

**ADVISER: Purpose**

- To support the creation of conversational agents for education and research purposes [1]
- To support the creation of multi-modal, socially engaged dialog systems [2]

**ADVISER: Flexible Framework Design**

- Includes rules-based and Deep Learning based components
- Supports architectures from sequential pipelines to parallel systems
- Local and distributed processing
- Debugging functionality
- Light-weight and easy to extend

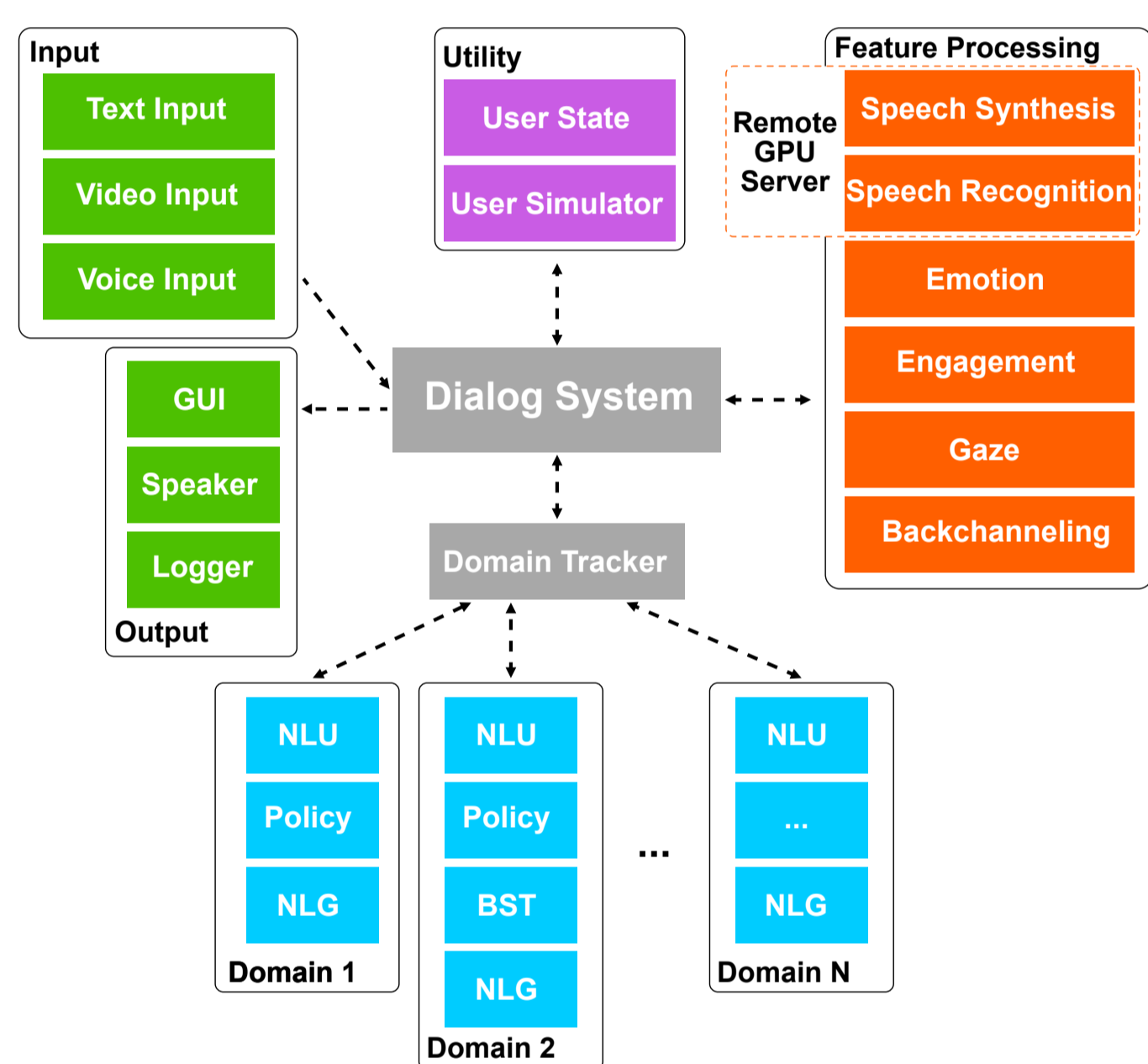


Figure 1. Example of multi-modal, multi-domain architecture.

