

# Moving sound source tracking from a multi-rotor drone

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# Can a mini drone detect and track a moving sound source?

## Motivations:

- Human-robot interaction
- Surveillance
- Search and rescue

## Challenges:

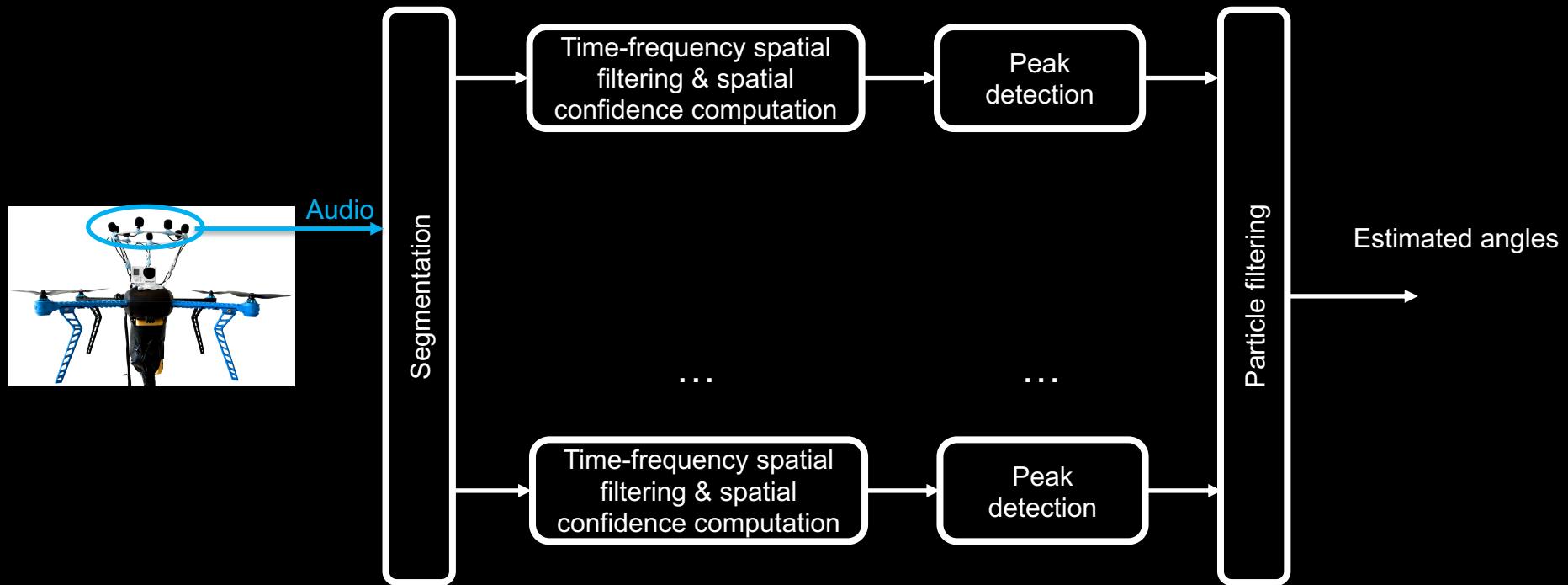
- Very strong ego-noise
- Extremely low SNR ( $< -15$  dB)
- Time-varying ego-noise
- Time-varying target location



