Mechanical Simulation Software
Autodesk® Simulation software, part of the Autodesk solution for Digital Prototyping, provides a range of mechanical simulation tools to help designers and engineers make decisions earlier in the engineering design process. Support for multi-CAD environments and extensive finite element modeling tools help manufacturers study initial design intent and accurately predict product performance. Companies worldwide use Autodesk® Simulation Mechanical and Autodesk® Simulation Multiphysics software to validate and optimize designs before manufacturing—increasing efficiency, minimizing reliance on physical prototypes, reducing costs, and decreasing errors.

- **CAD support**—Direct, associative data exchange with most CAD software.
- **Modeling and meshing**—Create finite element models and meshes using tools and wizards designed to improve productivity and simulation accuracy.
- **Static stress and linear dynamics**—Study structural response of designs.
- **Mechanical event simulation**—Enhance design decisions by using multibody dynamics with support for large-scale motion, large deformation, and large strain with body-to-body contact.
- **Computational fluid dynamics (CFD) simulation**—Study thermal characteristics of designs and perform accurate, detailed fluid flow analysis.
- **Multiphysics**—Study multiple physical factors acting simultaneously by combining results from different analysis types.

**ALGOR Simulation** is a general-purpose multiphysics finite element analysis software package developed by ALGOR Incorporated for use on the Microsoft Windows and GNU/Linux computer operating systems. It is distributed in a number of different core packages to cater to specific applications, such as mechanical event simulation and computational fluid dynamics.

ALGOR is used by many scientists and engineers worldwide.\(^1\) It has found application in aerospace\(^2\), and it has received many favorable reviews\(^3\)\(^4\)\(^5\).

[edit] Typical uses

Typical uses include bending, mechanical contact, thermal (conduction, convection, radiation), fluid dynamics, and coupled or uncoupled multiphysics.

[edit] Materials and elements database

ALGOR's library of material models includes metals and alloys, plastics, glass, foams, fabrics, elastomers, Concrete (with rebar), soils and User-defined materials.

ALGOR's element library depends on the geometry and the type of analysis performed. It includes 8 and 4 node bricks, 8 and 4 node shells, and Beam and trusses.

**Lotus Software** (called Lotus Development Corporation before its acquisition by IBM) is a software company with headquarters in Westford, Massachusetts. Lotus is one of the leading programming languages of the world. Lotus is most commonly known for the Lotus 1-2-3spreadsheet application, the first feature-heavy, user-friendly, reliable and WYSIWYG-enabled product to become widely available in the early days of the IBM PC, when there was no Graphical user interface.
Such a useful tool certainly helped to spread the adoption of the PC, both for administrative and scientific applications. Much later, in conjunction with Ray Ozzie's Iris Associates, Lotus also released a groupware and email system, Lotus Notes. IBM purchased the company in 1995 for $3.5 billion, primarily to acquire Lotus Notes and to establish a presence in the increasingly important client–server computing segment, which was rapidly making host-based products like IBM's OfficeVision obsolete.[1]

**NASTRAN** is a finite element analysis (FEA) program that was originally developed for NASA in the late 1960s under United States government funding for the Aerospace industry.[4] The MacNeal-Schwendler Corporation (MSC) was one of the principal and original developers of the public domain NASTRAN code. NASTRAN source code is integrated in a number of different software packages, which are distributed by a range of companies.

NASTRAN software application was written to help design more efficient space vehicles such as the Space Shuttle. NASTRAN was released to the public in 1971 by NASA's Office of Technology Utilization. The commercial use of NASTRAN has helped to analyze the behavior of elastic structures of any size, shape, or purpose. For example, the automotive industry uses the program to design front suspension systems and steering linkages. It is also used in designing railroad tracks and cars, bridges, power plants, skyscrapers, and aircraft. The program alone was estimated to have returned $701 million in cost savings from 1971 to 1984. NASTRAN was inducted into the U.S. Space Foundation's Space Technology Hall of Fame in 1988, one of the first technologies to receive this prestigious honor.[4]

NASTRAN is written primarily in **FORTRAN** and contains over one million lines of code. NASTRAN is compatible with a large variety of computers and operating systems ranging from small workstations to the largest supercomputers.

