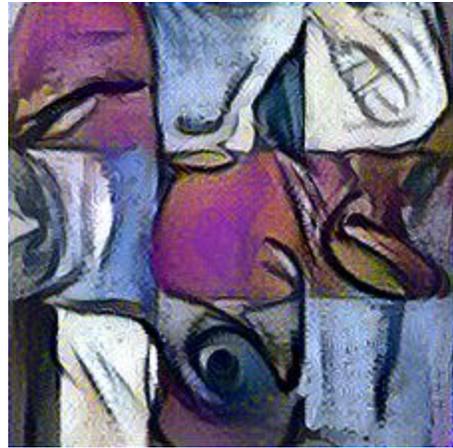# Dr. David Race

DavidRace@dcccd.edu

## Teaching Goals

I seek to contextualize mathematics and computer science to engage students in their studies by using applications that are relevant to their lives and their future in a highly computerized society.

## Current Location

Eastfield College
Office:        C236
Phone:        972-391-1047
Email:        DavidRace@dcccd.edu

## Employment

2016 - Present        DCCCD Adjunct at Eastfield College
I work, in association with my wife (Dr. Denise Race), to improve contextualization for mathematics courses; for example,
- Cal III, Differential Equations - I develop online labs used in Dr Denise Race's classes to support online exploration of topics for discussion boards and homework assignments.
- Linear Algebra - Introduced using a cloud environment (Google Colaboraboty) for computational labs so students could explore larger applications that are "close" to real applications. The application areas include science, computational mathematics, symbolic mathematics and machine learning.

| | |
|---|---|
| 2015 - 2016 | Independent study into machine learning and GPU optimization which using the latest "free technologies".  These include such cool results as my Picasso stylized self-photo above as well as real application in speech translation, image understanding and symbolic mathematics. |
| 2013 - 2015 | Cray Research<br>I focused on massively parallel application support using modern systems that included high performance processors, GPUs, parallel storage and Infiniband networks.<br>● Testing and development for HPC products; including, cluster products, multi-GPU servers, networks and parallel computing environments.<br>● Specialized customer application support as necessary to optimize highly parallel applications that rely on efficiency to avoid Moore's Law issues.<br>● Installation support as necessary to ensure delivered clusters meet customer expectations. |
| 2008 - 2013 | Appro<br>I focused on massively parallel application and system support that helped Appro become the third largest HPC vendor before it was acquired by Cray Research. |
| 1985 - 2008 | I worked for/with commercial companies (including Thinking Machines, Raytheon, Mobil, American Express, etc.) and with most of the large HPC labs for implementation of novel parallel applications and parallel systems. |

