What's New in MATLAB for Neuroscience

Deep Learning

Train and run convolutional neural network (CNN) and recurrent neural network (RNN) models for feature learning, classification, and regression tasks. Build custom network topologies, or leverage pre-built models via transfer learning. Utilize GPU(s) to speed both training and inference.

Dimensionality Reduction

Enhance machine learning speed and accuracy by feature extraction, via new algorithms like Reconstruction ICA (RICA), or feature selection via neighborhood components analysis (NCA). Visualize high-dimensional data in two- or three-dimensions using t-Distributed Stochastic Neighbor Embedding (t-SNE).

Volumetric Image Processing

Apply a wide range of image enhancement, geometric transformation, and image analysis algorithms to 3-dimensional volumetric image data. Visualize 3D image datasets with slice-based or rendered volume views using the Volume Viewer app.

Wavelet Denoising
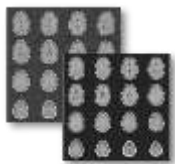
Denoise multichannel time-series with a variety of wavelet-based denoising methods (empirical Bayesian, false discovery rate, James-Stein block thresholding). Perform directionally selective wavelet analyis of volumetric data with the 3-D complex dual-tree transform.

Apps for Machine Learning

Interactively train and evaluate a wide range of classification or regression models and parameters for your datasets using the Classification Learner and Regression Learner apps. Utilize parallel computing to evaluate multiple models simultaneously.

Add-On Explorer

Extend MATLAB for Neuroscience applications. Find and install toolboxes and apps from MathWorks and from the File Exchange, a web collection of freely-shared MATLAB tools, including many tools hosted on GitHub.

Live Editor

Combine code, output, and formatted text to create an interactive narrative that describes your work. Share your work in a way that can be easily reproduced, validated, and extended by others.

Data Preprocessing

Prepare your data for downstream analysis with functions for smoothing and scaling, finding and filling outliers and gaps, detecting changepoints and extrema, finding and splitting data groups.

Visualizations for Big Data
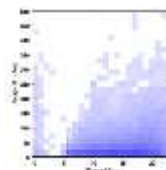
Visualize data too big to fit in memory using tall arrays. Graphing functions are optimized to display tall arrays. New types of plots, such as a binned scatter plot, are available for visualizing Big Data.

Unlimited Local Parallel Computing

Utilize all the CPU and GPU cores on a workstation or server node to solve compute- and data-intensive problems using Parallel Computing Toolbox™. Parallelize your applications with high-level constructs, without needing CUDA or MPI programming.
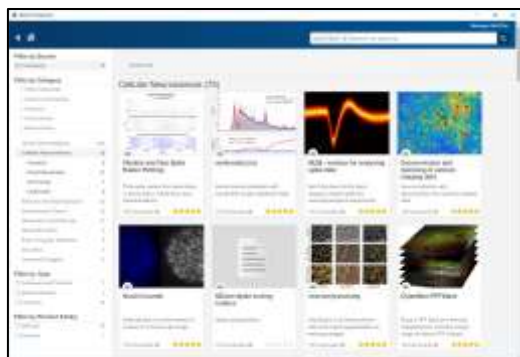

WHAT'S NEW IN MATLAB FOR NEUROSCIENCE
https://www.mathworks.com/solutions/neuroscience/whats-new.html

MathWorks®
Accelerating the pace of engineering and science

EXTENDING MATLAB FOR NEUROSCIENCE

COMMUNITY TOOLBOXES

Add-On Explorer An organized and curated collection of freely-shared tools targeted for a wide-range of neuroscience applications, including human brain mapping, cellular neuroscience, and more.

PRODUCTS WITH MATLAB INTERFACES

VENDOR	BOOTH #
ADInstruments, Inc.	1423
Alpha Omega	2111
Arrington Research, Inc.	2208
BKIN Technologies Ltd.	2936
Brain Products	537, 700
Cambridge Research Systems Ltd.	2837
Flywheel	811
g.tec Guger Technologies OG	837
3i - Intelligent Imaging Innovations	3014
Neuralynx, Inc.	2333
Ripple	3136/7
TMS International	510
Vidrio Technologies, LLC	2606

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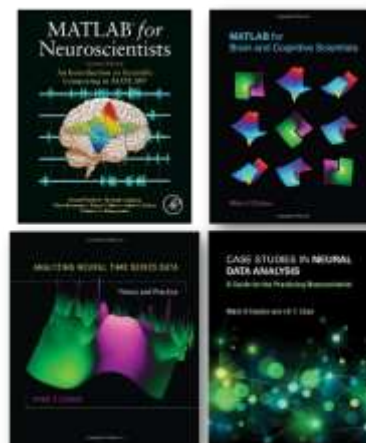
Books available at these publisher booths:

- Elsevier – **Booth 300/301**
- MIT Press – **Booth 215**

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