

Using Sweave and **patchDVI** with Japanese text

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概要

The **patchDVI** package works with Sweave [1] and document previewers to facilitate editing: it modifies the links that L^AT_EX puts into the output so that they refer to the original source. It also includes a few project management functions to make large multi-file Sweave documents easier to handle. This document describes Japanese language support in the package.

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1 Introduction

The main vignette “The patchDVI package” describes general features of patchDVI, and how to set up various editors to use it in typesetting English-language vignettes. This vignette describes how to set it up for Japanese language text. I expect the issues would be the same in other non-Roman alphabets, but I have no experience with them.

The main issues in writing Japanese language (日本語) documents are the encoding of the character set and the varying support by different L^AT_EX engines. The standard `pdflatex` engine does not work well with Japanese. In November, 2013 I visited the Institute for Statistical Mathematics in Tokyo, and with the help of Mr. Yasuto Nakano and Prof. Haruhiko Okumura I developed these instructions. In outline: you must use the UTF-8 encoding for the characters, use `uplatex` to convert to DVI file, and use `dvipdfmx` to convert the DVI to PDF.

2 Using patchDVI with TeXShop

These instructions have been tested with TeXShop version 2.47, but should work with other versions as well.

1. In Preferences – Typesetting – Sync Method, choose “SyncTeX”.
2. Create a file called `Library/TeXShop/Engines/JSweave.engine` containing the two lines

```
#!/bin/sh
```

and

```
Rscript -e "Sys.setlocale(locale='en_US.UTF-8');  
patchDVI::SweaveDVIPDFM( '$1', latex='uplatex',  
dvipdfm='dvipdfmx', encoding = 'UTF-8' )"
```

(which I have split to fit in this document; the actual line should not be split). Give this file executable permissions.

3. Install the `patchDVI` package into R. For this to work, you need at least version 1.9.1587 of patchDVI.
4. Add the lines

```
%!TEX encoding = UTF-8 Unicode  
%!TEX TS-program = JSweave
```

at the beginning of all files, and make sure they are created with UTF-8 encoding.

5. If you have multiple files in your project, your main file must be a Sweave file (e.g. `Main.Rnw`) which lists all Sweave files in a `.SweaveFiles` variable, and you need to add the line

```
%!TEX root = Main.Rnw
```

to each subordinate file.

6. Add

```
\usepackage[utf8]{inputenc}
```

to the main file to declare to Sweave that it uses the UTF-8 encoding. Add

```
\newcommand{\ThisIsNotUsed}{  
\usepackage[utf8]{inputenc}  
}
```

to subordinate files. This defines a macro which is never used; the purpose is for Sweave to see the `inputenc` line. (You can also use this line in the main file if you are using a class file such as `ujarticle` which defines the encoding, and don't want `inputenc` to be used.)

7. Add

```
\SweaveOpts {concordance=TRUE,eps=TRUE,pdf=FALSE}
```

because `uplatex` doesn't support PDF graphics, it requires EPS graphs.

With these changes, the TeXShop previewer will support SyncTeX; you right click in the preview, and choose Sync from the menu to jump to your source location.

3 Using patchDVI with TeXWorks

TeXWorks is an editor for several platforms, somewhat similar to TeXShop. These instructions have been tested in TeXWorks 0.4.4 on MacOS; I have not tested them on Windows, because I do not have `uplatex` and `dvipdfmx` there, but they should work if those programs are available.

1. In Edit – Preferences – Typesetting click on the “+” sign near the bottom of the Processing Tools box. Set the name of the tool to be JSweave. Set the program to Rscript by browsing to the `Rscript.exe` executable in your R installation, directory `bin/i386` or `bin/x64`.

Add two arguments on separate lines. The first is simply `-e`, the second is

```
{Sys.setlocale(locale='en_US.UTF-8');  
  patchDVI::SweaveDVIPDFM( '$fullname',  
    latex='uplatex', latexOpts='-synctex=1',  
    dvipdfm='dvipdfmx', encoding = 'UTF-8' )}
```

This should be typed all on one line.

2. Install the `patchDVI` package into R. For this to work, you need at least version 1.9.1587 of `patchDVI`.
3. Add the lines

```
%!TEX encoding = UTF-8 Unicode  
%!TEX program = JSweave
```

at the beginning of all files, and make sure they are created with UTF-8 encoding.

4. If you have multiple files in your project, your main file must be a Sweave file (e.g. `Main.Rnw`) which lists all Sweave files in a `.SweaveFiles` variable, and you need to add the line

```
%!TEX root = Main.Rnw
```

to each subordinate file.

5. Add

```
\usepackage[utf8]{inputenc}
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to the main file to declare to Sweave that it uses the UTF-8 encoding. Add

```
\newcommand{\ThisIsNotUsed}{  
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}
```

to subordinate files. This defines a macro which is never used; the purpose is for Sweave to see the `inputenc` line. (You can also use this line in the main file if you are using a class file such as `ujarticle` which defines the encoding, and don't want `inputenc` to be used.)

6. Add

```
\SweaveOpts {concordance=TRUE,eps=TRUE,pdf=FALSE}
```

because `uplatex` doesn't support PDF graphics, it requires EPS graphs.

The TeXWorks previewer will jump back to the source if you right click and choose Jump to Source.

参考文献

- [1] Friedrich Leisch. Sweave: Dynamic generation of statistical reports using literate data analysis. In Wolfgang Härdle and Bernd Rönz, editors, *Compstat 2002 — Proceedings in Computational Statistics*, pages 575–580. Physica Verlag, Heidelberg, 2002. ISBN 3-7908-1517-9.