

## Maqui



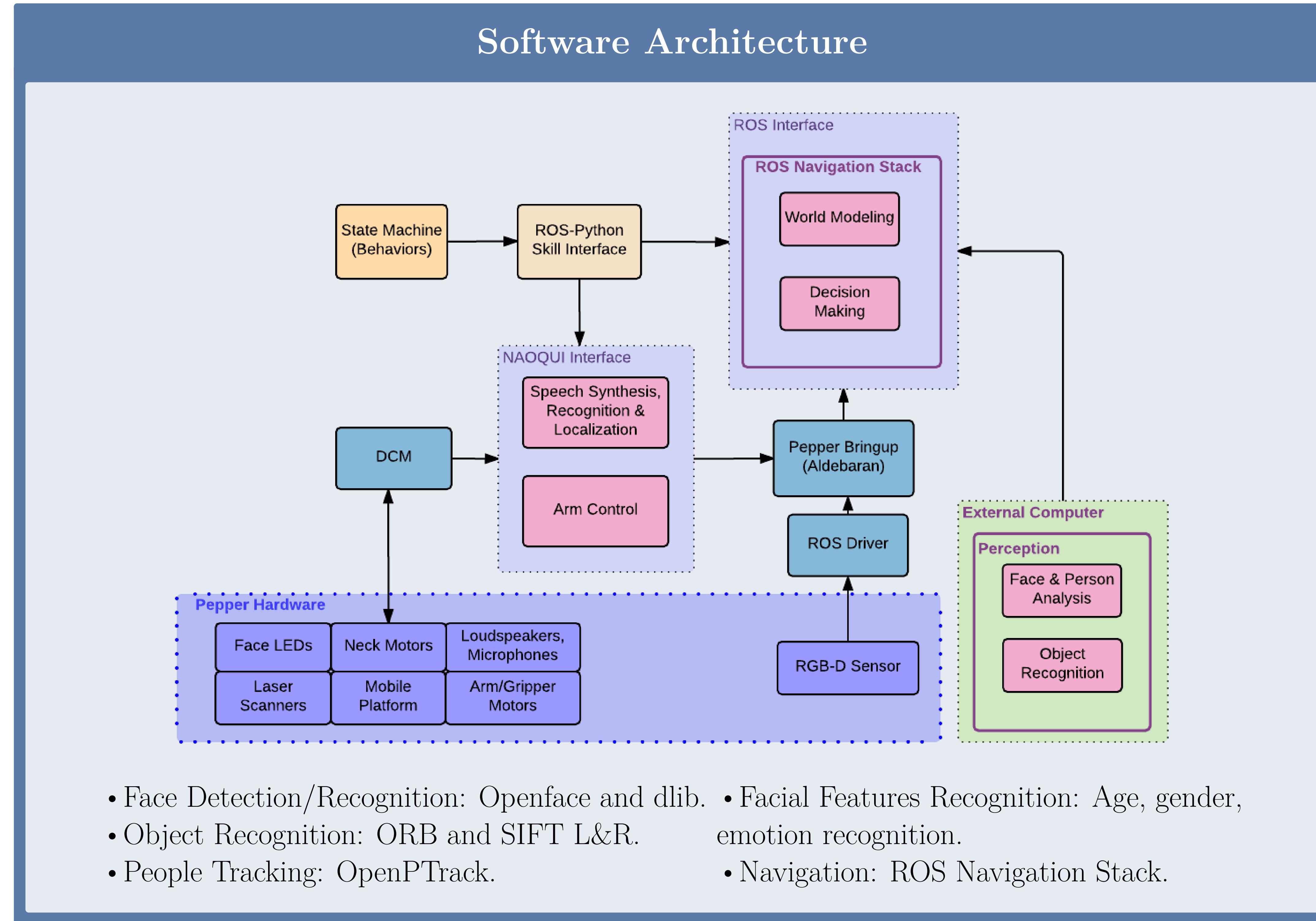
### UChile Framework

The goal of the UChile Framework is to develop hardware-independent code to achieve desired capabilities, it aims for re-utilization of code on different robots. Some of the developments already integrated on the Maqui robot are:

- High-level behavior system
- Joystick interface
- Object detection and recognition
- ROS Navigation Stack
- Facial features recognition system based on a DNNs library

