

REQUEST FOR INTER PARTES REVIEW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

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For: AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE  
HEADLIGHTS

**DECLARATION OF DR. A. GALIP ULSOY**

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I, A. Galip Ulsoy, of Dexter, Michigan, declare as follows:

**I. INTRODUCTION AND BACKGROUND**

1. My background, education, and professional experiences are summarized below.
2. I am currently the C.D. Mote Jr. Distinguished University Professor Emeritus and the William Clay Ford Professor Emeritus of Manufacturing at the University of Michigan (UM) in Ann Arbor, where I have worked since 1980.
3. I have a B.S. Degree in Engineering (Swarthmore College, 1973), an M.S.E. degree in Mechanical Engineering (Cornell University, 1975) and a Ph.D. degree in Mechanical Engineering (University of California, Berkeley).
4. I have also held temporary full-time positions as the Director of Civil and Mechanical Systems at the US National Science Foundation and as a Visiting Researcher at the Ford Scientific Research Laboratories. My expertise is in the automatic control of mechanical systems, especially manufacturing systems (e.g., computer controlled machine tools, robotics) and automotive systems (e.g., accessory drive belts, suspensions, active safety systems).
5. I have taught courses at UM in dynamical systems, automatic control, automotive control systems, manufacturing systems, etc. In addition to the

summary below, which emphasizes the most relevant topics, a copy of my current curriculum vitae (CV) is included in the Appendix.

6. I have taught a course on Vehicle Control Systems at the General Motors Technical Center for their engineering research staff. I am the author of four books, including the textbook *Automotive Control Systems* (Cambridge University Press, 2012), and over 300 journal and conference papers.

7. My research work includes many topics related to the dynamics and control of automotive systems, including active suspensions, accessory belt drive systems, and active safety systems to prevent run-off-road accidents.

8. I am a co-inventor on three US and one European patent. Three of these patents are related to automotive control technologies (i.e., emergency steering of a vehicle via differential right-left braking, and estimation of the vehicle yaw rate using inexpensive accelerometers).

9. I have also spent one year and several summers as a full-time Visiting Researcher at the Ford Scientific Research Laboratories where I worked on active suspensions, vehicle yaw rate estimation and control of stamping presses and received two Ford Innovation awards. I also worked with Ford and the US Army on a vehicle active safety system to prevent road-departure accidents, which was

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