Jacobian def. in GTSAM

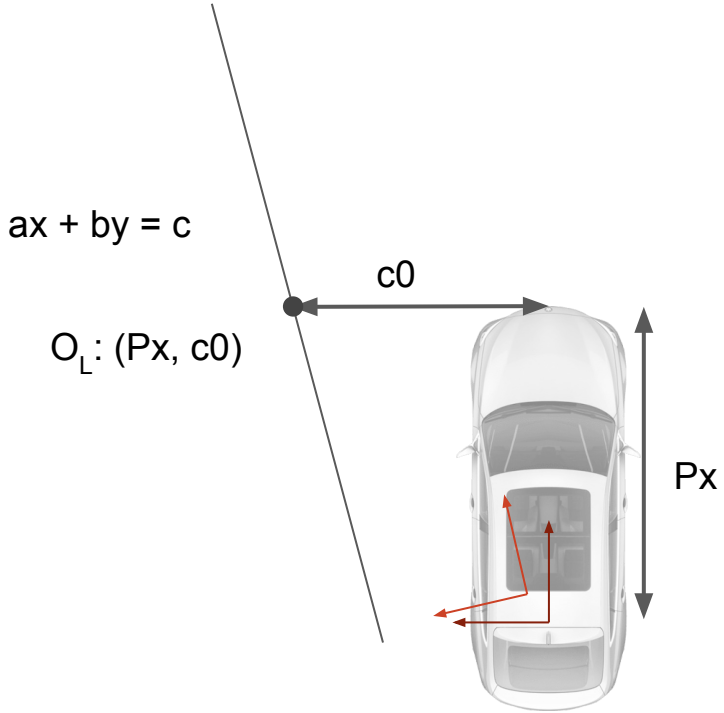
The right Jacobian is the one that makes your unit tests pass :-) Note that retract acts on the right, and hence the Jacobian is expressed in local, not global coordinates. This is something that is often overlooked, hence the importance of unit tests that use the GTSAM numerical derivative functionality.

- Dellaert, Frank

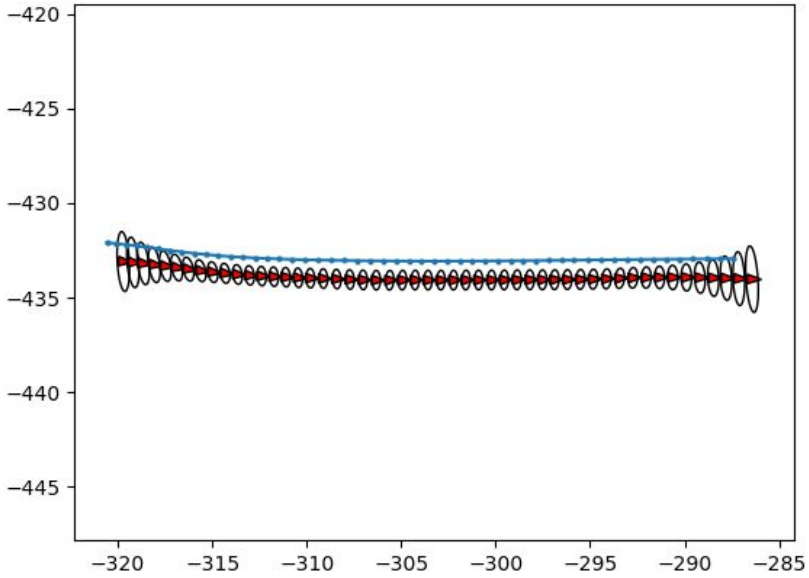
$$\begin{aligned} \text{pseudo-log} : \mathbf{SE}(2) &\mapsto \mathfrak{se}(2) \\ \begin{pmatrix} x \\ y \\ \phi \end{pmatrix} &= \begin{pmatrix} x' \\ y' \\ \phi \end{pmatrix} \end{aligned}$$

