KIASORT Installation Guideline and Requirements

Download KIASORT from:

https://github.com/banaiek/KIASORT

Add the downloaded folder to your MATLAB path

In MATLAB:

    Run: kiaSort.m

MATLAB Requirements for KIASORT

System Requirements

- **MATLAB 2021b or later** (required for optimal performance)
- **Operating Systems:** Windows 10/11, macOS 10.15+, Ubuntu 20.04+

Required MATLAB Toolboxes

- Signal Processing Toolbox
- Statistics and Machine Learning Toolbox
- Parallel Computing Toolbox (recommended for performance)
- Image Processing Toolbox
- Curve Fitting Toolbox

Python Requirements for KIASORT

Python Installation

- **Python 3.8 - 3.11** (recommended: Python 3.10)
- **Required packages:**
  - numpy $\geq$ 1.20.0
  - umap-learn $\geq$ 0.5.0
  - scikit-learn $\geq$ 1.0.0
  - numba $\geq$ 0.56.0

Quick Installation

If not installed download Python from python.org

Install packages:

```
pip install numpy umap-learn scikit-learn numba
```

MATLAB-Python Configuration

1. Find Python path:

- Windows: `where python`
- macOS/Linux: `which python3`

2. Configure in MATLAB:

```
% Set Python environment
pyenv('Version', '/path/to/python')


% Verify setup
pe = pyenv;
disp(pe.Version)
```

Quick Verification Test

Run in MATLAB to verify everything works:

```
% Test Python integration

py.sys.version


% Test required modules

numpy = py.importlib.import_module('numpy');

umap_module = py.importlib.import_module('umap.umap_');
```

Common Issues & Solutions

Python Issues

Problem	Solution
"Python not found"	Add Python to PATH, restart MATLAB
"Module not found"	Run pip install umap-learn numpy
Version conflicts	Use Python 3.8-3.11, avoid 3.12+
Permission errors (macOS)	Use sudo pip install or homebrew

Matlab Issues

Problem	Solution
pyenv fails	Use full Python path in pyenv('Version', 'path')
Import errors	Restart MATLAB after Python setup

Memory issues	Ensure 16GB+ RAM for large datasets

Troubleshooting Checklist

Before running KIASORT, verify:
- MATLAB 2021b+ with required toolboxes
- Python 3.8-3.11 installed and in PATH
- MATLAB can access Python (pyenv shows "Loaded: true")
- Sufficient system memory (16GB+ recommended)

System Recommendations

Recommended Configuration

- 16GB+ RAM
- 8-core CPU
- SSD storage
- GPU