

Martin Wagner, Sven Hennauer and Gudrun Klinker

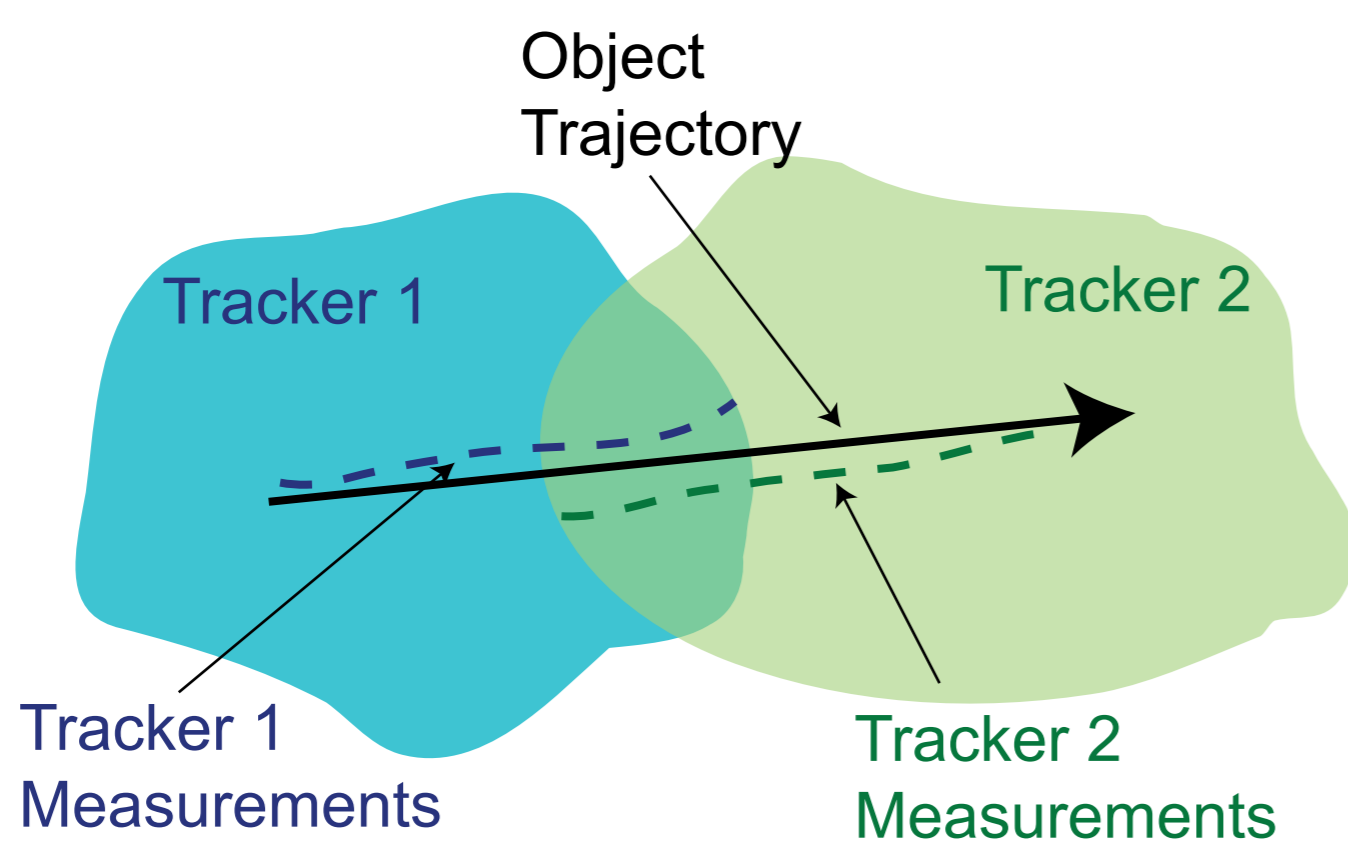
Augmented Reality Group

Institut für Informatik, Technische Universität München
Boltzmannstr. 3, 85748 Garching bei München, Germany

