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OBJECT-GROUND SEPARATION VIA STOCHASTIC DEPTH ANALYSIS – ANTICIPATIVE ROADWAY PATTERN MODELING IN NATURALLY COMPLEX SCENE –

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Abstract. *Scene analysis has been reformulated for object-ground separation to activate road following processes on satellite-roadway-vehicle networks. Roadway pattern segmented in bird's eye view is transfered to vehicle's view for the evaluation of depth and width of open spaces. For the integration of multi-viewpoint information, the randomness underlying natural complexities is extracted and identified using invariant measure associated with fractal model of maneuvering affordance. Scale shifts due to perspective projection are matched to open space models for the separation of the images of not-yet-identified object in the expansion of open space. The boundaries of fractal models are matched to object distribution in order to generate admissible versions of maneuvering affordance. Such an admissible model is available for the anticipative activation of road following processes on satellite-roadway-vehicle networks.*

Keywords: Object-ground separation, Roadway scene analysis, Maneuvering affordance, Randomness-based approach, Satellite-roadway-vehicle network

1. **Introductory Remarks.** Computational resources combined with advanced maneuverability systems have rapidly expanded the scope of 'informatic vicinity' [16] where machine perception is delegated and then networked to support human understanding of situations and subsequent decision making. For example, student knowledge can be expanded interactively by spacecraft to be operated from the classroom [5]. Final decisions on ensuring the social safety in large-scale natural disasters are relegated to information gathering and damage evaluation systems [8]. The mobility of computer-controlled vehicles, in particular, exceeds by far the inherent maneuverability of humans in a naturally complex scene [25]. As a consequence of evolution in uproarious illumination and reflection [26], by nature, the range of human perception is restricted to the physical perspective from a specific view point located and oriented in the informatic vicinity. For the on-going conformability of such human centered systems, thus, perceptive delegation is required to maintain direct access to *as-is* surroundings under schematics of serious contradictions: subsequent maneuvering processes are anticipatively adapted to unstructured scenes.

Three decades of investigations in neurophysiology have demonstrated that the consciousness of perception-decision processes are supported by 'latent' neuronal steps known as the 'critical one second' as illustrated in Figure 1; half a critical one second should be attributed to mean the computational delay necessary for the consciousness of perception called 'neuronal adequacy' [22]. Experimental results imply that the 'information to be exploited finally' activates neural dynamics *prior to* the awareness of the process, i.e., 'pre-event potential' generation [23]. Contradictively, a time delay due to neuronal adequacy and pre-event potential generation has been demonstrated to be restored *a posteriori* in the time scale of conscious processes. The existence of such subconscious anticipation has