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## **Objective**

Challenging work as a technical consultant.

## **Competencies**

**Mechanical Design** – Licensed Professional Mechanical Engineer in the State of California, #M33347. Static and kinetic mechanical design from mesoscopic to 100m scale. Solid and surface modeling in mechanical CAD (Solidworks, Pro/E.) Flexure, geartrain and vibrational system design. Design for Manufacture and Maintenance. High and low volume production. Techniques for injection molded and machined plastics. Techniques for machined, sheet formed, welded and plasma cut steel, aluminum, and copper. Design for shock. Automotive design. Vehicle dynamics and structural analysis. Rigid body, vibrational, and general linear and nonlinear dynamic systems. Feedback control systems. Mechanical and thermal FEA (Cosmos, Ansys.)

**Mechatronics** – Embedded system specification and programming for ARM Linux, 8051, PIC, and AVR platforms. C/C++, C#, Visual Basic, Java/Javascript, Flash, html, and assembly. Motion control. Power control and signal conditioning circuit design. PCB design. Sensor and Actuator specification and interface. Design and analysis of dynamic systems for feedback control and DSP. Audio processing.

**Human Machine Interface** – Design of haptic, audio, and visual interface devices with consideration towards psychophysics, engineering, and cognitive psychology. GUI design in Flash, Visual Basic, and C/C++. Haptic and sound cue design. Display and transducer specification.

## **Experience**

2006-now [Ideal Mechanism LLC](#), San Francisco, CA

**Principal** – Providing engineering services including design, analysis, testing, and prototyping. Founded, manage, own and operate the company.

Some Ideal Mechanism Project Highlights –

**Developed** next generation LED Headlight system for Audi.

**Originated and managed** GPS-guided swarming robot art project.

**Created an HMI technology prototype** for Consumer Electronics device.

**Provided vehicle dynamic and structural analysis** for Ben Cohen of Ben and Jerry's

**Designed shock absorption** for Varian Paxscan 4336 digital radiography panel

**Prepared White Paper on Haptic Touch Screen technology** for Volkswagen

**Designed power distribution and control system** for a model with 1,000 discrete LED's.

**Developed 5-dof, 24,000lb hydraulic actuation system** for large scale kinetic art piece.

2002-2006 [Volkswagen of America Electronics Research Lab](#), Palo Alto, CA

**Senior Engineer** - Developed innovative Human Machine Interface technologies for automotive electronics through human touch, hearing, and vision.

**Filed Invention Disclosures** yielding 22 currently published patent applications.

**Managed projects**, allocating financial and human resources. Trained coworkers, advised management on technical matters.

**Formed development partnerships** with other firms to bring Silicon Valley technology to Volkswagen. Transferred technology to Germany via demos, documents, and in person meetings, often conducted in German language.

**Designed mechanical assemblies** using plastic, metal, and glass with SolidWorks and CATIA. Produced dimensional drawings, machine paths, and 3d renderings.

**Designed embedded microprocessor solutions and GUI based interfaces.** Coded in assembly, C/C++, Java, Macromedia Flash, and XML/HTML. Designed actuator control, signal conditioning, and microprocessor PCB's.

**Developed novel prototyping techniques** with critical tolerances using CNC and manual machine tools, injection molding, laser cutting, and rapid prototyping.

**Specified actuators** (electromagnetic, piezo, smart materials) and sensors.

**Conducted mechanical failure analysis**, using direct analysis and FEA.

**Developed measurement procedures** to test prototypes for consistent motion control, tolerance to heat and cold, and vibration tolerance.

**Performed analysis of audio signals**, implemented Active Noise Cancellation.

## Education

1998-2002 [Stanford University](#), M.S. and Engineer's Degree in M.E.

Thesis title "Towards a Linear Engine". Research in feedback control systems, electromechanical systems, I.C. engine modeling, vehicle dynamics, and actuation for rapid acceleration. Coursework in mechatronics, product design, dynamic systems, human machine interface, nonlinear modeling and control, digital signal processing, and fabrication.

1994-1998 [Johns Hopkins University](#), B.S. in M.E.

**Senior design project** involving a dynamic, piezo-actuated material testing fixture with capacitive position feedback.