

Installation manual

SiteOpt: an Open-source R-package for Site Selection and Portfolio Optimization

Payman Ghasemi Saghand, Zulqarnain Haider, Hadi Charkhgard, Mitchell Eaton, Julien Martin, Simeon Yurek, Bradley J. Udell

1 Installation files

Please download the installation files for SCIP and Julia from the following link:

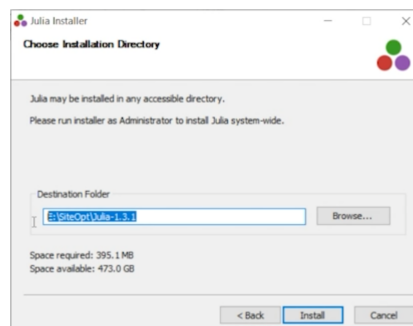
<https://usf.box.com/s/hkj2t1be3is0zcm8je1manze9k9gy6ob>

2 Installing Julia V1.3

1. Run “*julia-1.3.1-win64.exe*”, and click on “*Next*”



2. Enter the desired installation location (in our example *E:\SiteOpt\Julia-1.3.1*), and click “*Install*”



3. The Julia is now installed. Click on “*Finish*”

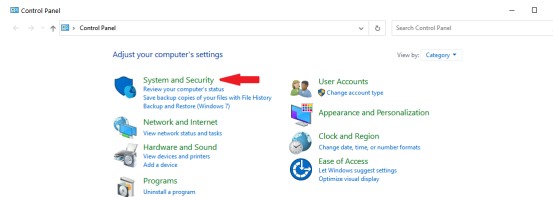


4. In case of any problem, please refer to

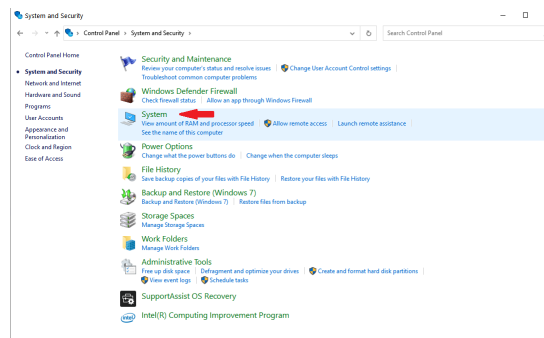
<https://julialang.org/downloads/platform/#windows>

3 Setting up the environment variables for Julia

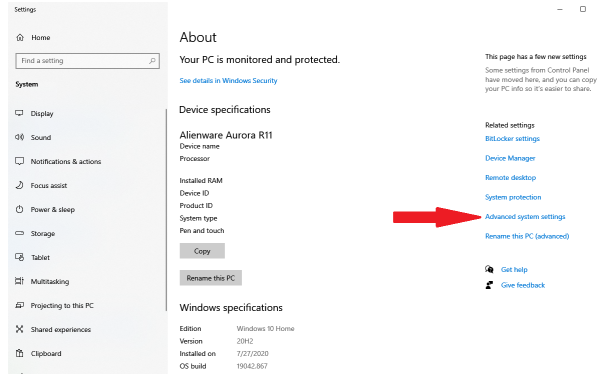
1. From “*Control Panel*” of Windows, go to “*Systems and Security*”



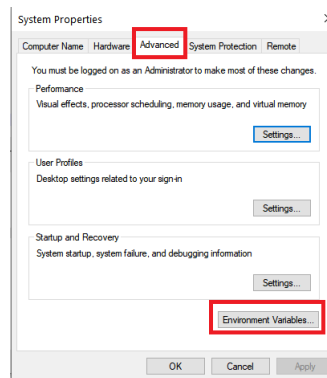
2. Go to “*system*”



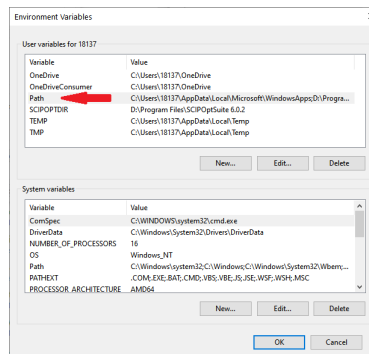
3. In the new window, go to “*Advanced system settings*”



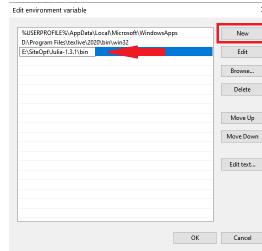
4. From the “*Advanced*” tab, click on “*Environment Variables...*”