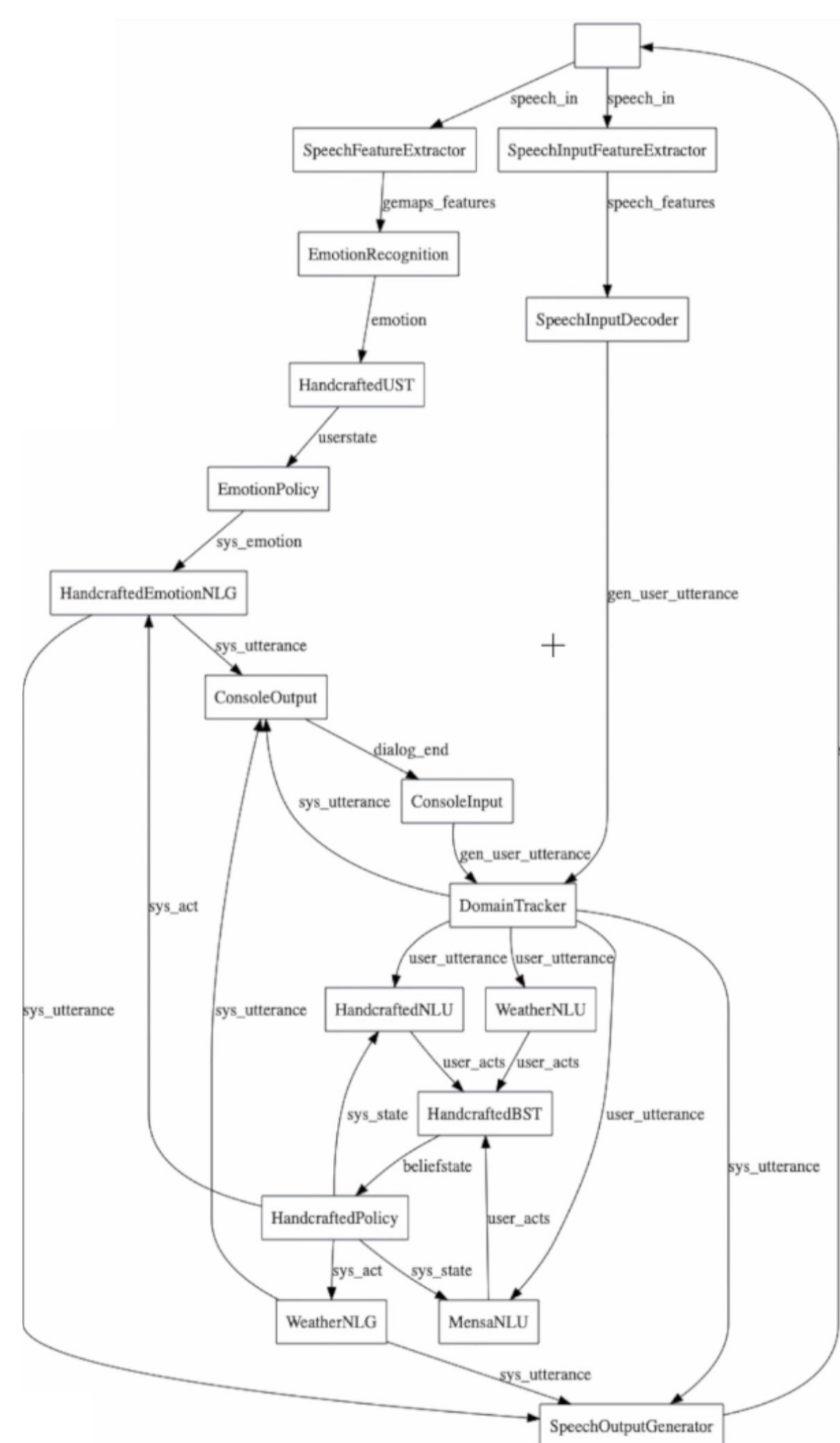


Figure 2. Debug view of message passing in a multi-modal, multi-domain system.