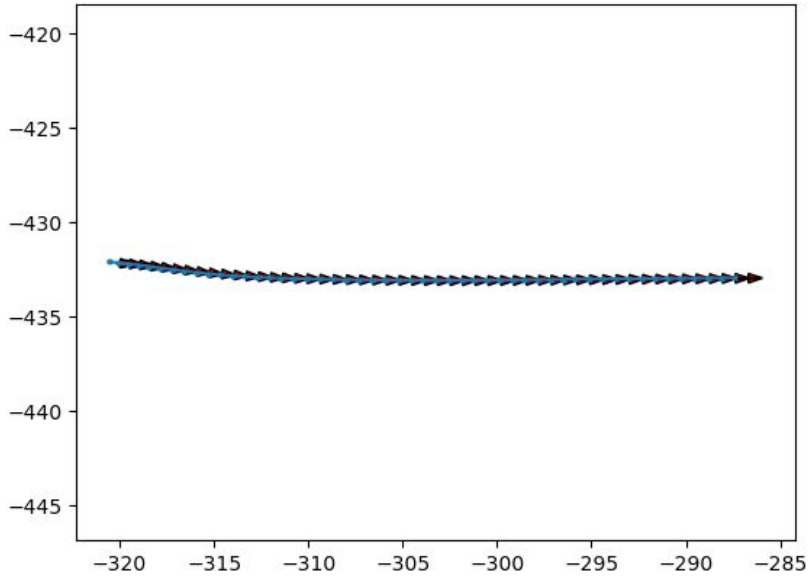
"A tutorial on SE(3) transformation parameterizations and on-manifold optimization",
http://ingmec.ual.es/~jlblanco/papers/jlblanco2010geometry3D_techrep.pdf

