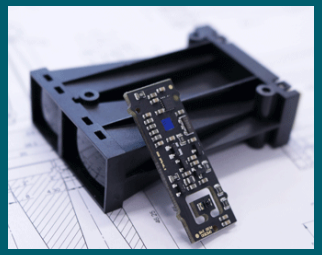
UNIVERSITÄT ZU LÜBECK
INSTITUT FÜR ROBOTIK
UND KOGNITIVE SYSTEME

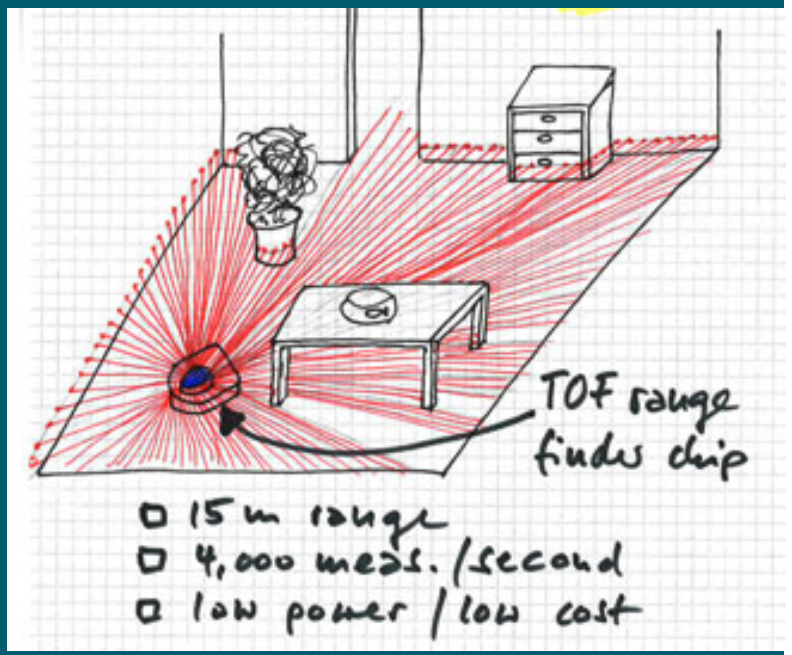
Institute for Robotics and Cognitive Systems | Prof. Dr. Elmar Rueckert

# Master's Thesis

## Planning with neural networks from 3D ToF Images



Modern time of flight (ToF) sensors are extremely small, have a high resolution and cost a few euros. However, the required computational power to process the data is enormous. To build small sized mobile computing solutions we will investigate in this thesis novel neural network ToF processing systems. A recurrent neural network will be trained on data collected with a EPC611 cam mounted on a mobile robot. The neural network will be used for motion planning and obstacle avoidance in closed-loop control approaches.




**Tasks**

You will study and experiment with state of the recurrent neural networks like LSTMs or restricted Boltzmann machines. The neural networks will be used for robot control and navigation tasks using 3D image data from a tiny epc611 ToF sensor. Parts of this innovative research will be published at an international robotics conference., where the student will become a co-author.

**Qualification**

Highly interested in robotics, AI or neural networks. Some experience with C++, Matlab or Python.

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