data input at each signal junction is inputted into a real-time situation model to provide said control operation.~~

~~13. The traffic signal control system as claimed in any preceding claim wherein each agent comprises means for providing junction management to provide an active junction that can have continuously different phases that it can decide on, based on traffic flow and priorities.~~

~~14. The traffic signal control system as claimed in any preceding claim comprising negotiation means such that each signal group is aware of each traffic situation for each approach route controlled by an agent.~~

~~15~~7. The traffic signal control system as claimed in any preceding claim comprising a standard PC connected to an existing signal controller, such that the controller comprises means for detecting data at a junction is turned into "slave" mode operation.

~~16~~8. The traffic signal control system as claimed in any preceding claim comprising means for providing priority to selected public transport vehicles at signalised junctions.

~~17~~9. The traffic signal control system as claimed in any preceding claim wherein ~~in~~ said control signals comprises XML instructions.

~~18~~10. A method of controlling a traffic signal control system comprising multiple agents for controlling a plurality of signal junctions, an agent comprising one or more traffic signals at each signal junction to provide local control at each junction where a traffic light is positioned; the method comprising:

providing a signal group oriented multi-agent control ~~scheme~~ system, each agent ~~operates~~ operating independently and ~~represents~~ representing one or more traffic signals at a signal junction;

determining traffic conditions at its signal junction and traffic conditions at neighbouring agents; and

applying fuzzy logic in signal control operations, wherein the signal control operation is based on traffic conditions at each agent and one or more neighbouring agents, such that the control operation is distributed to each agent to control each of said plurality of signal junctions; the method characterised by the fuzzy logic being based on a real-time model of the traffic situation at each of said plurality of signal junctions, wherein the modelling represents the current traffic state of each junction; and wherein the real-time modelling data comprises visual data and numeric data at each junction being transmitted to a remote server, wherein the server further comprises means for

translating the visual data and numeric data into a 2D or 3D real time model of the traffic at the junction.

~~19~~11. A computer program comprising program instructions for causing a computer to perform the method of claim ~~18~~ 10.