Hochschule Konstanz
Fakultät Informatik

Title

Your Name(s)
HTWG Konstanz, Ubiquitous Computing Lab

Mobile Computing WS2018/19

URL: http://uc-lab.in.htwg-konstanz.de

Motivation

State of the Art

Construction

Kinematics

Application

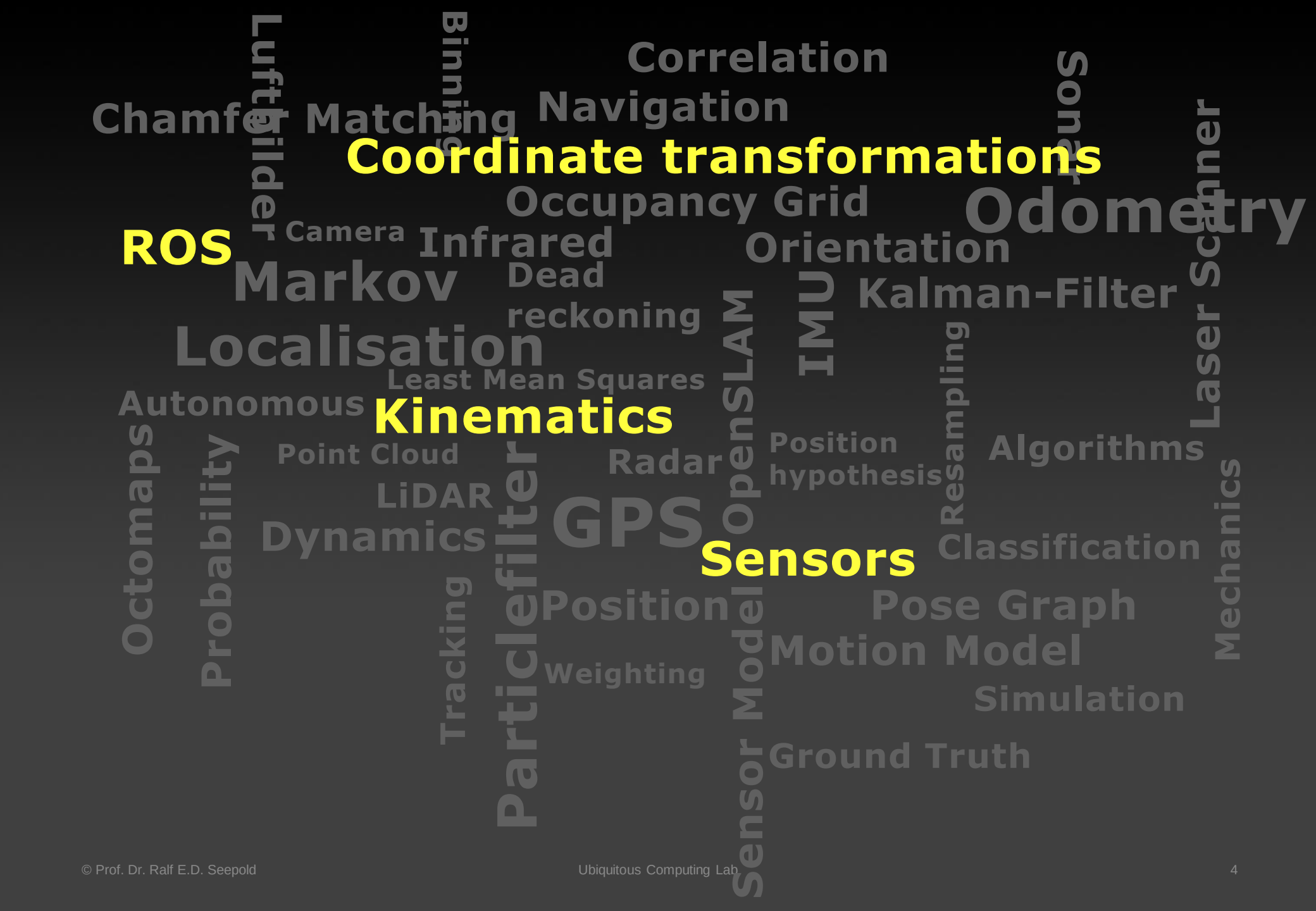
Demo

Motivation

Material recycling

Use in teaching

Easy start in robotics


Correlation
Navigation
Chamfer Matching
Coordinate transformations
Occupancy Grid
Odometry
ROS
Camera
Infrared
Orientation
Markov
Dead reckoning
Kalman-Filter
Localisation
IMU
Laser Scanner
Least Mean Squares
Autonomous
Kinematics
Point Cloud
Radar
Position hypothesis
Algorithms
LiDAR
GPS
Dynamics
Classification
Sensors
Position
Pose Graph
Motion Model
Weighting
Simulation
Ground Truth
Octomaps
Probability
Tracking
Particlefilter
OpenSLAM
Resampling
Mechanics
Sensor Model

(State of the Art)

Construction

~ 150 gr.