## Interesting Applications

I have focused on computational mathematics since I finished my Ph.D.  I spent most of the last 30 years in industry using Mathematics + Computer Science  on a daily basis.  I have had the privilege of working on a number of extrement interesting applications over the years.  A small sampling of the problems I have worked on since the beginning of my career (caveat - these examples use "stock" images rather than the actual applications):
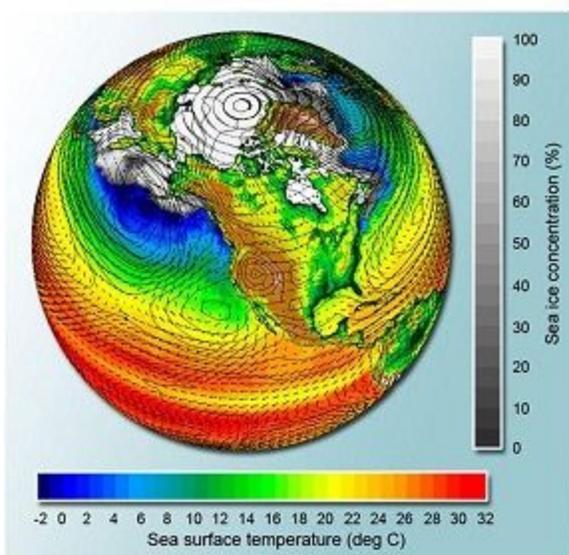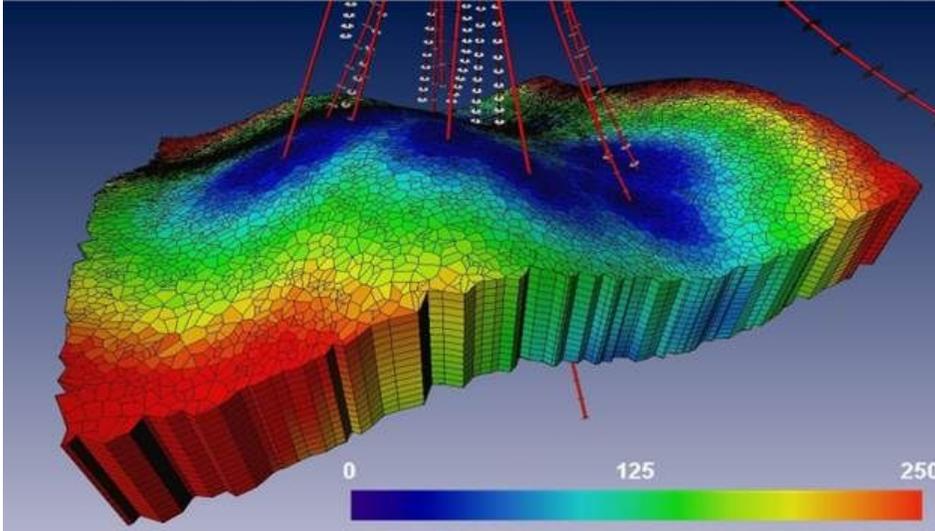
**F1 Modeling**
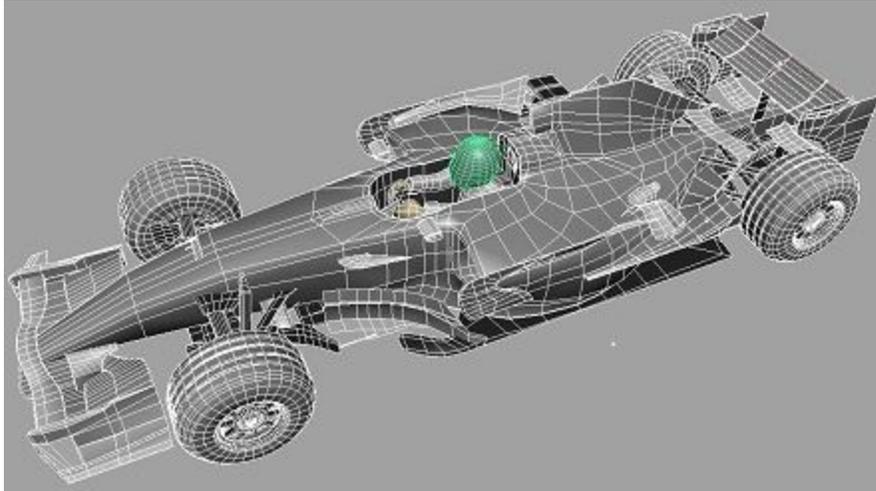
**Container Improvements**
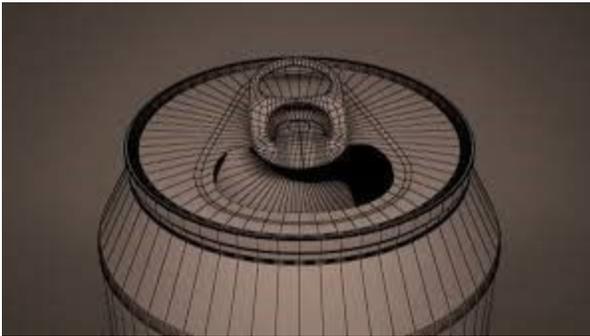


**Climate Modeling**

**Reservoir Modeling**



In addition to this work, I was working NCSA when they released the Mosaic browser (which popularized the World Wide Web) and witnessed some of the early "Wild, Wild West" of the internet.

## Current Work

Currently I am working with my wife, Dr. Denise Race, to improve the visualization of mathematics and understanding of complex problems though newer browser visualization tools such as WebGL and javascript.  This work uses cloud computing (c9.io), open source computation libraries (Octave) and open source visualization (plot.ly) to incorporate the modern cloud into the mathematics classroom.
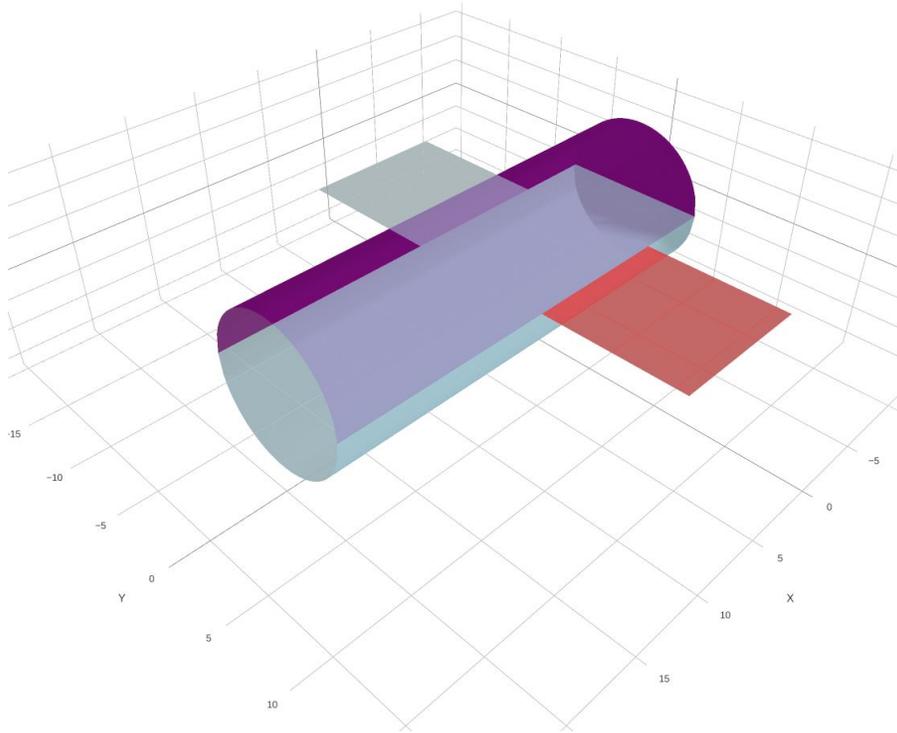
A small example of some of our current visualization are:

Parametric-Plus-Vector
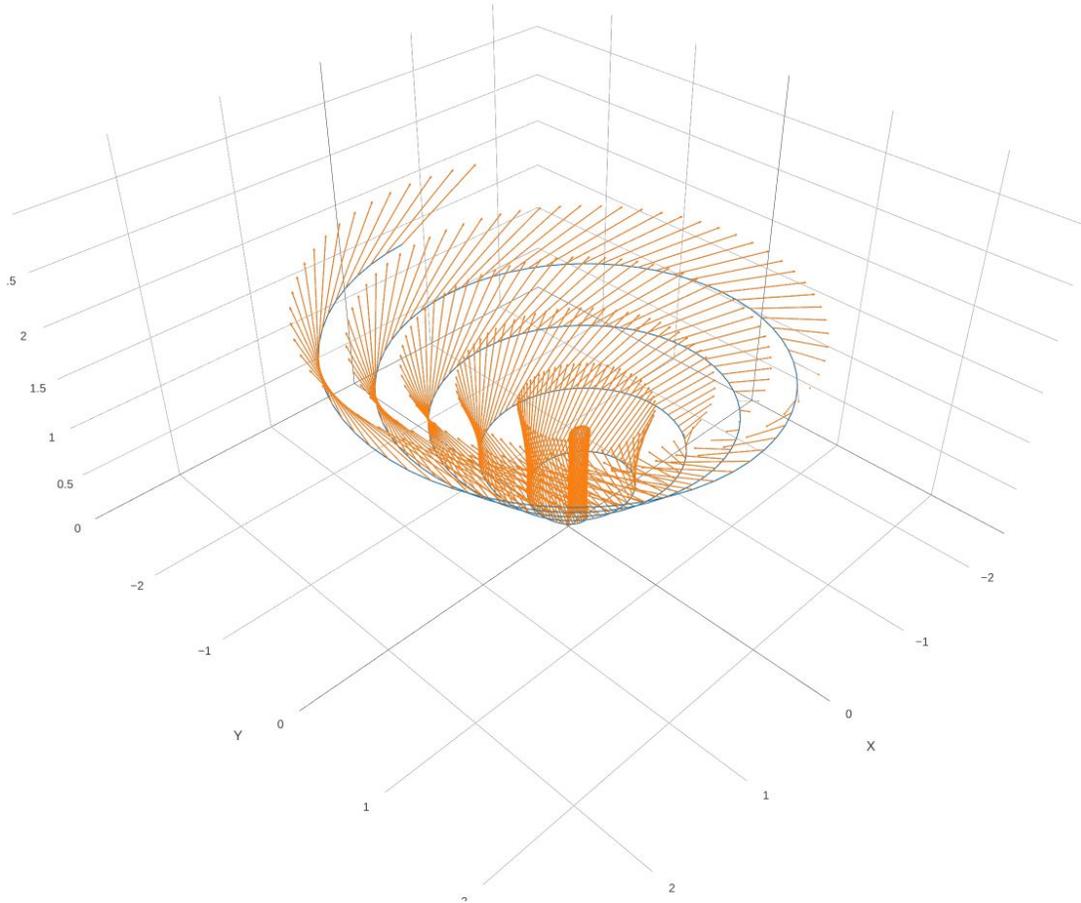


and

## Education

**University of North Texas / Ph.D. Mathematics**

1986,  Denton, TX

**University of North Texas** / M.A. Mathematics

1983,  Denton, TX

**Arkansas Tech University** / B.A. Mathematics

1981,  Russellville, AR