MATLAB and Simulink最新情報

MathWorks Japan
アプリケーションエンジニアリング部
大谷 卓也
宅島 章夫

... R2014b R2015a R2015b ...
MATLAB and Simulink – Enhancing Your Productivity

- Speed
- Workflow
- Insight
New MATLAB Execution Engine

- Redesigned execution engine runs MATLAB code faster
- Average performance improvement of 40% on 76 performance-sensitive user applications
GPGPU Acceleration & Parallel Computing

- **GPU Enabled Functions**
  - >300 MATLAB functions for GPU
  - 90 in Statistics and Machine Learning Toolbox
  - 48 in Image Processing Toolbox
  - Sparse Arrays

Simple GPU code in MATLAB

Transfer data to GPU
>> GX = gpuArray(X);

GPGPU Computation
>> GY = fft2(GX);

Gather data to CPU
>> Y = gather(GY);

Graph showing performance improvement with grid size:
- 18x faster
- 23x faster
- 20x faster

GPU: NVIDIA Tesla K20c
Simulink Fast Restart
Performance Advisor

Analyze your model for common simulation bottlenecks

- Automated tool included in Simulink
- Checks its own advice
- Many checks have an AutoFix option
- Verifies simulation results are within tolerance
MATLAB and Simulink – Enhancing Your Productivity
Add-On Explorer

- Add capabilities to MATLAB, including community-authored and MathWorks toolboxes, apps, functions, models, and hardware support
  - Browse and install add-ons directly from MATLAB
  - Access community-authored content from File Exchange
Machine Learning
Classification Learner App

- New **app** to train models and classify data using supervised machine learning

- Supports a **workflow**
  - Explore your data
  - Select features
  - Specify cross-validation schemes
  - Train models
  - Assess results

Focus on machine learning, not programming
Connectivity with Other Languages

Other Languages
C/C++, Java, .NET
Python

MATLAB

MATLAB Compiler SDK
MATLAB Coder

.Net
C/C++
Python
Java

.R2014b R2015a R2015b
Smart Editing Cues

Accelerate model building with just-in-time contextual prompts

- Smart prompts for inserting blocks upon typing the block name
- Suggests marquee actions when a group of blocks are selected Ex: Create Subsystem
- Easily insert blocks that occur in pairs Ex: Goto, From pair

Quick insert & Hot parameters

Tear-off cues

Persistent guides

Marquee actions
Model Slicing

Test and debug complex models

- Understand functional dependencies
- Determine interdependencies
- Eliminate unneeded items
- API support in R2015b
Simulink Test

Author, execute and manage simulation-based testing

- Build synchronized executable test environments
- Create inputs and assessments based on logic or temporal conditions
- Author, execute, and manage testing
MATLAB and Simulink – Enhancing Your Productivity

- Speed
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New MATLAB Graphics System

- New look
  - New default colormap and line colors
  - Anti-aliased fonts and lines
- Easier to customize
- New features
  - Rotatable tick labels
  - User interfaces with tab panels
  - Automatic updating of `datetime` tick labels
  - Multilingual text and symbols
New Interface for Scopes

View and debug signals with cursors and measurements

- Scope, Floating Scope, and Viewers all upgraded with new UI
- Includes simulation data analysis and debugging tools
  - Cursors
  - Measurements
  - Triggers
Dashboard Block Library

Tune and test your simulations with graphical controls and displays

- New library of controls and displays, including knobs, switches, and gauges
- Place blocks directly within the Simulink Editor
- Provide a front-end user interface to the entire model
New Products for

Hardware Connectivity and Wireless System Design
Connect MATLAB and Simulink to Hardware

- Generating code and targeting hardware
- Live data streaming to and from hardware

Mobile Devices (iOS/Android)

Low-cost Hardware (Arduino / Raspberry Pi2 / BeagleBone Black)

OPC UA Protocol

J1939 Protocol

Robotics System Toolbox
Wireless System Design

- End-to-end simulation
  - Antenna-to-Bits Simulation
  - Smart RF Design

- Design verification
  - Standard-compliant (LTE, LTE-A)
  - RADAR systems

- Over-the-air testing
  - Connectivity to SDR and RF instruments