**Application: Teaching**

- ADVISER provides students with hands-on experience with each module in a standard dialog system architecture (Fig. 3).
- Students are given 6 weeks to design and implement a new domain which goes beyond examples included with the framework.

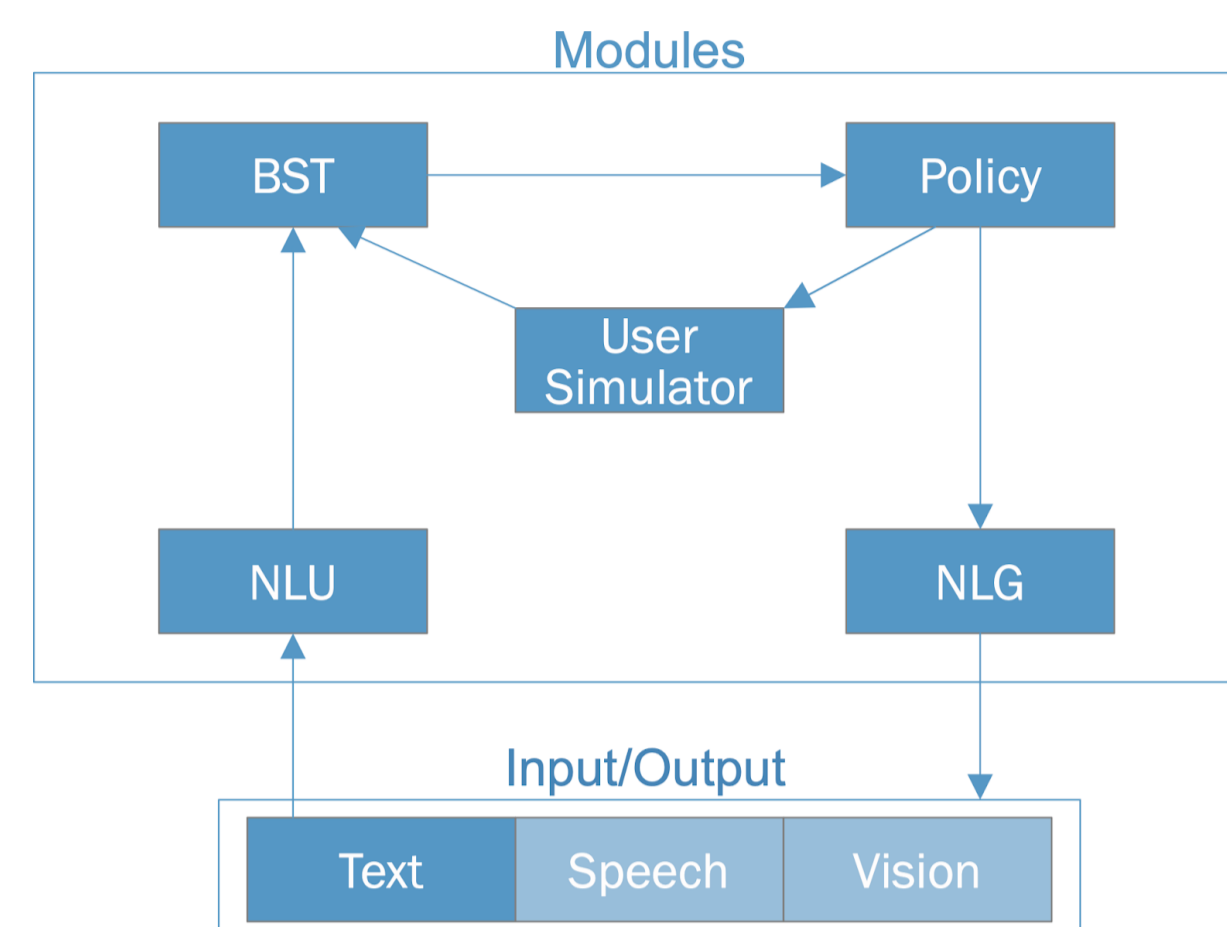


Figure 3. Architecture of a text base dialog system.