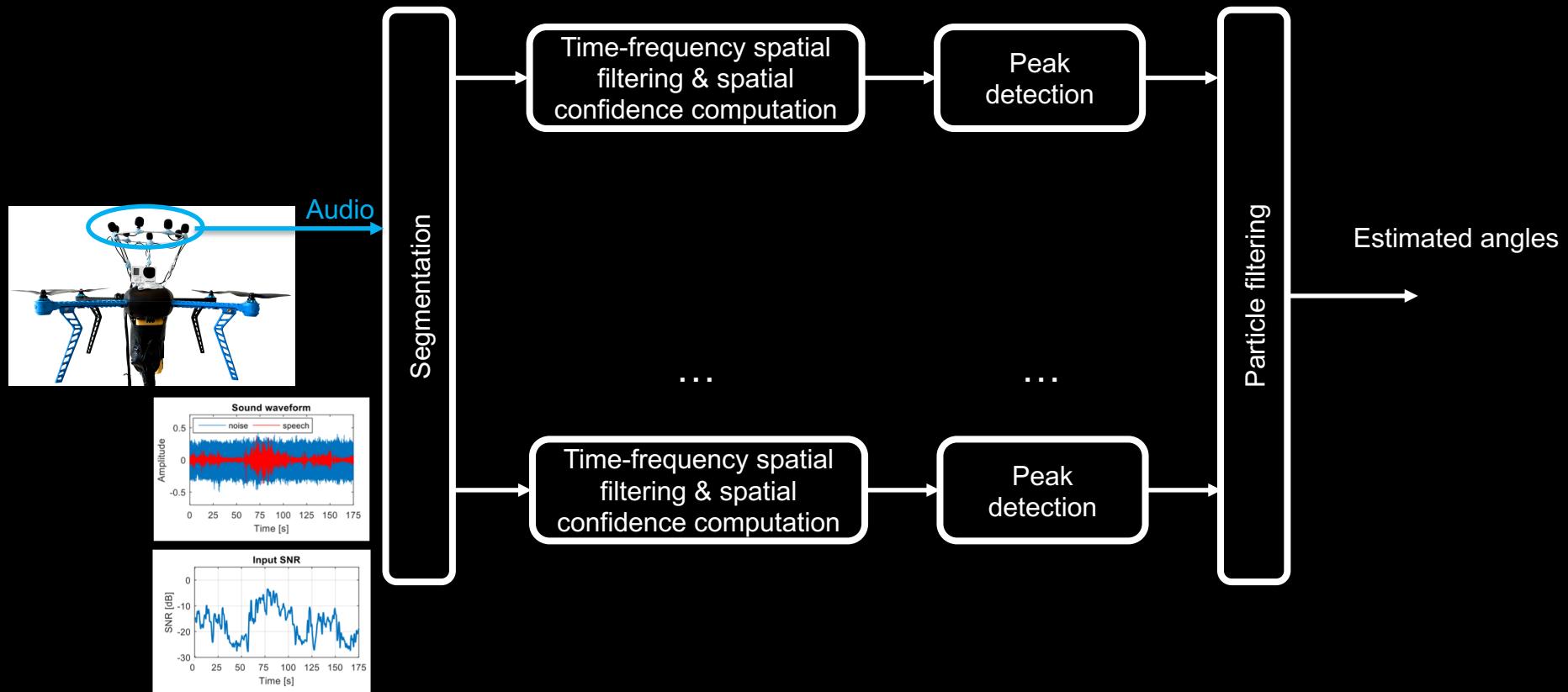
# Audio captured by the mini drone



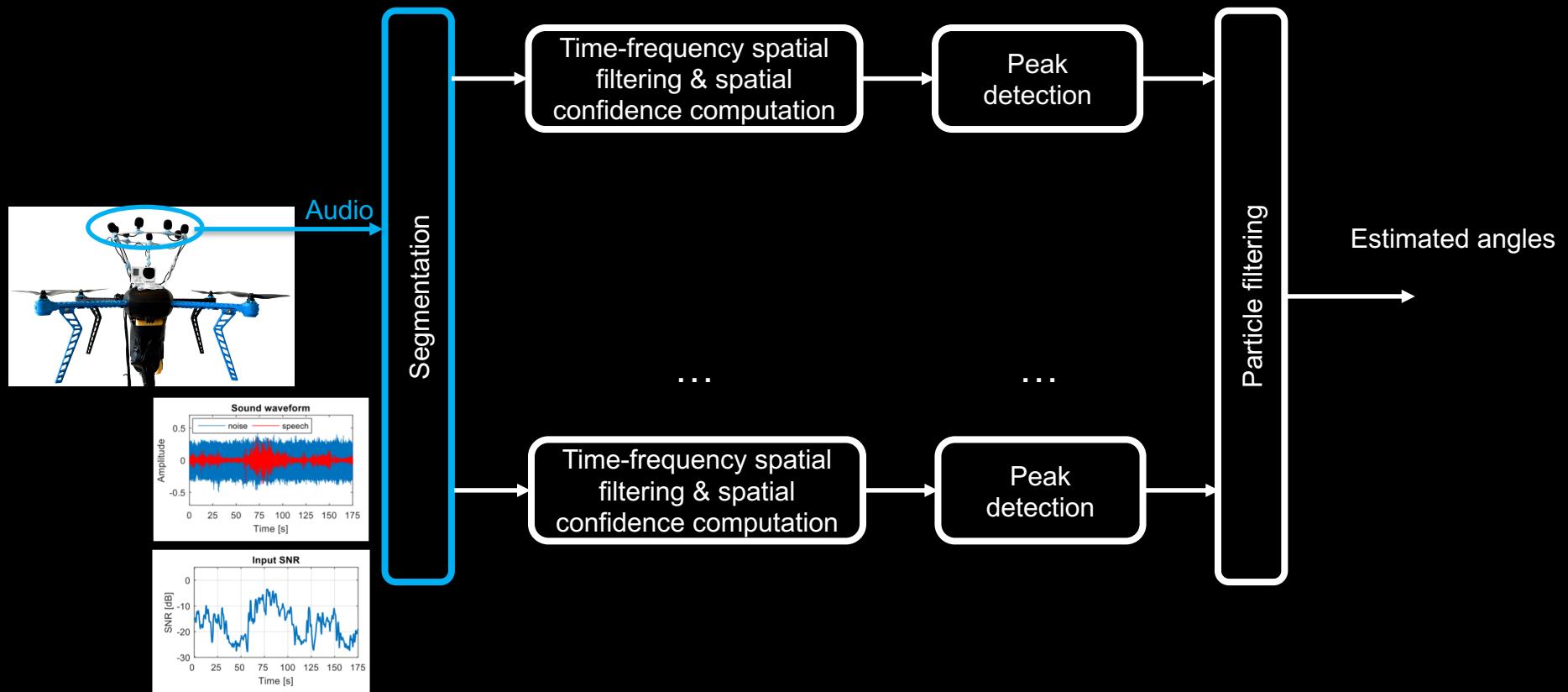
