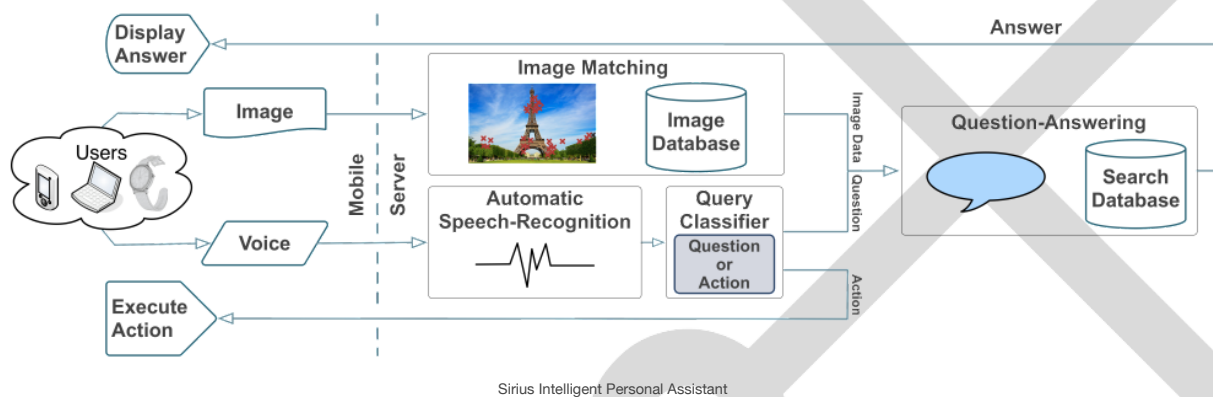


Disclaimer: Sirius is **not** produced by Apple and is **in no way** derived from Apple's Siri.

Sirius

Sirius is an open-source end-to-end standalone intelligent personal assistant (IPA) service. Sirius receives queries in the form of speech or images and returns results in the form of natural language. Sirius implements the core functionalities of an IPA including speech recognition, image matching, natural language processing and a question-and-answer system.



Download

Visit our [Downloads](#) page to get the latest version of Sirius.

Install

Sirius has been tested on Ubuntu 12.04 and 14.04. The following instructions are based from the `sirius-application/` directory.

Prerequisites

Sirius (and Sirius-suite) has several dependencies which can be resolved with the included `get-dependencies.sh`. The full list of dependencies is summarized below:

- **Sphinx** (sphinxbase and pocketsphinx)
- **Kaldi**
- **Protobuf**
- **OpenCV** (v2.4.9)
- Java (v1.7.0_55)

Setting up Sirius

```
$ tar xzf sirius-1.0.1.tar.gz
$ cd sirius/sirius-application
$ tar xzf question-answer.tar.gz
$ sudo ./get-dependencies.sh
$ sudo ./get-opencv.sh
$ ./get-kaldi.sh
$ ./compile-sirius-servers.sh
```

After all the correct dependencies have been resolved `compile-sirius-servers.sh` compiles all the Sirius servers.

The subsequent scripts mentioned are included in the `run-scripts/` directory unless otherwise noted.

Automatic Speech Recognition (ASR)

Sirius supports three backends: Kaldi (DNN/HMM based), Pocketsphinx, and Sphinx4 (the latter are GMM/HMM based) to perform Automatic Speech Recognition.

To open an ASR server:

```
$ ./start-asr-server.sh
or
$ ./start-asr-server.sh pocketsphinx
```

or specify an ASR, hostname and port:

```
$ ./start-asr-server.sh pocketsphinx localhost 8080
```

In a separate terminal, to test ASR:

```
$ ./sirius-asr-test.sh ../inputs/questions/what.is.the.speed.of.light.wav
```

Image Matching (IMM)

Image Matching uses **SURF** to match query images to a stored database.

In `image-matching/` first build and store a database of descriptors in protobuf format where the arguments are the name of the database and the directory containing the images:

```
$ ./make-db.py landmarks matching/landmarks/db/
```

To change the database used by the IMM service, change the name in `start-imm-server.py`.

In `run-scripts/`, open the IMM server:

```
$ ./start-imm-server.sh
```

In a separate terminal, test IMM using:

```
$ ./sirius-imm-test.sh ../image-matching/matching/landmarks/query/query.jpg
```

Question-Answering System (QA)

The Question-Answering system uses **OpenEphyra** and a Wikipedia database stored in **Lemur's Indri** format.

Extract the Wikipedia database (after untaring and building question-answer):

```
$ wget http://web.eecs.umich.edu/~jahausw/download/wiki_indri_index.tar.gz
$ tar xzvf wiki_indri_index.tar.gz -C question-answer/
```

In `run-scripts/`, open the QA server:

```
$ ./start-qa-server.sh
```

In a separate terminal, test QA using:

```
$ ./sirius-qa-test.sh "what is the speed of light"
```

Combining Services

It is very easy with Sirius to combine ASR and QA to create the full intelligent personal assistant pipeline. After opening multiple servers using `./start-<service>-server.sh`, test an ASR-QA query using:


```
$ ./sirius-asr-qa-test.sh ../inputs/real/what.is.the.capital.of.italy.wav
```

Contact

We would love to have your help in improving Sirius. Please visit the [sirius repo](#) to learn more about how to contribute. For questions and comments, post to [sirius-users](#).

Citing Sirius

If you use Sirius in your research, please cite the official publication [1].

[1]  Johann Hauswald, Michael A. Laurenzano, Yunqi Zhang, Cheng Li, Austin Rovinski, Arjun Khurana, Ron Dreslinski, Trevor Mudge, Vinicius Petrucci, Lingjia Tang, and Jason Mars. Sirius: An Open End-to-End Voice and Vision Personal Assistant and Its Implications for Future Warehouse Scale Computers. In *Proceedings of the Twentieth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, ASPLOS '15, New York, NY, USA, 2015. ACM. Acceptance Rate: 17%
[Bibtex]