Introduction to MATLAB

Adam Filion
Application Engineer
Data Analysis Tasks

Access
- Files
- Software
- Hardware
- Equations
  - $V = L \frac{di}{dt}$
  - $F = ma$

Explore & Discover
- Data Analysis
- Mathematical Modeling
- Algorithm Development
- Application Development
  - $N(t) = N_0 e^{rt}$
  - for $k=1: \text{max}$
    - $x = \text{fft}(data)$
    - $y = 20 \times \log(x)$

Share
- Reports and Documentation
- Applications
  - MATLAB
  - Excel
  - .NET
  - .exe
  - C/C++
  - Java
  - Web
- Outputs for Design

Automate
Modeling Global Solar Radiation

\[ R_s = a \left( 1 + bH \right) \left( 1 - e^{-c \Delta T^n} \right) \]

- Solar Ratio \((R_s)\) = \(\frac{\text{Global solar radiation}}{\text{Extraterrestrial solar radiation}}\)
- Daily Temperature Difference \((\Delta T)\) = \(T_{\text{DailyMax}} - T_{\text{DailyMin}}\)

\(H\) is Relative Humidity
\(a,b,c,n\) are the model coefficients
MATLAB® is a high-level language and interactive environment for numerical computation, visualization, and programming. Using MATLAB, you can analyze data, develop algorithms, and create models and applications. The language, tools, and built-in math functions enable you to explore multiple approaches and reach a solution faster than with spreadsheets or traditional programming languages, such as C/C++ or Java®.

You can use MATLAB for a range of applications, including signal processing and communications, image and video processing, control systems, test and measurement, computational finance, and computational biology. More than a million engineers and scientists in industry and academia use MATLAB, the language of technical computing.

Explore MATLAB Capabilities

Numeric Computation
Data Analysis and Visualization
Programming and Algorithm Development
Application Development and Deployment