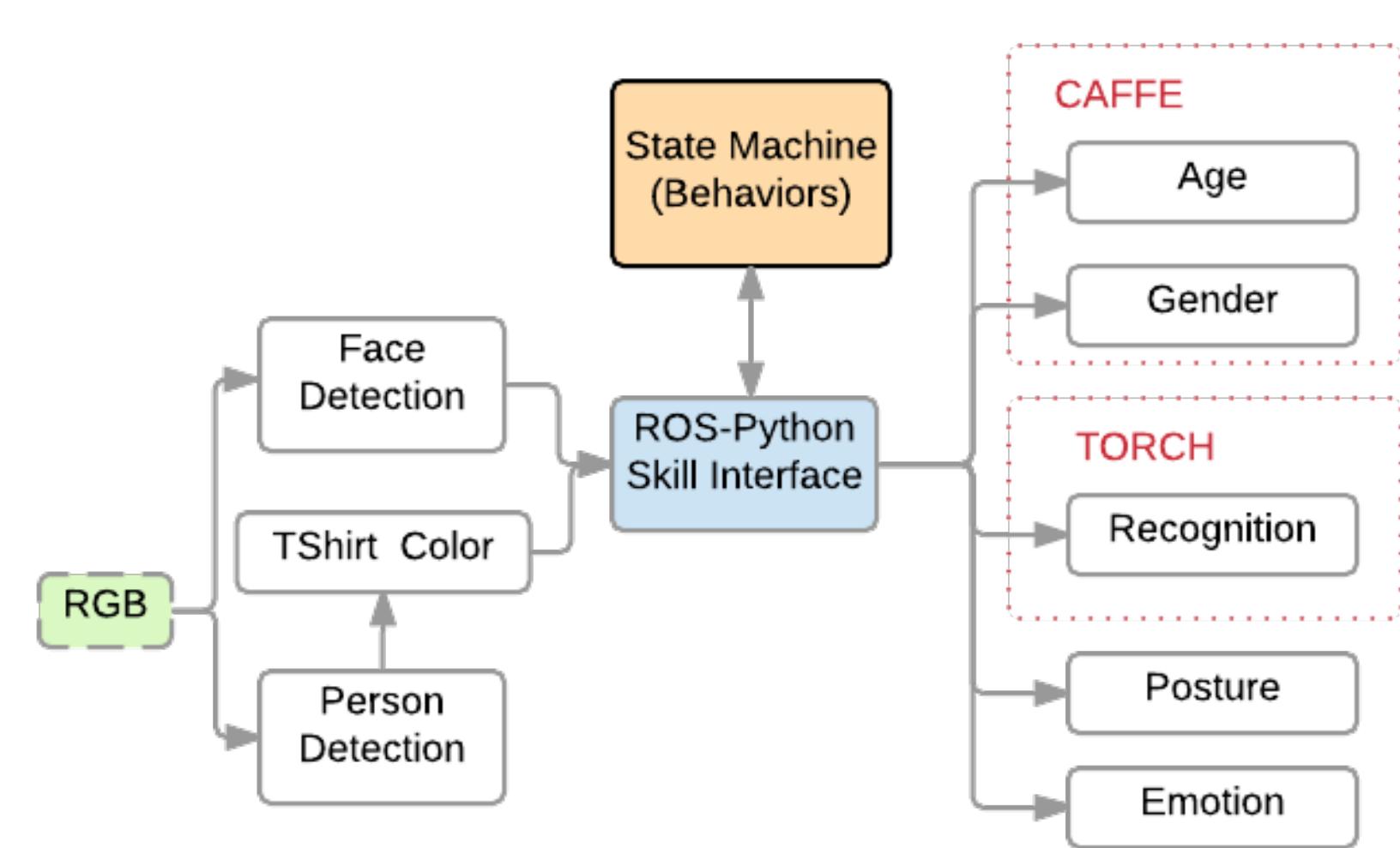
### Contact Information

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- Repository: [github.com/uchile-robotics](https://github.com/uchile-robotics)
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### Interface for deep facial features recognition

Given the complexity in the design and training of DNNs, special learning frameworks/tools are needed for these tasks. To achieve this we had to develop an interface that combines Caffe and Torch frameworks. Using the dlib face detector, it sends the face to each of the processing nodes. Age and gender recognition is implemented using Caffe, while face recognition is developed using Torch.



Size	Image	Detection	Recognition	Gender
640x480		1.0	0.33	0.8
1270x720		1.0	1.0	0.82
1280x1024		1.0	1.0	0.88
4928x3264		1.0	1.0	0.93

Table 1: Recall facial features recognition

### Future Work

The research efforts of the UChile Peppers team are focused around the application of the Deep Learning paradigm through the use of Deep Neural Networks (DNNs), where the team is investigating novel implementations for compression and quantizations of DNNs. Alongside this research, the team is developing algorithms for Semantic Segmentation of indoor environments and for Object Recognition, using DNNs.

### Team Collaboration

UChile Peppers Team counts on the support provided by the Universidad de Chile's other robotics teams, namely UChile Homebreakers and UChileRT. The UChileRT of the SPL soccer league brings support in topics like the Naoqi framework, and Uchile Homebreakers from the Open Platform League brings support in domestics robots topics. This opens the door to future collaborative performances between Maqui and Bender.



### Outreach(2017)



### Acknowledgements

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