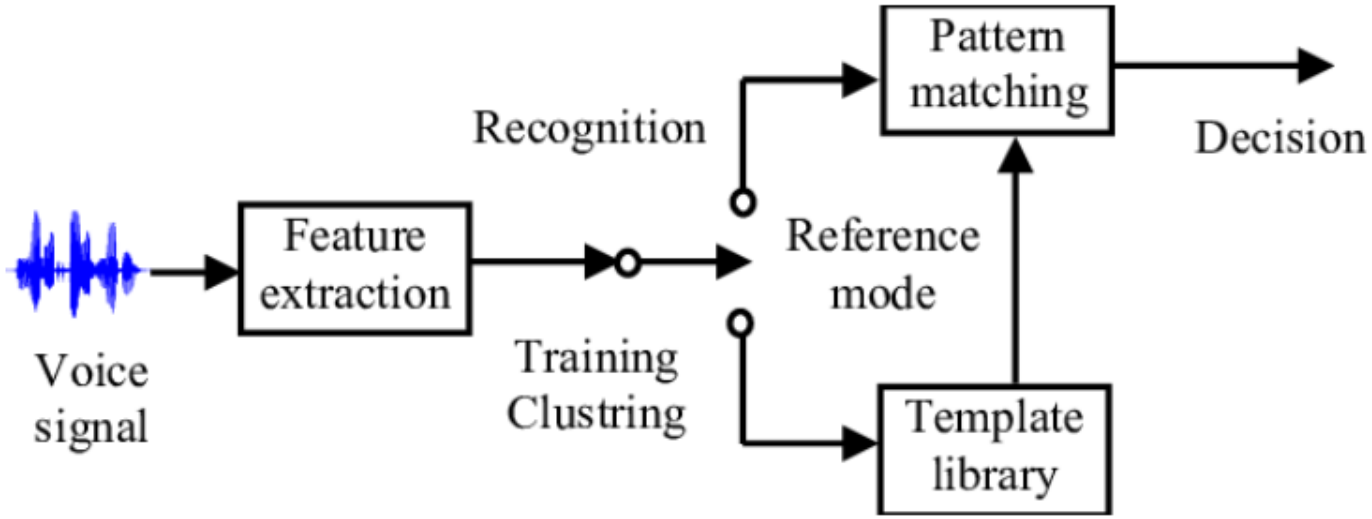
SPEECH RECOGNITION

Speech Recognition

- Speech recognition is a process to extract speech contents from human's voice.
- An automatic speech recognition (ASR) system converts spoken words into text.



[Hamidia, Mahfoud, et al. "Voice interaction using Gaussian mixture models for augmented reality applications." 2015 4th International Conference on Electrical Engineering (ICEE). IEEE, 2015.]

Speech Recognition [offline]

- CMUSphinx - https://cmusphinx.github.io
- ROS Pocketsphinx - http://wiki.ros.org/pocketsphinx
- Demonstration of **kws mode** (keyword spotting mode)
  - $ roslaunch pocketsphinx **kws.launch** dict:=/home/mustar/catkin_ws/src/basic_function_packages/pocketsphinx/demo/voice_cmd.dic kws:=/home/mustar/catkin_ws/src/basic_function_packages/pocketsphinx/demo/voice_cmd.kwlist
  - $ rostopic echo /kws_data
- Voice commands for robot simulation in Gazebo
  - $ roslaunch jupiterobot_gazebo **jupiterobot_world.launch** (takes time to load)
  - $ rosrun pocketsphinx **voice_control_example.py**
- Source code implementation
  - $ roslaunch rchomeedu_speech **talkback.launch** (kws.launch)

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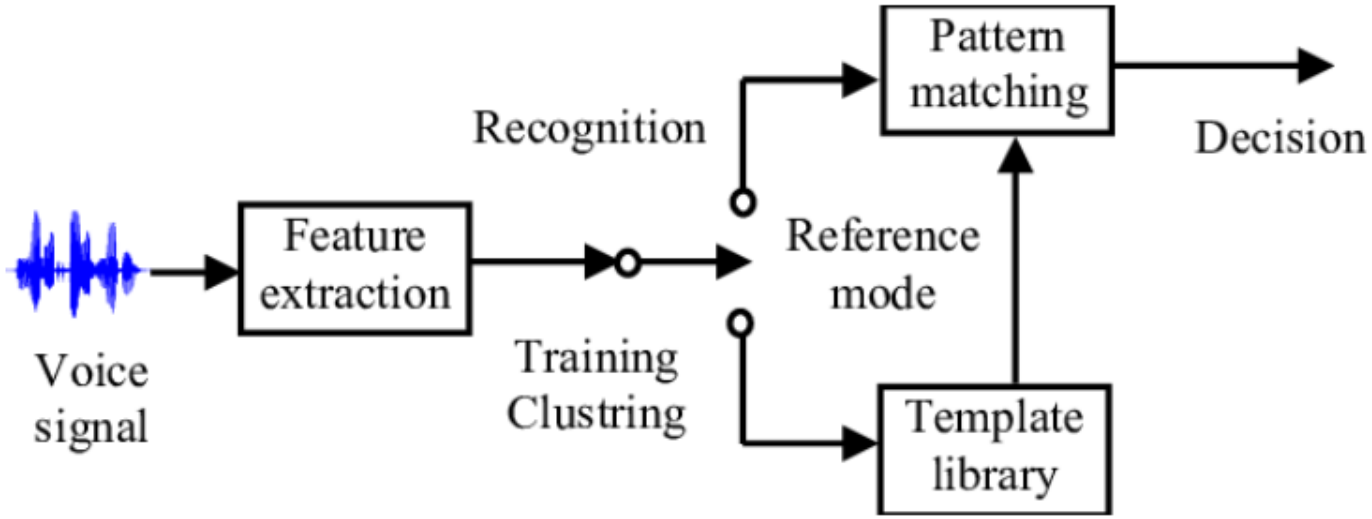

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Speech Recognition [offline]

- Demonstration of **lm mode** (language model mode)
  - $ roslaunch rchomeedu_speech **lm.launch** dict:=/home/mustar/catkin_ws/src/rc-home-edu-learn-ros/rchomeedu_speech/robocup/robocup.dic lm:=/home/mustar/catkin_ws/src/rc-home-edu-learn-ros/rchomeedu_speech/robocup/robocup.lm
  - $ rostopic echo /lm_data
- Creating a Vocabulary
  - $ roscd rchomeedu_speech/robocup
  - $ less **robocup.corpus**
  - http://www.speech.cs.cmu.edu/tools/lmtool-new.html
  - Update dic and lm files in launch file (lm.launch)
- Add dic and lm files into launch file
  - $ roscd rchomeedu_speech/launch
  - $ gedit **lm.launch**
  - Add dic and lm files into respective argument's value