# Sound source localization and tracking



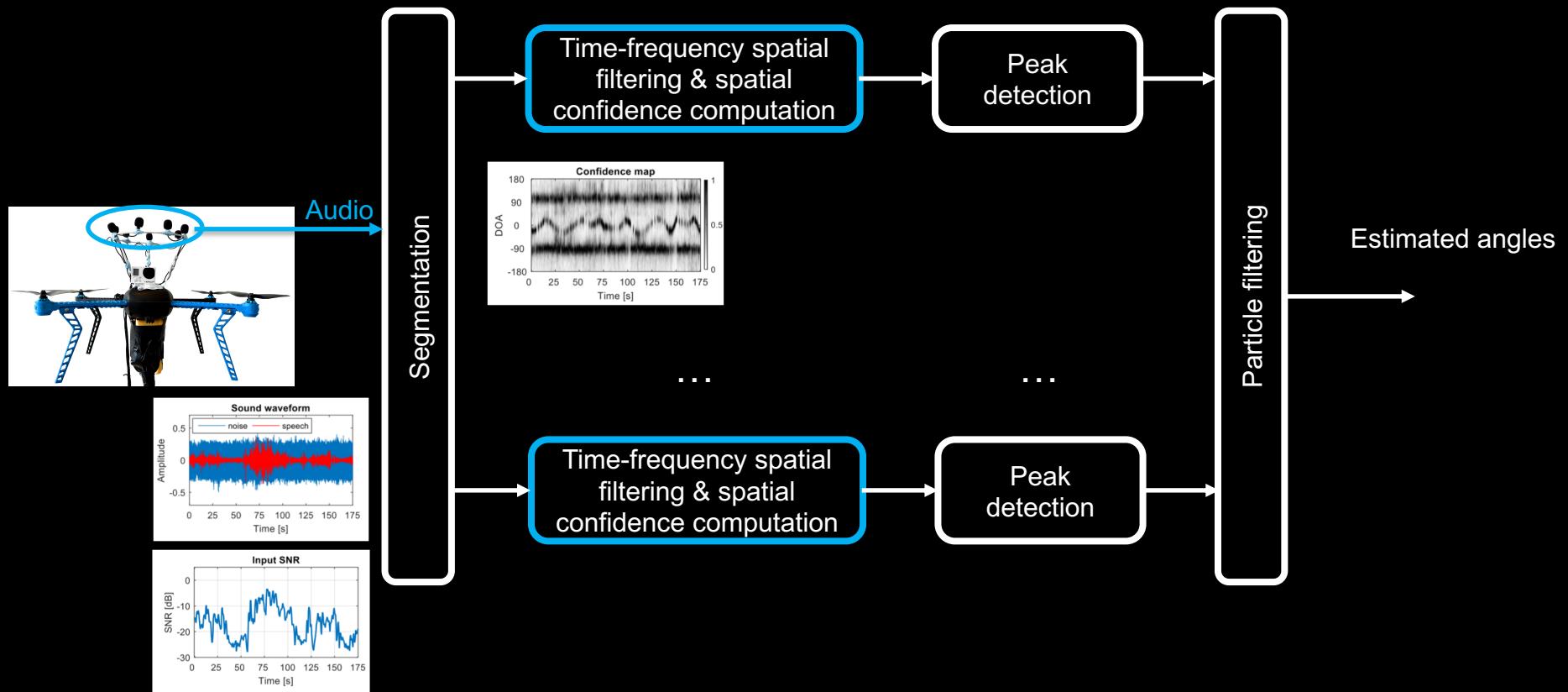
# Sound source localization and tracking