5. In the “*User Variables*” window, click on “*Path*”

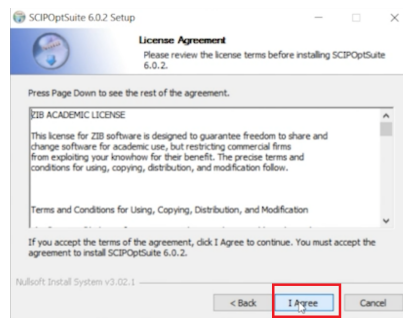


6. Click on “*New*”, and enter the location where you installed the julia and add **\bin** to it (in our example **E:\SiteOpt\Julia-1.3.1\bin**)



4 Installing SCIP V6.0.2

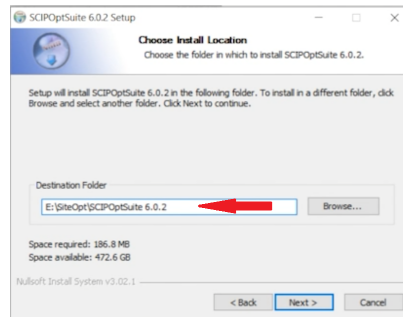
1. Run “*SCIPOptSuite-6.0.2-win64-VS15.exe*”
2. Click on “*Next*”, read the license and click on “*Accept*” to agree with the terms and conditions



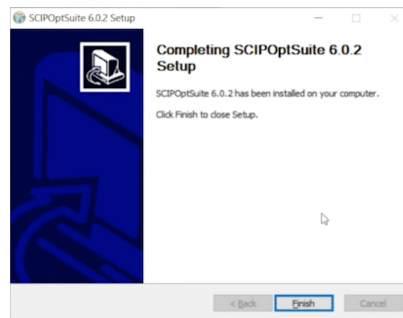
3. Select “*Do not add SCIPOptSuite to the system PATH*”, and click “*Next*”



4. Enter your desired location for installation (in our example “*E:\SiteOpt\SCIPOptSuite 6.0.2*”), click “*Next*”, and then click “*Install*”



5. The SCIP is now installed. Click on “*Finish*”

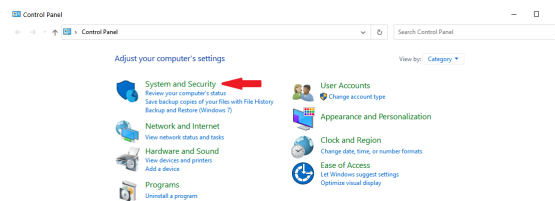


6. In case of any problem, please refer to

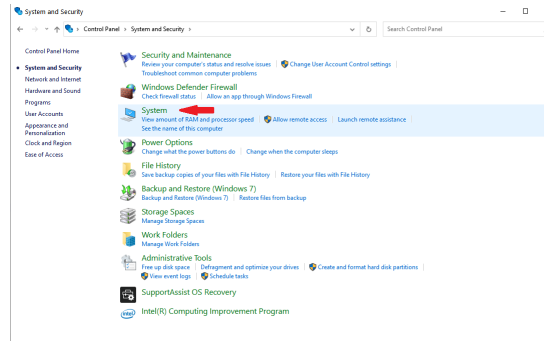
<https://www.scipopt.org/doc/html/INSTALL.php>

5 Setting up the environment variables for SCIP

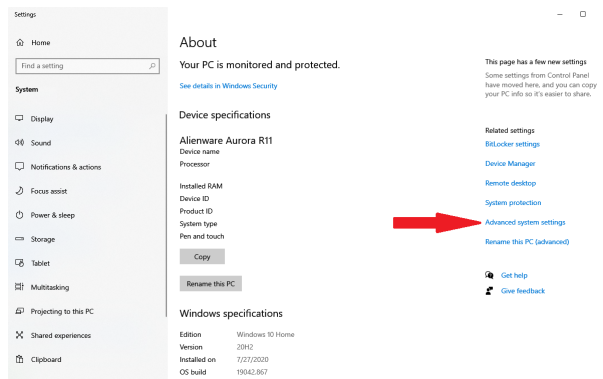
1. From “*Control Panel*” of Windows, go to “*Systems and Security*”



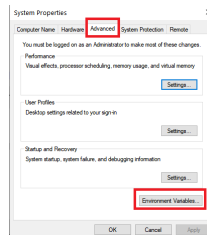
2. Go to “*system*”



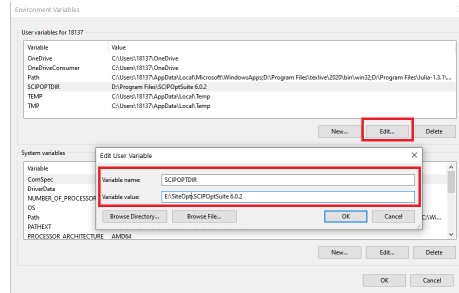
3. In the new window, go to “*Advanced system settings*”



4. From the “*Advanced*” tab, click on “*Environment Variables...*”



5. In the “*User Variables*” window, click on “*New*”, and in the new window, enter “*SCIPOPTDIR*” as the variable name and the installation location of SCIP as the variable value (in our example “*E:\SiteOpt\SCIPOptSuite 6.0.2*”)



