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Dynamical Systems to Account for Turn-Taking in Spoken Interaction

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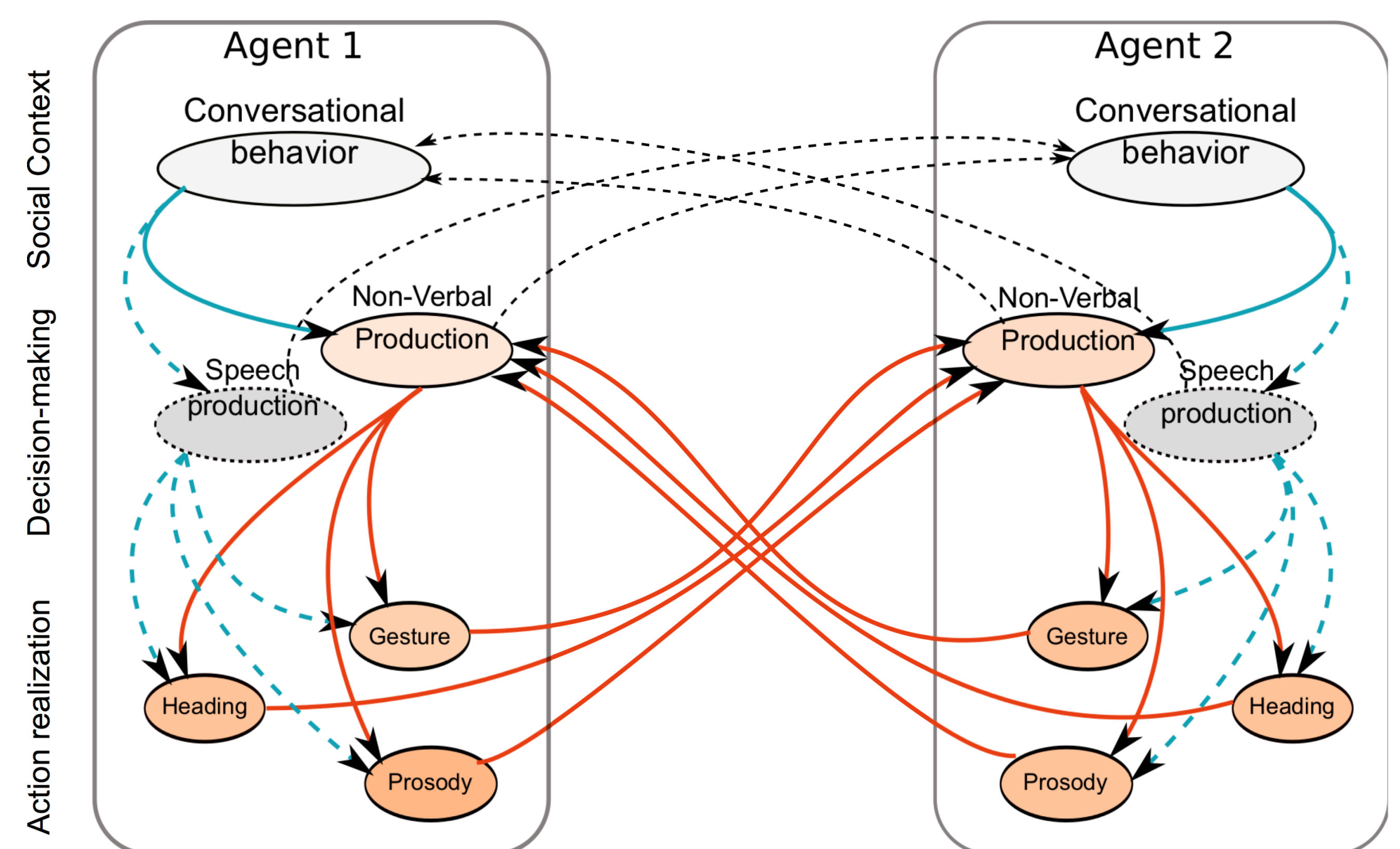
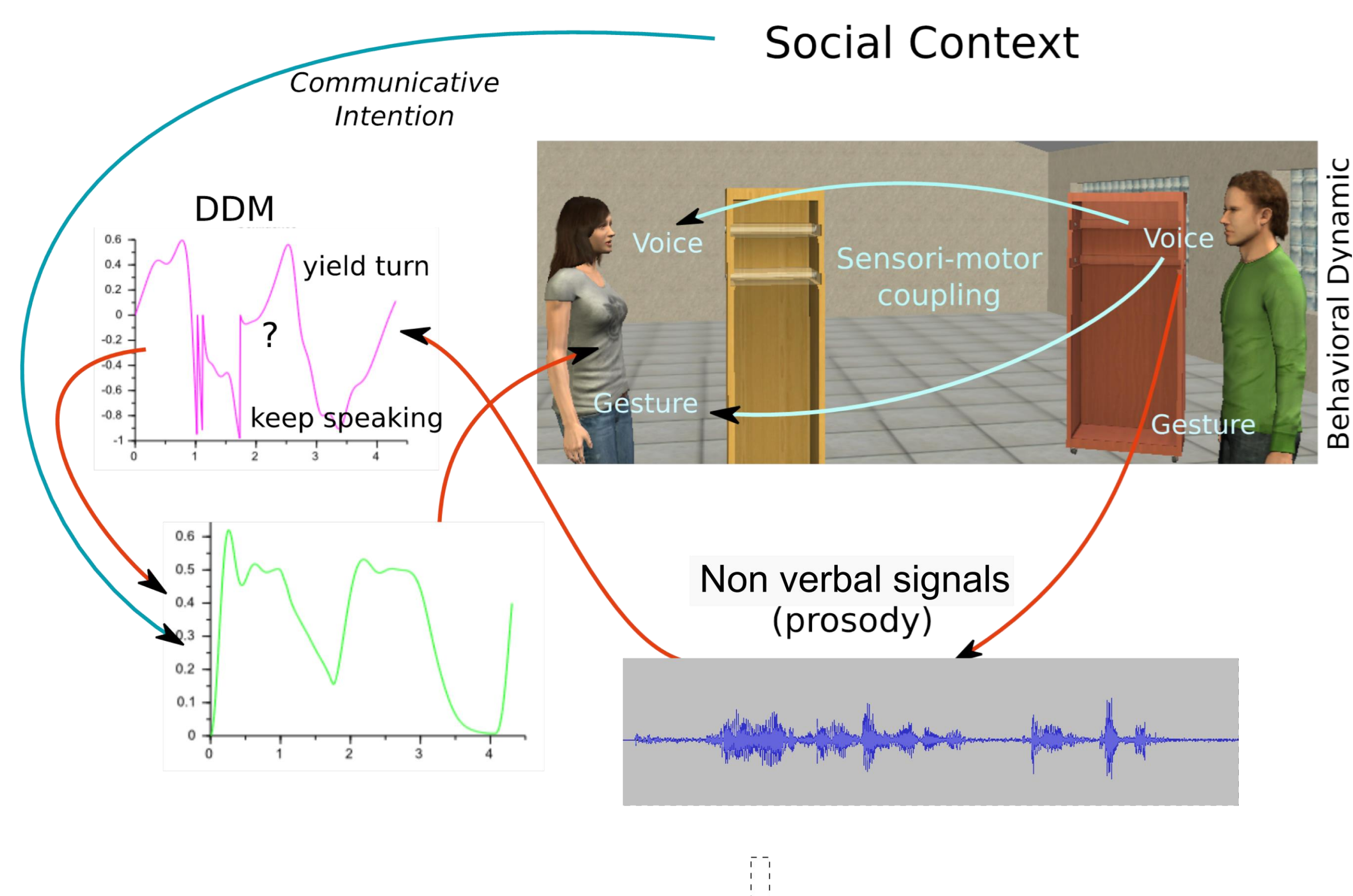
Pierre De Loor – Lab-STICC, France