Jacobian def. in GTSAM

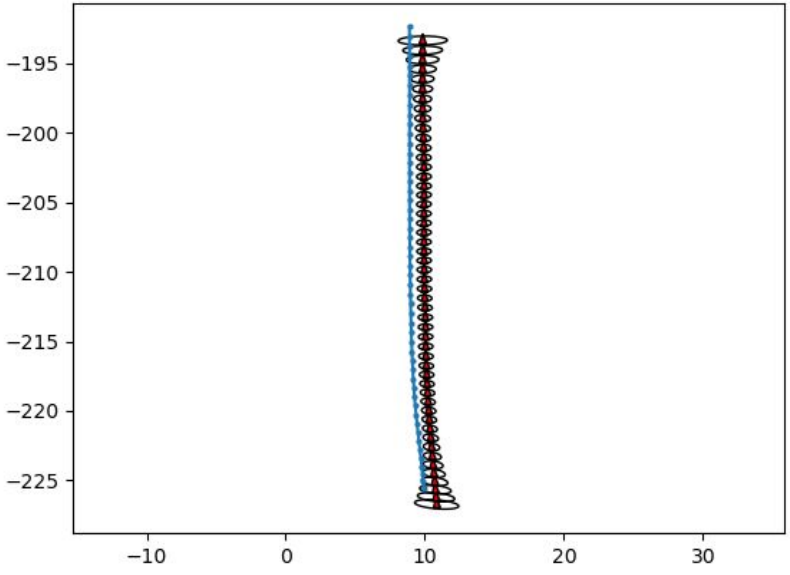


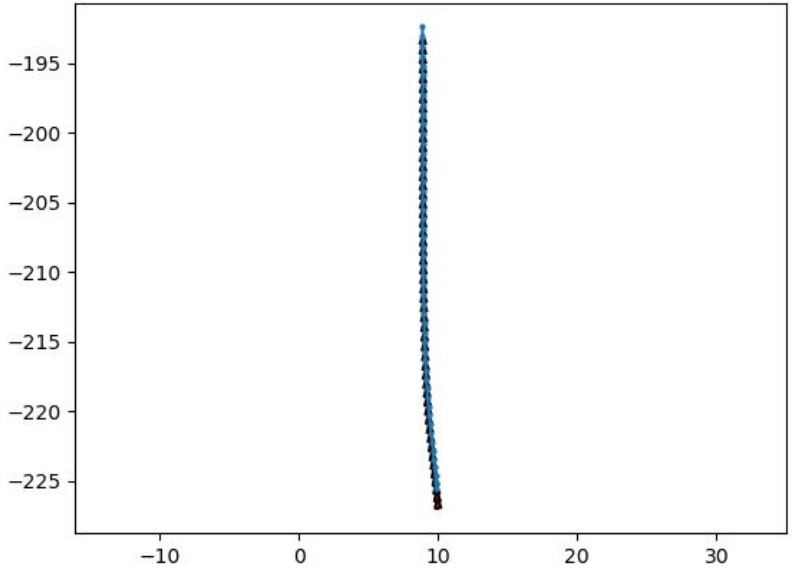
Localization w/ Left Lane Marking



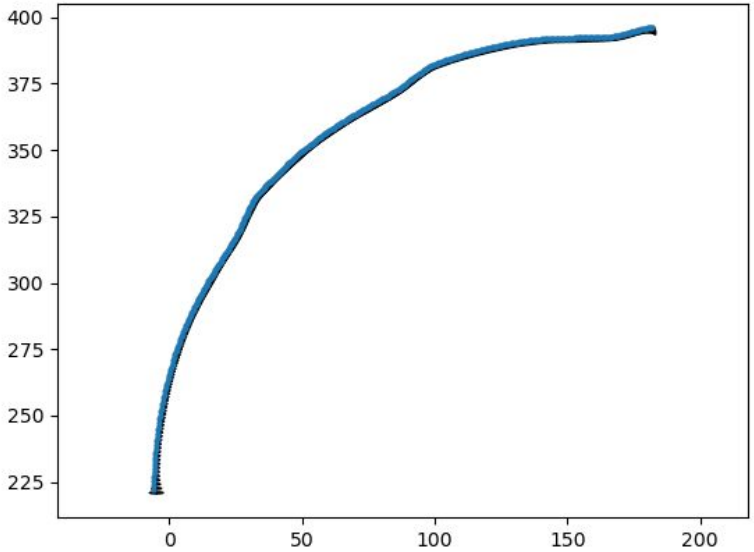


Localization w/ Left Lane Marking

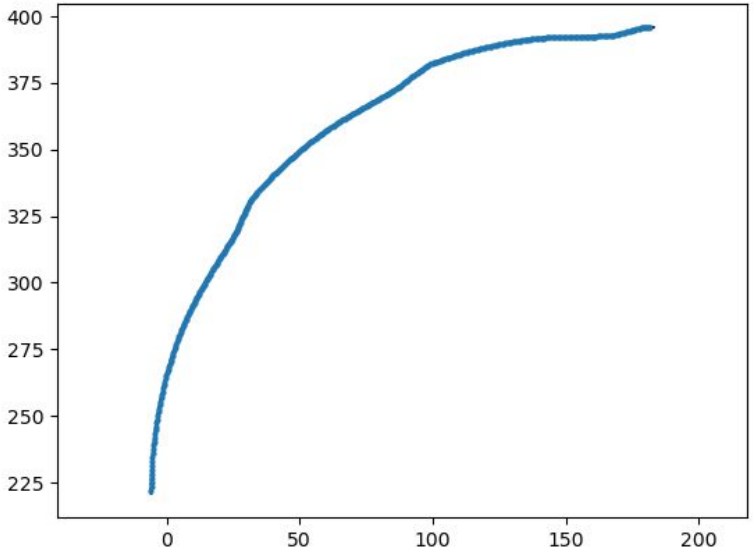




Localization w/o and w/ Lane Marking



odom + gps



odom + gps + lane marking

PDA using Max-Mixture