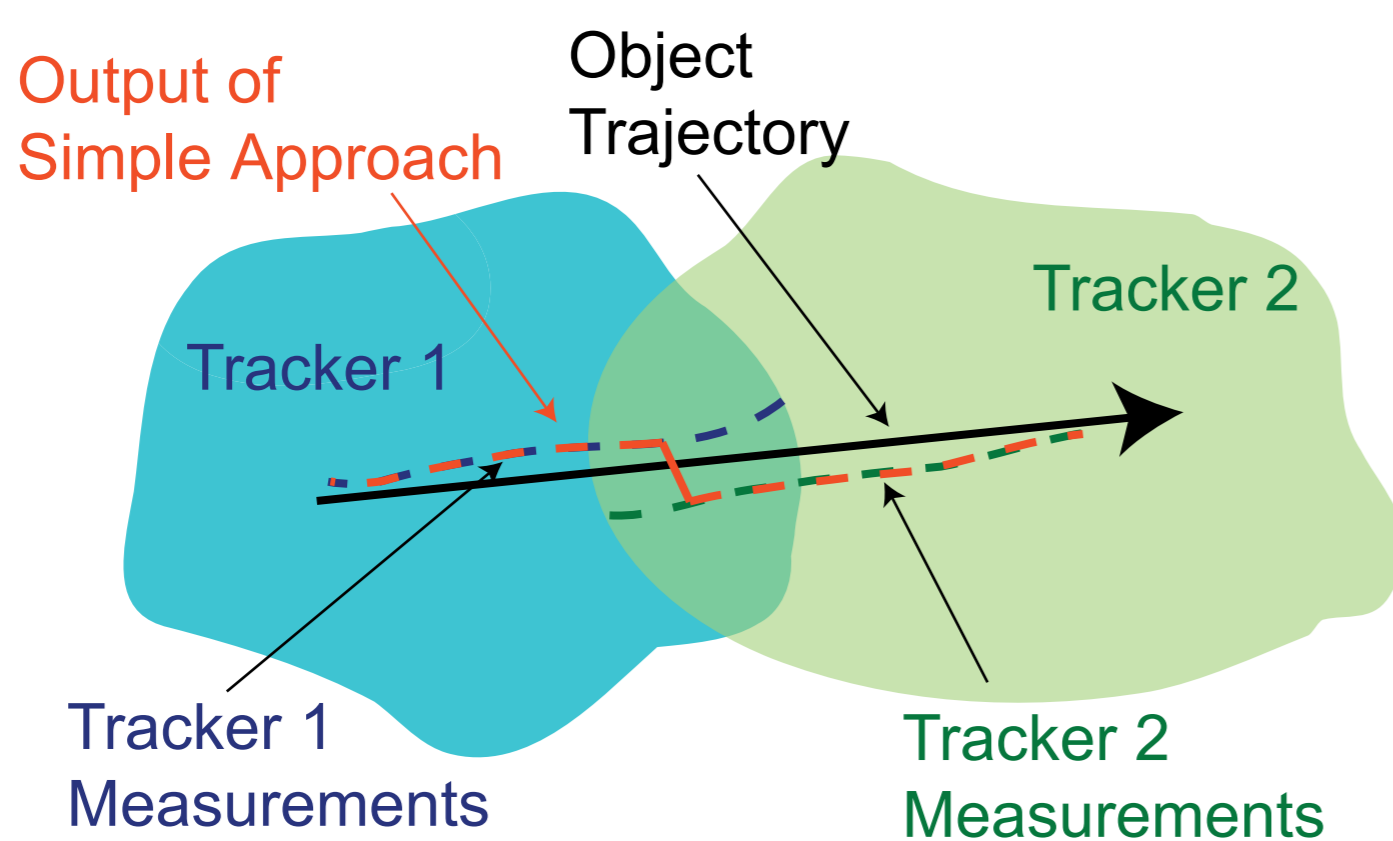
martin@augmentedreality.de

Problem:

- Generic multi-tracker setup for AR applications with visual augmentations
- Transition between two trackers
- Trackers have varying error on their boundary