Goals:

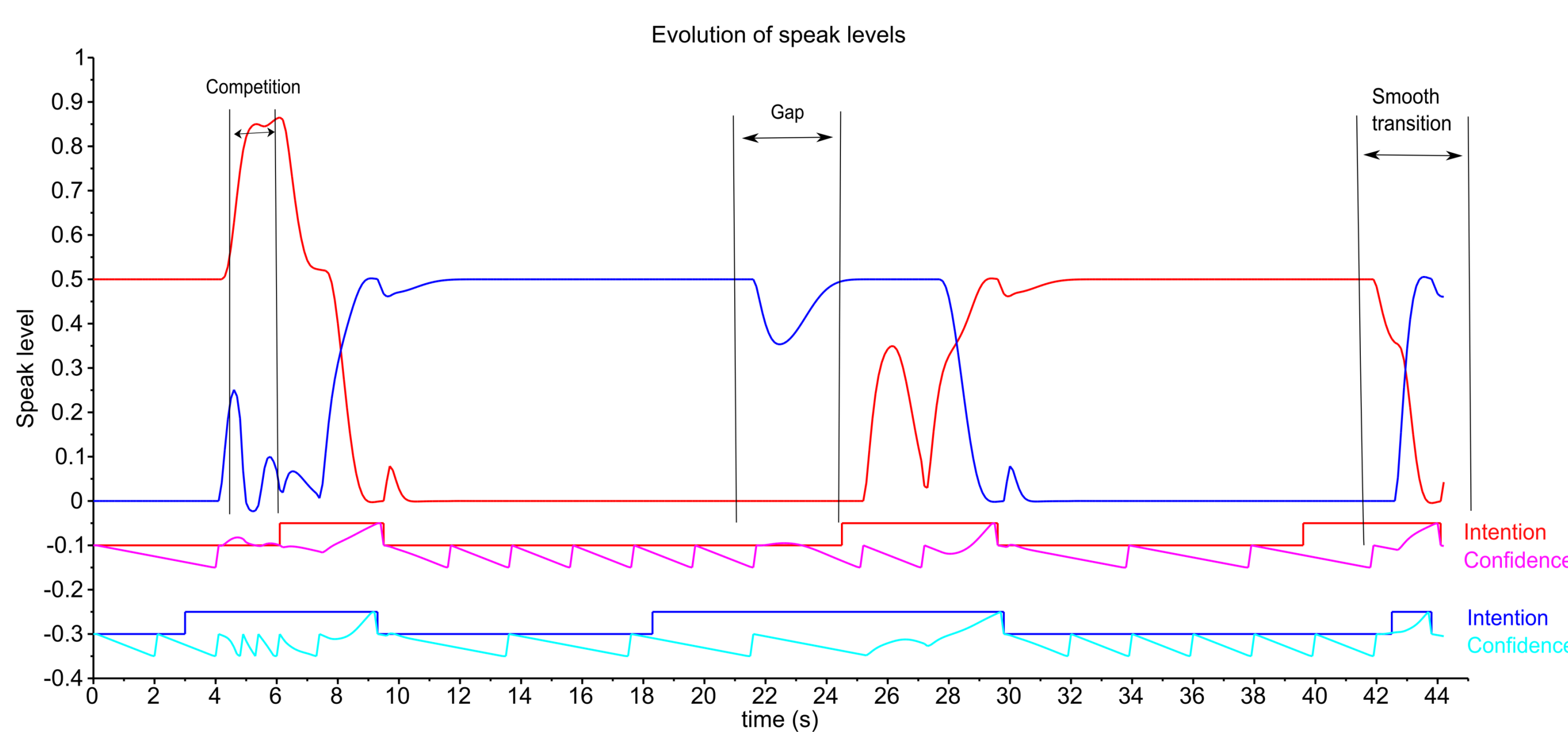
- **Continuous, multimodal non-verbal** interaction with user
- **Sensori-motor coupling** between user and agent
- Application to **turn-taking management** : realistic turn-transitions