~ 200 gr.

Repeatability of
+/- 1°

Forward Kinematics

$$T_0^3 = T_0^1 * T_1^2 * T_2^3$$

$$T_i^{i-1} = Tl(0, 0, d_i) * R(z, \Theta_i)$$

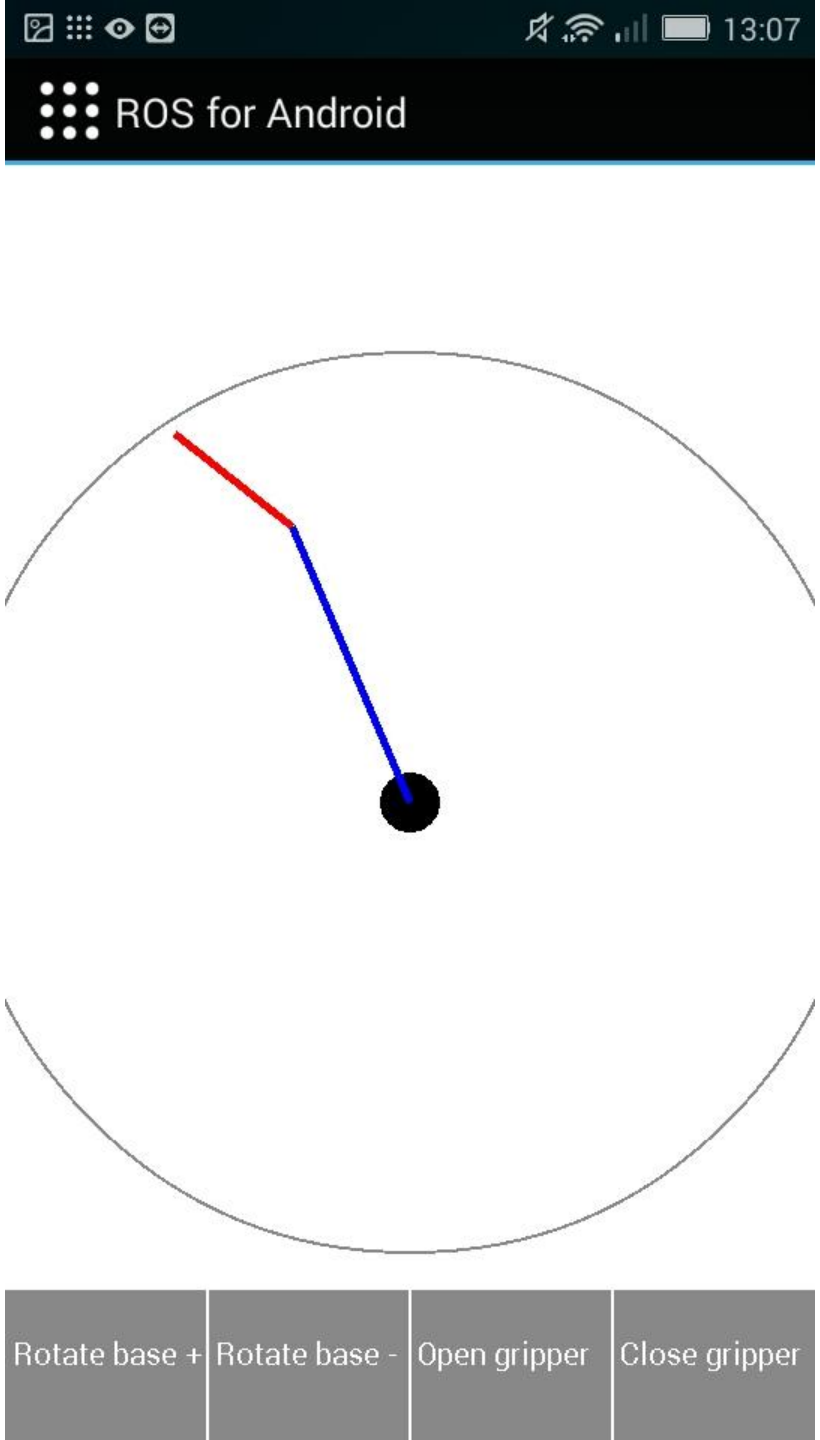
$$T_i^{i-1} = \begin{matrix} cos(\Theta_i) & -sin(\Theta_i) & 0 & l * cos(\Theta_i) \\ sin(\Theta_i) & cos(\Theta_i) & 0 & l * sin(\Theta_i) \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{matrix}$$

$$p_{tcp} = T_0^3 * (0 \quad 0 \quad 0 \quad 1)^T$$

Inverse Kinematics

Application - Architecture


Gripper +
Gripper -
Gelenk 2 +
Gelenk 2 -
Gelenk 1 +
Gelenk 1 -
Basis +
Basis -


13:07
ROS for Android
Rotate base +
Rotate base -
Open gripper
Close gripper

Application – Pipeline

Thanks for your attention. Questions?

Your name here

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