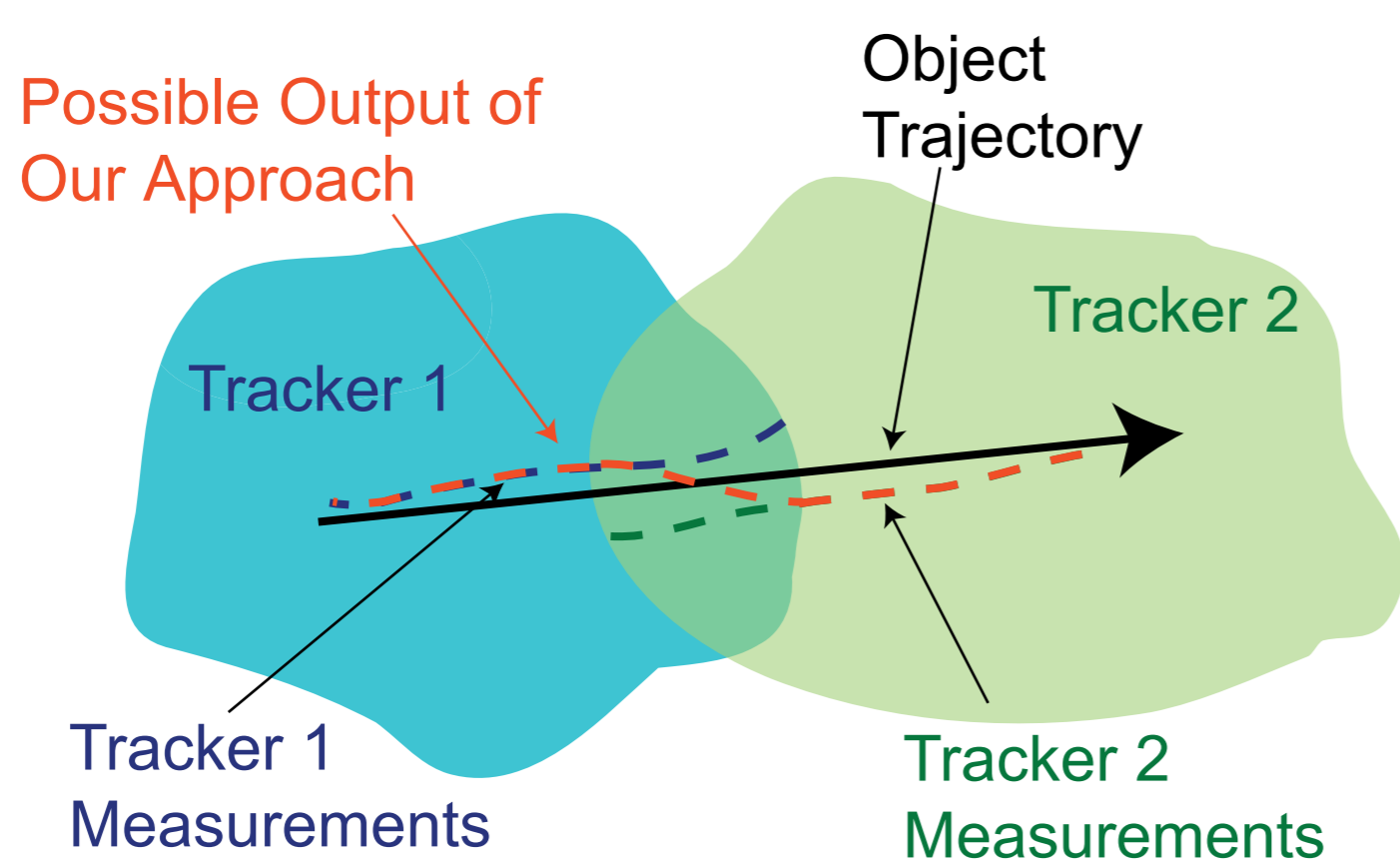


- “Jumps” in visual augmentations result



Approach:

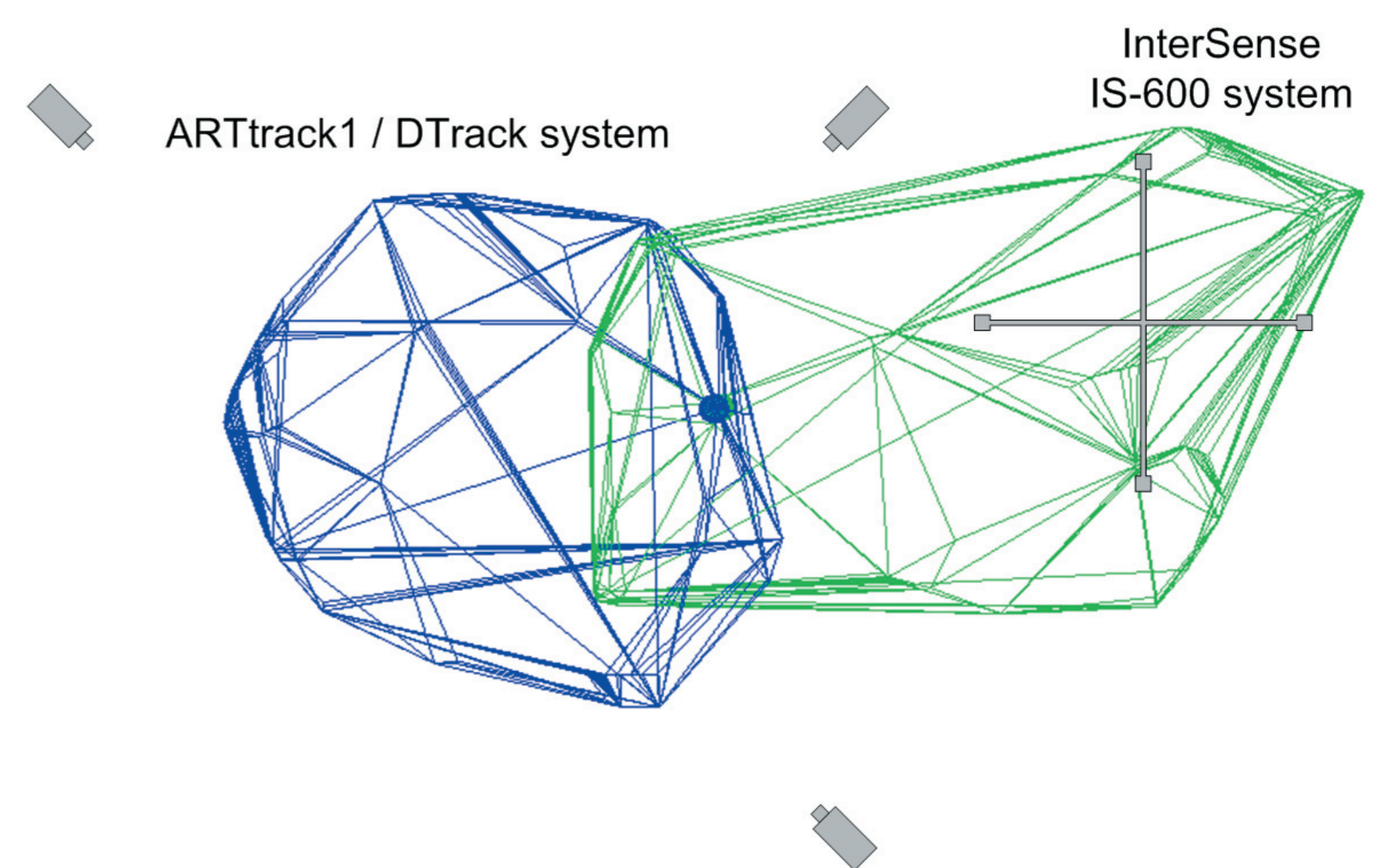
1. Automatic estimation of trackers' working volumes (on- or offline process)
2. If object is in overlapping area, determine distances to boundaries
3. Interpolate tracker measurements according to distances



Estimating the Working Volume:

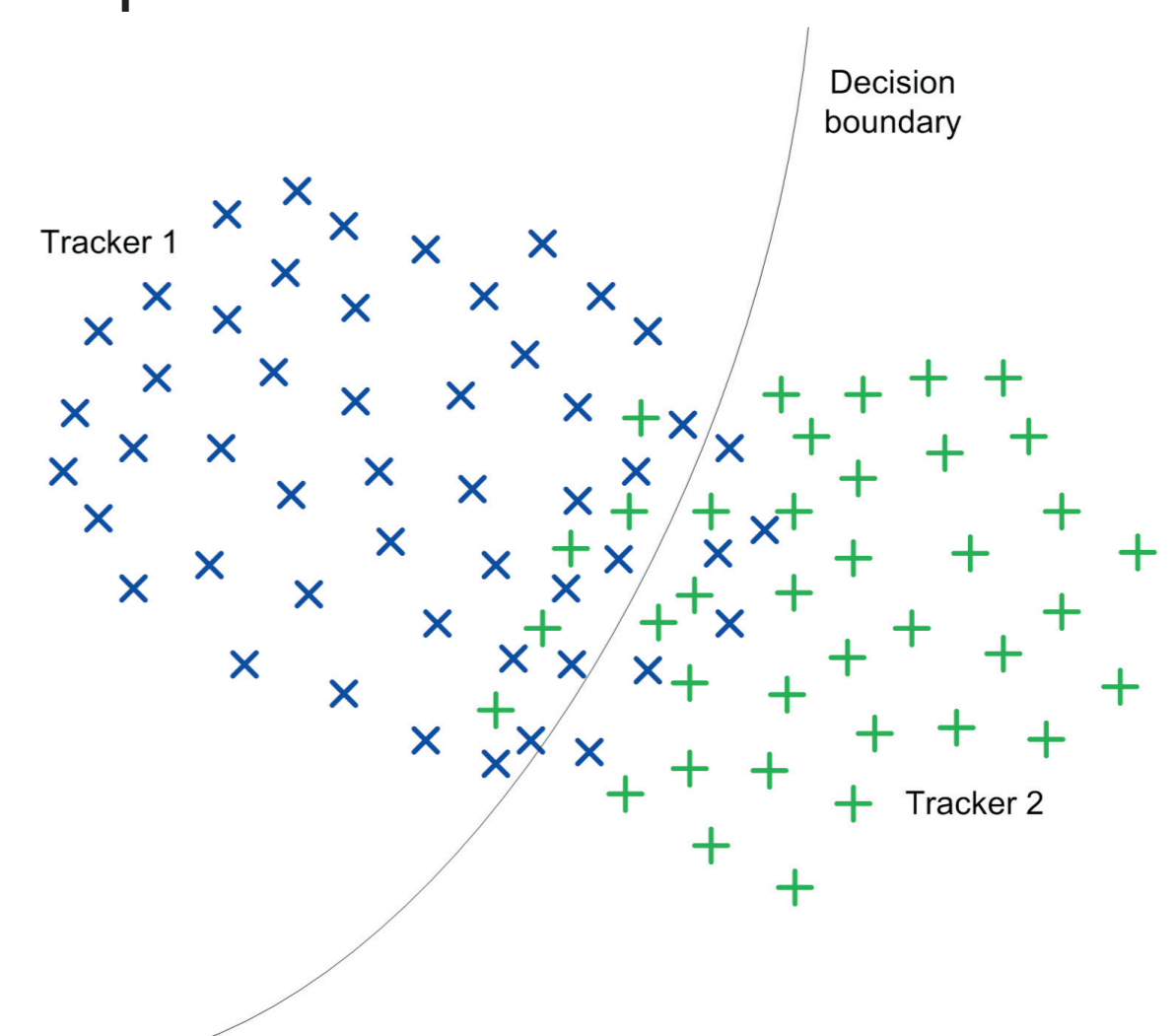
Convex hull approach:

- Update convex hull of measurement volume with every data item received
- Pro: fast, online updates
- Con: assumes tracker working volumes to be convex, susceptible to outliers



Neural network approach:

- Train neural network to act as classifier
- Pro: fast decision, adapts to arbitrarily shaped decision boundaries
- Con: slow offline training phase, no explicit representation of decision boundary



Open Questions & Future Work:

- Good measurements for distance estimation?
- Factors of applications influencing negative effects of jumps in visual augmentation
- Incorporate additional knowledge for estimation of working volumes