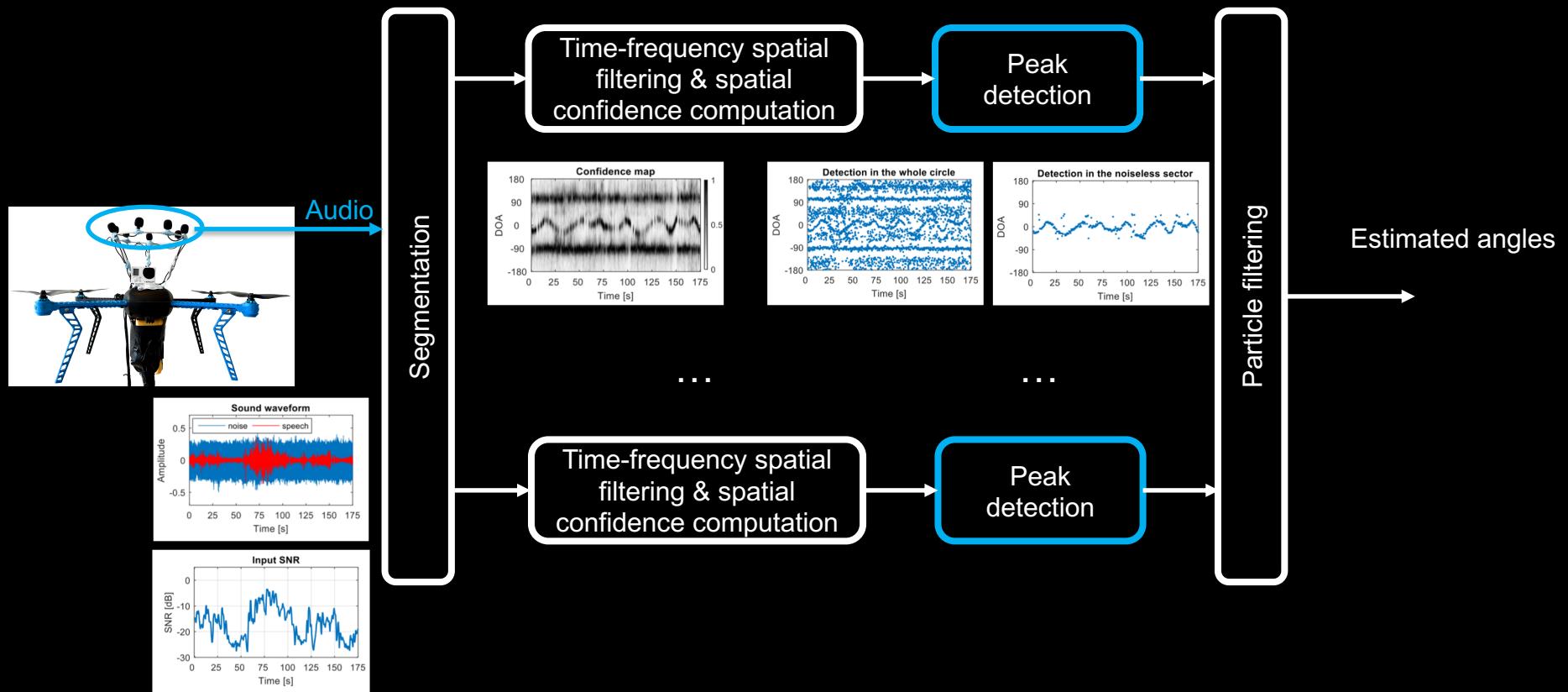
# Sound source localization and tracking