Criteria of success:

- **Emergent** and **self-organized** patterns of turn-transition between agents
- Consistent **interpretation** of user's **multimodal signals**
- **Production of multimodal, non verbal signals**, the right way, the right time



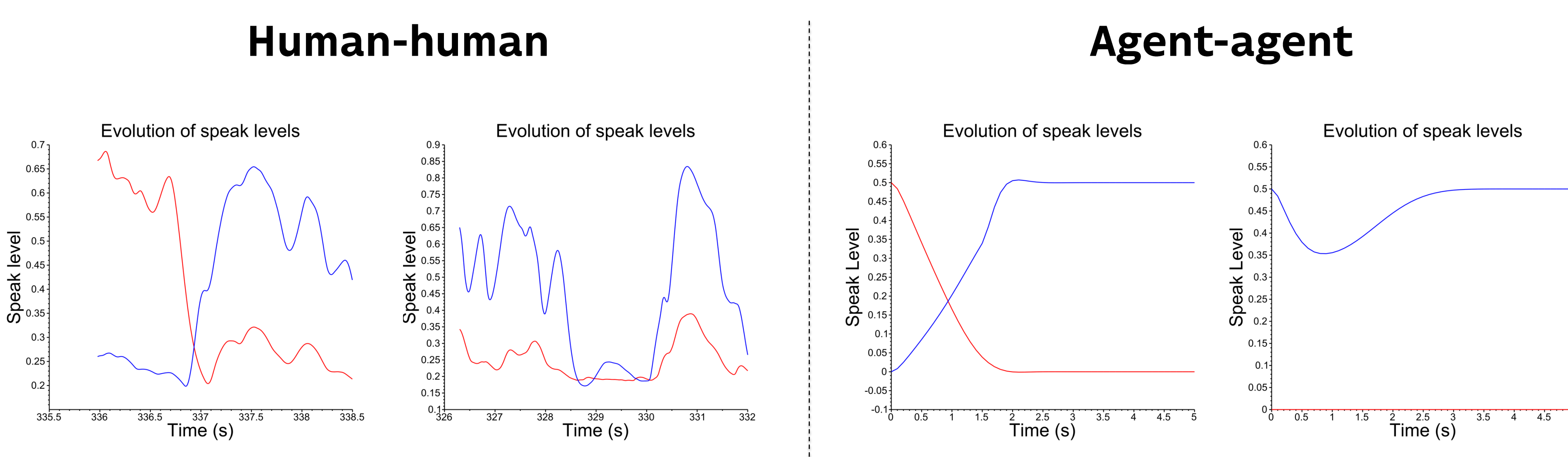
Agent-agent simulation



Main results

3 main patterns :
gap, smooth transition, competition
Self-organized transitions without prediction

Validation



Improving the model

Temporal calibration
Gaps not marked enough

Next steps

- Main qualitative patterns of human-human interactions
- Realistic responses to real humans curves
- Real-time interactions between virtual human and user

References

1. Sacks, H., Schegloff, E.A., Jefferson, G.A.: A simplest systematics for the organisation of turn-taking in conversation. *Language* 50, 696-735 (1974)
2. Warren, W.H.: The dynamics of perception and action. *Psychological Review* 113(2), 358-389 (2006)
3. Ratcliff, R.: A theory of memory retrieval. *Psychological Review* 85, 59-109 (1978).

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