6. Click on “OK”

6 Installing SiteOpt in RStudio

1. To install “SiteOpt” in RStudio, we need *Rtools* and “devtools” to be installed.

<https://cran.r-project.org/bin/windows/Rtools/>
<https://cran.r-project.org/web/packages/devtools/index.html>

2. To install “devtools”, in the RStudio console enter “*install.packages(“devtools”)*”

3. Then, call the devtools library by entering “*library(devtools)*”

4. To install SiteOpt, enter “ *devtools::install_github(“paymanghasemi/SiteOpt”)* ”

```

R version 3.6.3 (2020-02-29) -- "holding the windsock"
Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
you are welcome to redistribute it under certain conditions.
type 'license()' or 'licence()' for distribution details.

Natural language support but running in an english locale

R is a collaborative project with many contributors.
type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
type 'q()' to quit R.

> install.packages("devtools")
Installing package into 'C:/Users/Payman/Documents/R/win-library/3.6'
(as 'lib' is unspecified)
trying url 'https://cran.rstudio.com/bin/windows/contrib/3.6/devtools.2.3.0.zip'
content type 'application/zip' length 350923 bytes (342 kB)
downloaded 342 kB
package 'devtools' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:/Users/Payman/AppData/Local/Temp/RTmpFC7r7/downloaded_packages
> library(devtools)
Loading required package: usethis
> devtools::install_github("paymanghasemi/SiteOpt")
Downloading github repo paymanghasemi/SiteOptmaster

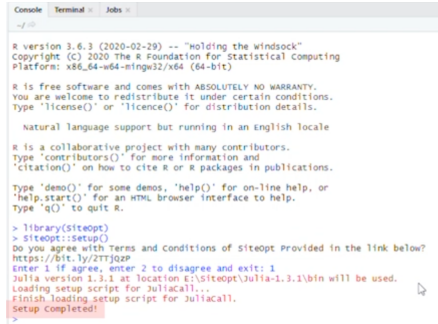
```

5. After installing SiteOpt, enter “ *SiteOpt::Setup()* ” to setup SiteOpt for use. This functions needs to be called only once and when the SiteOpt is being installed for the first time. (This function will install “JuMP” package in Julia, and make sure that “JuMP” works properly with “SCIP” package in Julia)

6. After entering “ *SiteOpt::Setup()* ”, please refer to the link that the function provides to read the terms and conditions of SiteOpt, and enter “ 1 ” to agree to them.

7. After agreeing to the terms and conditions, a line will be printed pointing out the environment variable of Julia. Please make sure the location is the same as the address you defined as the environment variable of Julia

Note: SiteOpt::Setup() is a time consuming function and can take several minutes to finish. After successful completion, it will report “Setup Completed!”.



```
R version 3.6.3 (2020-02-29) -- "holding the windsock"
Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
you are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

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Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an html browser interface to help.
Type 'q()' to quit R.

> library(SiteOpt)
> SiteOpt::Setup()
Do you agree with Terms and Conditions of Siteopt Provided in the link below?
https://bit.ly/2T7J0ZP
Enter 1 if agree, enter 2 to disagree and exit: 1
Julia version 1.3.1 at location E:\SiteOpt\Julia-1.3.1\bin will be used.
Loading setup script for JuliaCall...
Finish loading setup script for JuliaCall.
Setup Completed!
```

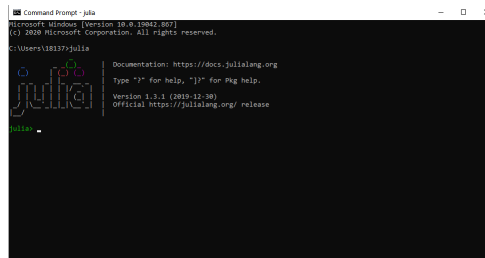
8. In case of any problem, please refer to

<https://jump.dev/JuMP.jl/v0.21.6/installation/>

Error in SiteOpt::Setup() or optimization functions

In case of encountering an error, take the following steps:

1. Open the “*Command Prompt*” of windows, and enter “*julia*”. The result should be the same as the following figure, and in case of an error, make sure you have properly defined the environment variable of Julia



```
Microsoft Windows [Version 10.0.18362.807]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\18177\Julia
julia
Julia
Julia version 1.3.1 (2019-12-30)
Official https://julialang.org/ release
```

2. Then, enter the following codes in the Julia interface opened in windows command prompt.

- import Pkg
- Pkg.add(Pkg.PackageSpec(;name="JuMP", version="0.21"))
- Pkg.add(Pkg.PackageSpec(;name="SCIP", version="0.9.3"))
- Pkg.build("SCIP")
- import JuMP
- import SCIP

3. In case of any error, please contact payman@usf.edu