

# tkDerm nao 1.0.0 Documentation

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October 22, 2011



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# Chapter 1

## Setting up tkDerm nao

tkDerm nao is a dermatological image database client running on Nao. You can operate an image database by telling Nao what to do or by touching him. It requires a Macintosh computer to show photos by using Safari and Exposé. It also needs an iPad to choose a patient to be bound to a Naomark card.

### 1.1 tkDerm touch on iPad

tkDerm nao uses tkDerm touch running on iPad to choose a patient to be bound to a Naomark card. tkDerm touch can be obtained from App Store without charge. Instruction on how to set up the server and how to use tkDerm touch can be read in tkDerm touch Documentation found at

<http://tkderm.sourceforge.net/touch.html>

### 1.2 Database server

tkDerm nao and tkDerm touch use PostgreSQL as a database server. You can find a guide on how to set up the server in tkDerm touch Documentation mentioned above.

For the reviewers' convenience, a demo server is available at 218.45.173.209 until the NAOSTore contest ends.

*Notice: All data on the demo server are made anonymous.*

*Register and Delete commands described below will be failed on the demo server as the privilege to change data is not given to the guest account.*

To connect to the demo server with tkDerm touch,

1. Tap the Data button on the tab bar.
2. Tap the ">" button at the right end of the Preferences row.
3. Enter "218.45.173.209" as Host.
4. Enter "guest" as User.
5. Tap the Save button at the upper-right corner.
6. Tap the Search button on the tab bar.
7. Tap the Action button at the upper-right corner.
8. Enter "demopw" as Password.
9. Choose "ano1" as Database Name.
10. Enter "demokey" as Encryption Key and hit the return key.

## 1.3 Macintosh computer for showing photos

tkDerm nao requires a Macintosh computer as it depends on Safari and Exposé to show photos.

### 1.3.1 tkDerm nao.pkg

The most convenient way to set up your Macintosh computer is to use "tkDerm nao.pkg", which is a one-click installer for Snow Leopard. With this installer, all the auxiliary software and files described below will be installed and the Apache web server will be restarted automatically to let the suexec support take effect. If you use "tkDerm nao.pkg", you can skip the following 3 subsections on Appscript, suEXEC and CGI scripts.

If you'd like to use the installer and the demo server, follow the following instruction.

1. Download "tkDerm nao.pkg" to your "Snow Leopard" machine. This installer is compatible with Snow Leopard only.
2. Double-click the installer and follow the instruction.
3. Download "tkderm.crg" and open it by Choregraphe connected to Nao.
4. Set "CGI URL" parameter of "showPhotos" box. 192.168.1.1 and yourAccount in the default value should be replaced with your IP address and your account name, respectively. All the other parameters should be left unchanged.
5. Click the Play button in Choregraphe. Nao will stand up.
6. Say "recent" to Nao or touch the right side of his right hand. Nao will connect to the demo server and show photos by Safari.
7. The voice commands are described in Section 2.2 (12 page). The touch commands are described in Section 2.3 (13 page).
8. To quit, say "Good-bye" to Nao.

### 1.3.2 Appscript

tkDerm nao depends on Python appscript (py-appscript), which is an Apple event bridge that allows you to control scriptable Mac OS X applications using ordinary Python scripts.

You should install py-appscript from

<http://appscript.sourceforge.net/py-appscript/install.html>

### 1.3.3 suEXEC for the Apache web server

tkDerm nao needs suEXEC support for the Apache web server to execute CGI scripts installed under your home directory. The suexec binary compiled for Apache 2.2.15 is included in the tkDerm nao distribution. It is confirmed that it is also compatible with Apache 2.2.17, but it may not work with other versions of the Apache server. In the latter case, you should compile suexec by yourself by the way described at

<http://httpd.apache.org/docs/2.0/en/suexec.html>

To enable suEXEC support,

```
sudo cp suexec /usr/bin
sudo chgrp _www /usr/bin/suexec
sudo chmod 4750 /usr/bin/suexec
cd /private/etc/apache2/users
sudo vi yourAccountName.conf
```

The content of the yourAccountName.conf file should be changed to

```
<Directory "/Users/yourAccountName/Sites/">
AddHandler cgi-script .cgi .py
    Options Indexes MultiViews ExecCGI
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>
```

Be sure to restart the Apache web server to make suexec effective. To restart it, visit System preferences – > Sharing – > Web Sharing.