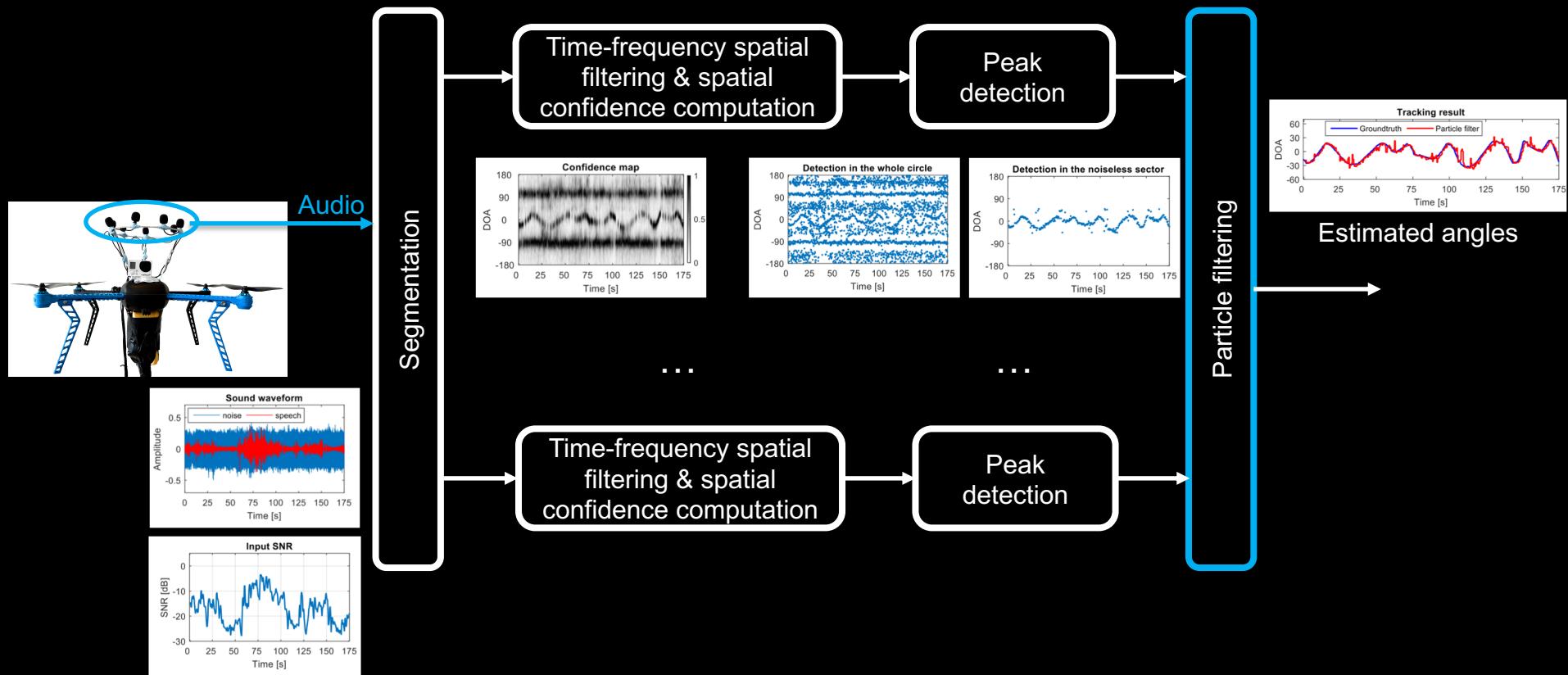
# Sound source localization and tracking