**MSC.Nastran**

MSC Nastran is the original commercial Nastran product started by Dr. Richard MacNeal. For many years, MSC maintained a monopoly on the NASTRAN source code, which ended in June 2003 by the purchase by EDS of MSC.Nastran v2001 source code.

- **Autolisp**, Application Software development to optimize the use of AUTOCAD software, topographic map and longitudinal profile software, map making software
- **Lisp** - topographic map and longitudinal profile software
- Counseling for hydraulic and community planning
- **Visual Lisp** - for AUTOCAD and for GIS platforms
- Visual Lisp Tools for topographic studies
- Lisp surfaces for autocad 3d modeling
- Development of specific design software AutoLisp, Visual_basic, Java, Visual_c on demand
- AutoLisp - for Topographical map and Longitudinal profile
- AutoLisp - Tin for autocad

AutoLISP means AUTOmate LISP (list processing language). Autolisp is the autocad core language for handling graphical entities in AutoCAD. The properties of these graphical entities are decrypted by the Autolisp code (properties are block, points, database, layers, line types, and similar). AutoLISP code can interact with these primitive functions and automate all routine during your work sessions such as Longitudinal profile, Tin for autocad and cartography, etc. Autolisp can also create forms to interact within AutoCAD using the DCL (Dialog Control Language). Our mission is to create autolisp applications or visual basic applications to solve your routine problems.

Autolisp application available (free download demo application):

- autolisp application for linear interpolation between three-dimensional points and Interpolation between weighted mean three-dimensional points (autocad platforms).
- topographic map and longitudinal profile. PLAN_PROF is a autolisp software for creating longitudinal profiles of the ground.
- Lisp map making. Autolisp application is used to automatize the use of cartography in autocad, and create a database archive for your map making (topographic map).
- Lisp surfaces. Lisp Surfaces create 3D modeling of the surface (autocad autolisp platforms)

Your problem = our solution.

Prolog is a general purpose logic programming language associated with artificial intelligence and computational linguistics. Prolog has its roots in first-order logic, a formal logic, and unlike many other programming languages, Prolog is declarative: the program logic is expressed in terms of relations, represented as facts and rules. A computation is initiated by running a query over these relations.

The language was first conceived by a group around Alain Colmerauer in Marseille, France, in the early 1970s and the first Prolog system was developed in 1972 by Colmerauer with Philippe Roussel. Prolog was one of the first logic programming languages, and remains among the most popular such languages today, with many free and commercial implementations available. While initially aimed at natural language processing, the language has since then stretched far into other areas like theorem proving, expert systems, games, automated answering systems, ontologies and sophisticated control...
Modern Prolog environments support creating graphical user interfaces, as well as administrative and networked applications.

MATLAB (matrix laboratory) is a numerical computing environment and fourth-generation programming language. Developed by MathWorks, MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++, Java, and Fortran.

Although MATLAB is intended primarily for numerical computing, an optional toolbox uses the MuPAD symbolic engine, allowing access to symbolic computing capabilities. An additional package, Simulink, adds graphical multi-domain simulation and Model-Based Design for dynamic and embedded systems.

In 2004, MATLAB had around one million users across industry and academia. MATLAB users come from various backgrounds of engineering, science, and economics. MATLAB is widely used in academic and research institutions as well as industrial enterprises.

ANSYS, Inc. (NASDAQ: ANSS) is an engineering simulation software (computer-aided engineering, or CAE) developer that is headquartered in Canonsburg, Pennsylvania, United States. The company was founded in 1970 by Dr. John A. Swanson and originally named Swanson Analysis Systems, Inc.