### 1.3.4 CGI scripts

CGI scripts are included in the tkDerm nao distribution as

CGI-Executables.zip

You should extract it in

```
/Users/YourAccountName/Sites/
```

Then change the ownership as follows.

```
cd /Users/YourAccountName/Sites
sudo chown -R YourAccountName CGI-Executables
```



## 1.4 Naomark cards

You can use Naomark cards to let Nao know which patient to be shown. Nao recognizes a combination of two Naomarks corresponding to a patient.

The order and dimension of the Naomarks on the cards are important. For reference, you can find in the tkDerm nao distribution the photo of a sample card. The longer rim of the surrounding rectangle of each Naomark should be 5 cm and there should be some space to be grasped by Nao at the right side of the second Naomark. As shown in the photo, I use plastic card cases to give strength to Naomark cards not to be bent when grasped by Nao.

If you say "recent" to Nao, Nao will show photos of the patient who was accessed by tkDerm touch on iPad most recently. If you prefer to use tkDerm touch to specify a patient to be shown, you may not need Naomark cards.

If you have decided to use Naomark cards, you must add "naomark" column to "patient" table of your database. To do this, you should connect to your database with a PostgreSQL client application "psql" by typing in the terminal as follows.

```
psql yourDatabaseName
```

Then execute the following command.

```
ALTER TABLE patient ADD COLUMN naomark integer[];
```

*Notice: When you try with the demo server, it is not necessary to execute the above command.*

*Combinations of Naomarks used for the demo server are*

*{64,68},{64,84},{64,107},{64,112},{64,114},  
{80,68},{80,84},{80,107},{80,112},{80,114}.*



# Chapter 2

## Executing tkDerm nao

### 2.1 Setting parameters

You should set parameters of the showPhotos box before executing tkDerm nao.

**PostgreSQL IP** IP address of the PostgreSQL server. When using the demo server, it should be

218.45.173.209

**Photo URL** URL of the root directory for serving photos. When using the demo server, it should be

http://218.45.173.209/photo/

**CGI URL** URL of CGI scripts. It should be

http://yourIPAddress/~yourAccountName/CGI-Executables/

**Database** Database name. When using the demo server, it should be

ano1

**User** User name of your PostgreSQL account. When using the demo server, it should be

`manabu`

**Password** Password of your PostgreSQL account. When using the demo server, it should be

`demopw`

**Encryption Key** Encryption Key of your database. When using the demo server, it should be

`demokey`

**Encryption Algorithm** Encryption Algorithm of your database. When using the demo server, it should be

`bf`

## 2.2 Voice commands

While executing tkDerm nao, Nao can recognize commands described below.

**New data** Nao will say "Give me a patient ID card." and open his hand. If you give him a Naomark card, Nao will show photos of the patient bound to the card.

**Recent** Nao will show photos of the patients whose record was accessed by tkDerm touch most recently.

**Next** Nao will show the tab right to the current tab of the top window of Safari.

**Previous** Nao will show the tab left to the current tab of the top window of Safari.

**Session** Nao will change the order of a stack of windows by moving the top window to the bottom.

**Close** Nao will close the top window.

**Expose** Nao will launch Exposé application to make the windows arranged side-by side in the tile style. Another "Expose" command will go back to the stack arrangement of the windows.

**Register** Nao will say "Give me a patient ID card." and open his hand. If you give him a Naomark card, Nao will bind the card to the patient whose photos are being shown.

**Delete** Nao will unbind the patient whose photos are being shown from the card bound to the patient.

**Goodbye** Nao will stop running tkDerm nao.

## 2.3 Touch commands

Currently, the performance of the voice commands is not satisfactory. To circumvent this situation, all the voice commands except for Goodbye have equivalent touch commands as shown below.

**New data** Back of the right hand.

**Recent** Radial side of the right hand.

**Next** Left foot.

**Previous** Right foot.

**Session** Front head.

**Close** Middle head.

**Expose** Rear head.

**Register** Back of the left hand.

**Delete** Radial side of the left hand.