Brian Ceccarelli, PE

Consulting Engineer

Licensed professional engineer in the State of North Carolina. Many years of science and engineering experience spanning many disciplines including transportation engineering, mining engineering, mechanical engineering, biophysics and space exploration.

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Education

2021 **Cornell University**, *Data Science*
2021-2022 **University of Texas**, *Cloud Computing*
1979-1983 **University of Arizona**, *B.Sc. Physics*

Registration

2016- **Professional Engineer,** North Carolina, License #043760
2016- **Professional Limited Liability Company**, North Carolina, License #P-1693

Professional Experience

9 yr **Raimondo Law Firm, New York - Expert**
Served as expert in traffic engineering and photo-enforcement for several cases. Helped law firm win cases against Suffolk and Nassau Counties' red-light camera programs totaling about $492,000,000.00, and for Suffolk County terminating its red-light camera program.

14 yr **Stam Law Firm, North Carolina - Expert**
Served as expert in traffic engineering and photo-enforcement for several cases. Won case in NC Appellate Court. Confrontations over unlawful penalties and the malpractice of engineering resulted in the complete elimination of red-light cameras in North Carolina.

1 yr **Manly Shipley Law Firm, Georgia - Expert**
Not officially retained, yet guiding firm with lawsuits over speed cameras.

<1 yr **Fiedler Deutsch Law Firm, New York - Expert**
Serving as expert in a personal injury case over a malfunctioning traffic signal.

15 yr **Talus Software PLLC - Principal Engineer**
Identified several physics errors in the Institute of Transportation Engineers' (ITE) yellow change interval practice. To confirm the errors, I designed software to analyze raw red-light camera event data. By combining the NCDOT traffic signal plans with the raw data from Redflex, my system confirmed the physics errors in the ITE yellow change interval spec and discovered that these errors cause about 90% of red-light running and

crashing.

In 2020, the Institute of Transportation Engineers (ITE) acknowledged that the math of its yellow change interval practice was incorrect. ITE published a new practice. The new practice incorporates a new math formula and adopts two recommendations directly from me. The first recommendation was the addition of a statement aimed against zero tolerance red-light camera operations. The second recommendation was to remove the word "rate" from the phrase "deceleration rate".

1 yr **North Carolina Department of Transportation - Applications Architect**
Identified a mathematics error in software the NCDOT uses to synchronize traffic lights. The error caused a congestion problem on Capitol Blvd in Raleigh.

5 yr **Engineering Technology International** - **Principal Software Engineer**
Responsible for the physics, mathematics and the coding of the company's mining software. Projects included rendering open pit mines with 3D graphics (linear algebra with GIS problem), slope stability analyzer for open pit mines, a cave-in warning system for underground mines which notified miners of rapid microseismic events (physics, triangulation, 3D graphics), and an underground room-and-pillar stability analyzer using finite element analysis.

6 yr **S & H Machine and Engineering - Principal Software Engineer**
Author of MasterCAM -- a 3D graphics computer-aided machining system which automated the generation of CNC programs. By incorporating analytic geometry, trigonometry, summation series and calculus-based surface fitting, MasterCAM automatically generated the tool paths for complex parts including wave guides for communication satellites and artificial bones for animals.

2 yr **Colorado State University, NOAA – Research Associate**
Designing and building software to gather weather predictions, analyze their impacts on the National Weather Service's partners, and automatically notify emergency management services all over the United States.

2 yr **Lunar and Planetary Laboratory - Principal Software Engineer**
For the Mars Observer space probe, programmed the data platform for the gamma ray spectrometer. The spectrometer measured gamma ray emissions from latitudes and longitudes over the Martian surface. The purpose was to enable scientists to analyze the spectra and then draw a map of the minerals on the Martian surface for future mining operations.

Publications/Presentations

2023 **North Carolina Society of Engineers,** Raleigh, North Carolina
Physics of the Yellow Change Interval, Winter Conference
Physics of the Yellow Signal Light Parts I and II, Durham Engineers Club

2020 **National Society of Professional Engineers**, National Webinar
Physics of the Yellow Signal Light -- ITE's First Recommended Practice

2019 **Professional Engineers of North Carolina***,* Webinar Series
Part I: Physics of the Yellow Change Interval
Part II: Misapplications of Physics of the Yellow Change Interval

Part III: Physics, Engineering Practice and Jurisprudence

2017 **Autonomous Vehicles Symposium**, Novi, Michigan
Signalized Intersections Prevent Travelling Legally from Point A to B

2017 **American Society of Civil Engineers**, Raleigh, North Carolina
Physics of the Yellow Change Interval

2016 **Autonomous Vehicles Symposium**, Stuttgart, Germany
The Yellow Change Interval—Physics in Opposition

2015 **Institute of Transportation Engineers**, Hollywood, Florida
Traffic Signal Timings Expert, Panelist at International Convention

2013 **Technology International,** Brian Ceccarelli, Dr. Joseph Shovlin**;**
Does the Multibillion Dollar Red Light Camera Sector Owe Its Existence –and Its Profits—to Traffic Engineer's Misapplication of the Yellow Change Interval Formula? London, England; Oct/Nov 2013

Professional Organizations

2018- North Carolina Society of Engineers (NCSE)
2018-2022 National Society of Professional Engineers (NSPE)
2013-2021 American Society of Civil Engineers (ASCE)
2013-2021 Institute of Transportation Engineers (ITE)