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# Eye gaze in interaction: towards an annotation scheme for dialogue

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## Aim

- Provide basis for employing gaze information in natural human-machine dialogue

## Development of eye gaze in humans

- Infants – instant eye contact (ambiguous actions)
- 2 to 5 day – discriminate direct and averted gaze
- 4th week – fixate and smile at eyes
- 4 months – look at faces that engage in mutual gaze.
- Children – understand social information
- Middle childhood – intentions through gaze direction

## Eye gaze in dialogue

- **Social Functions**
  - ▷ Distributional pattern of listener-speaker gaze shift
  - ▷ Gaze has a floor apportionment function
- **Referential functions**
  - ▷ Reduce linguistic cognitive load and act as a disambiguator of referring expressions
  - ▷ The combined reference resolution component of a simulated robot deployed on the ISS excluded gaze interaction. Compensates lack of domain modelling.



## What do we want to do?

- Annotation - is it feasible?
  - ▷ and can any of it be automated using ML techniques?
- Can we classify elements of the dialogue based only on gaze behaviour?
  - ▷ Dialogue acts?
  - ▷ Turn-taking?
  - ▷ Reference objects?
- Can we implement a model of gaze in dialogue for a conversational robot/avatar to interpret human gaze and produce human-like gaze behaviour?

## Data

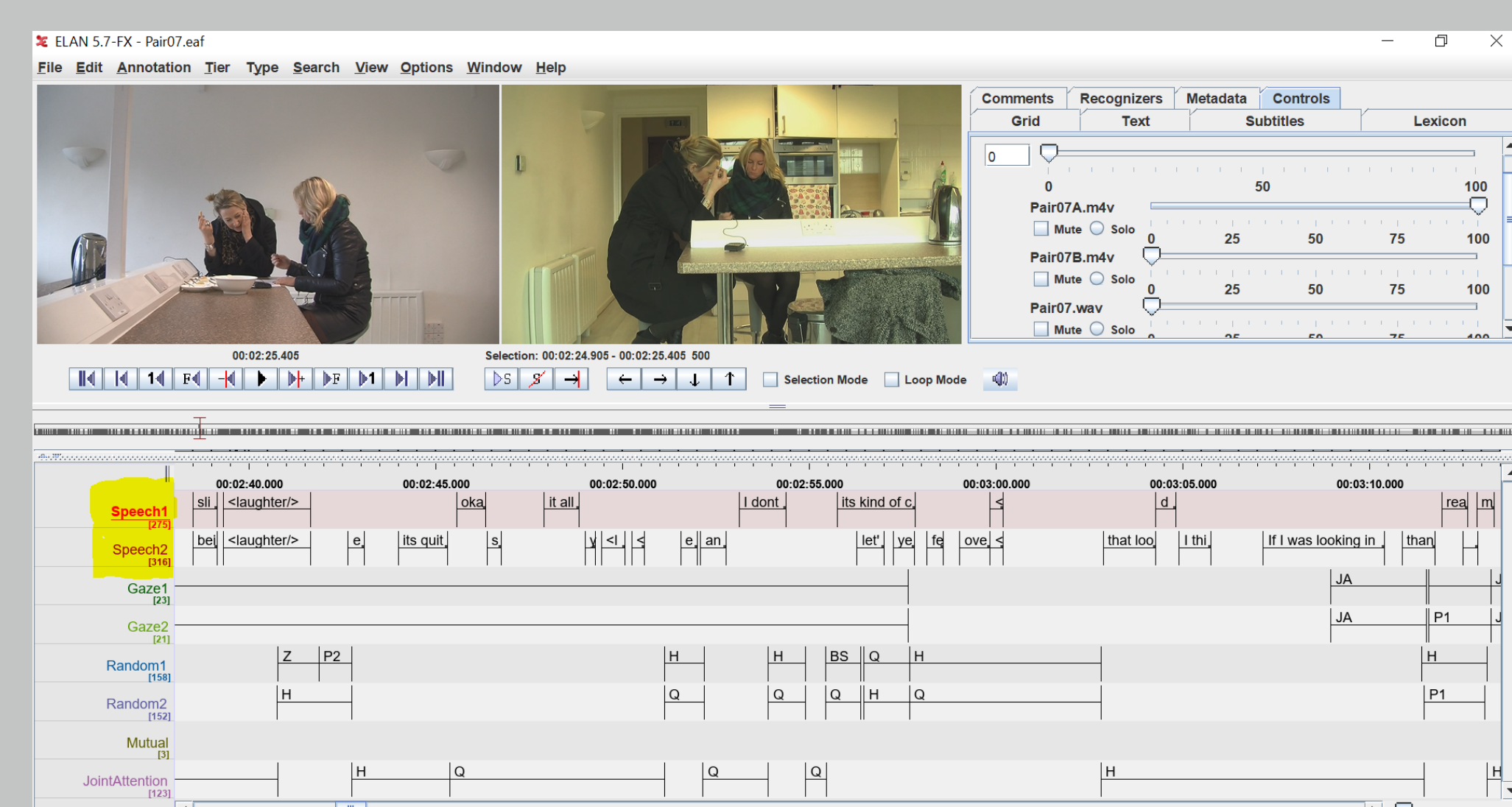


- Taste-testing dialogues between staff at the Good Housekeeping Institute

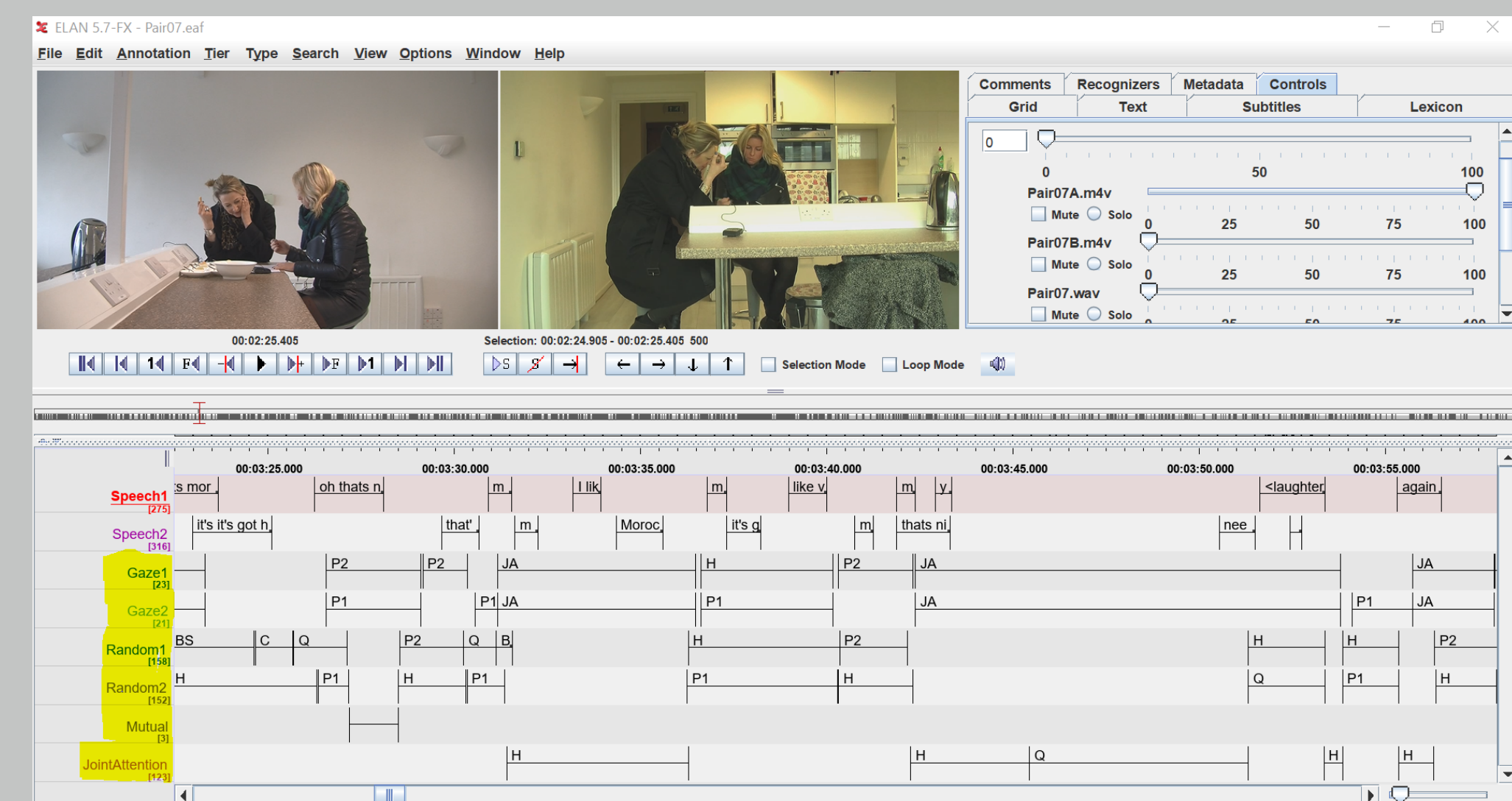


## Annotation

### Speech Annotation



### Gaze Annotation



## Conclusion

- Dialogue management, convey feedback, coordinate turn-taking during speech overlaps
- The influence of disagreement in the rating (influence fairness/capitulate behaviour)