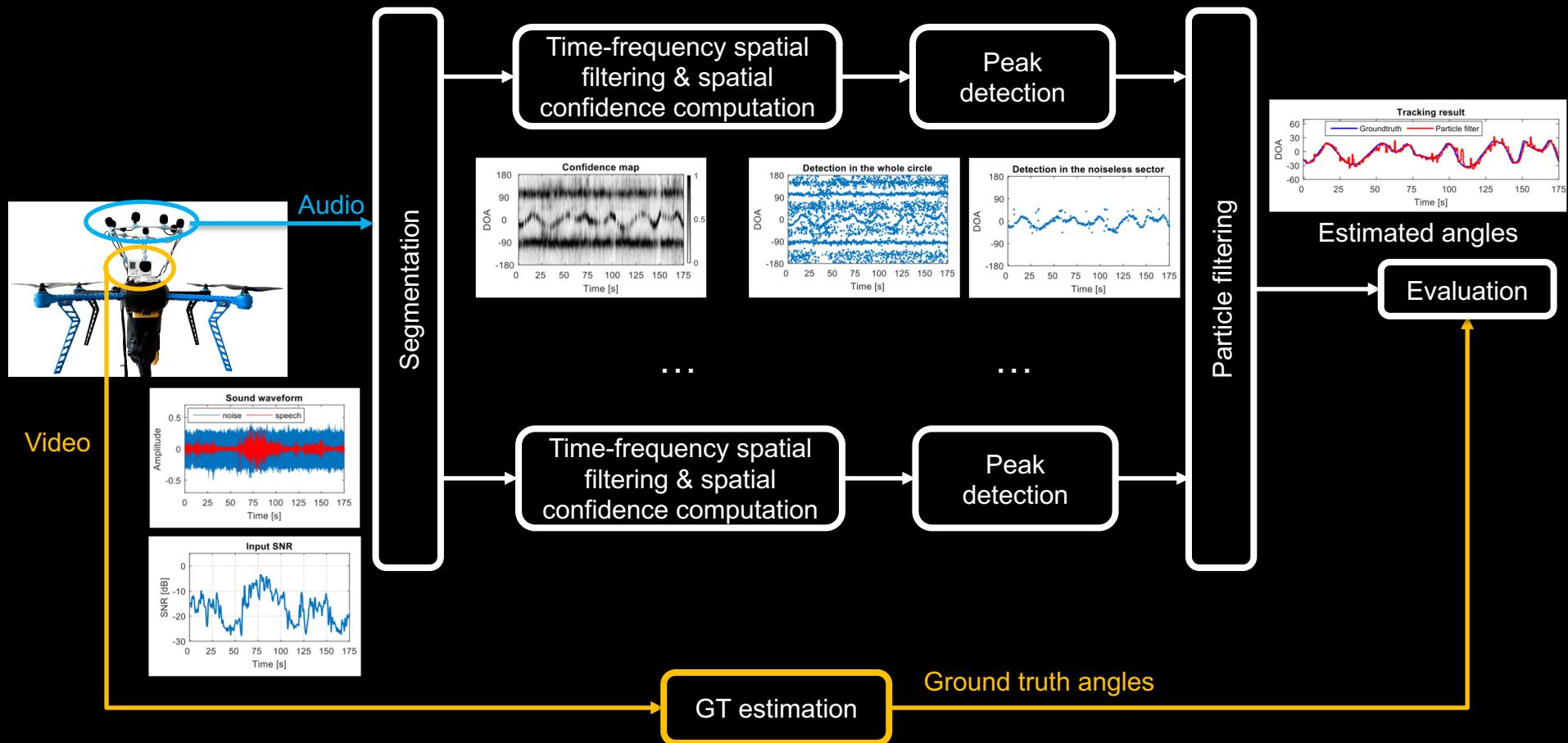
# Sound source localization and tracking

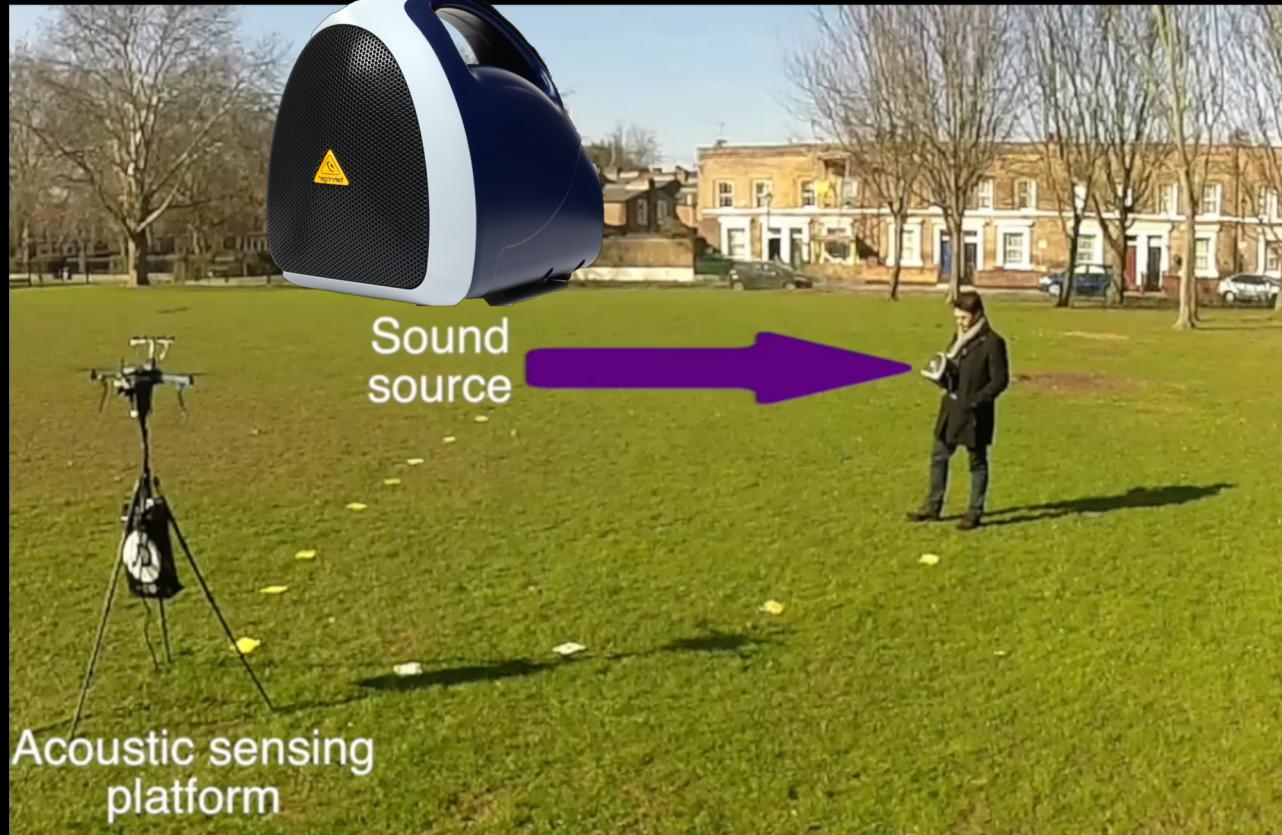


# Sound source localization and tracking



# Sound source localization and tracking





# **Scenario 3**

**Speaker: unconstrained region**

**Drone: stationary mode**

# **Scenario 2**

**Speaker: constrained region**

**Drone: dynamic mode**

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## Audio Demo & Dataset

<http://www.eecs.qmul.ac.uk/~andrea/sst.html>

<http://cis.eecs.qmul.ac.uk/projects/multimodalma/>

<http://www.eecs.qmul.ac.uk/~andrea/ear-in-the-sky.html>

<http://www.eecs.qmul.ac.uk/~andrea/auditory-mav.html>



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