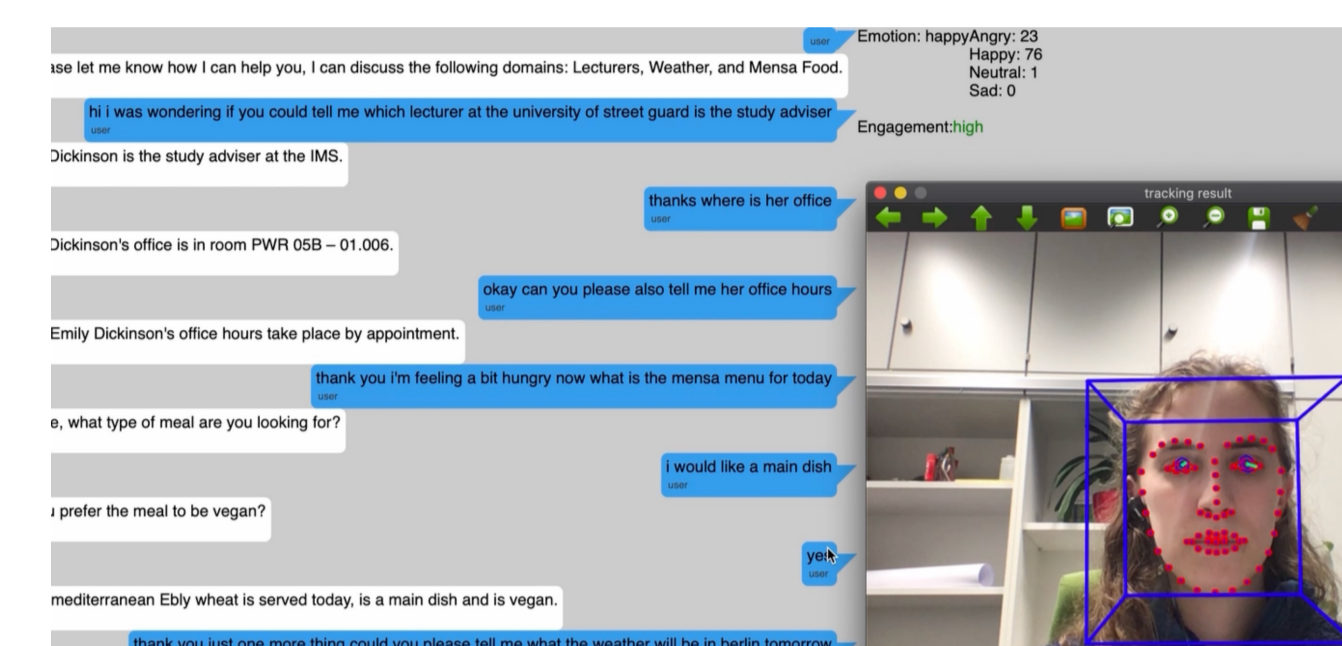


Figure 4. Dialog System with UI, emotion- and engagement tracking.

**Research Application: Ethics in Chatbot Design**

- **Goal:** to study the effect of language style on users interacting with a chatbot [4]
- **Findings:** Language style affects perceived likability, gender, and acceptability of personal pronouns, such as “you” and “I”

**Application: AI for Vocational Education (KIB3)**

- Development of a dialog system as part of an open-source online AI curriculum for vocational students being developed by the IHK
- The chatbot should help support the students’ learning/navigation of the e-learning platform and provide a concrete example of AI
- Chatbot adapts its behavior based on the individual progress of students



Gef rdert als INNOVET-Projekt aus Mitteln des Bundesministeriums f r Bildung und Forschung.

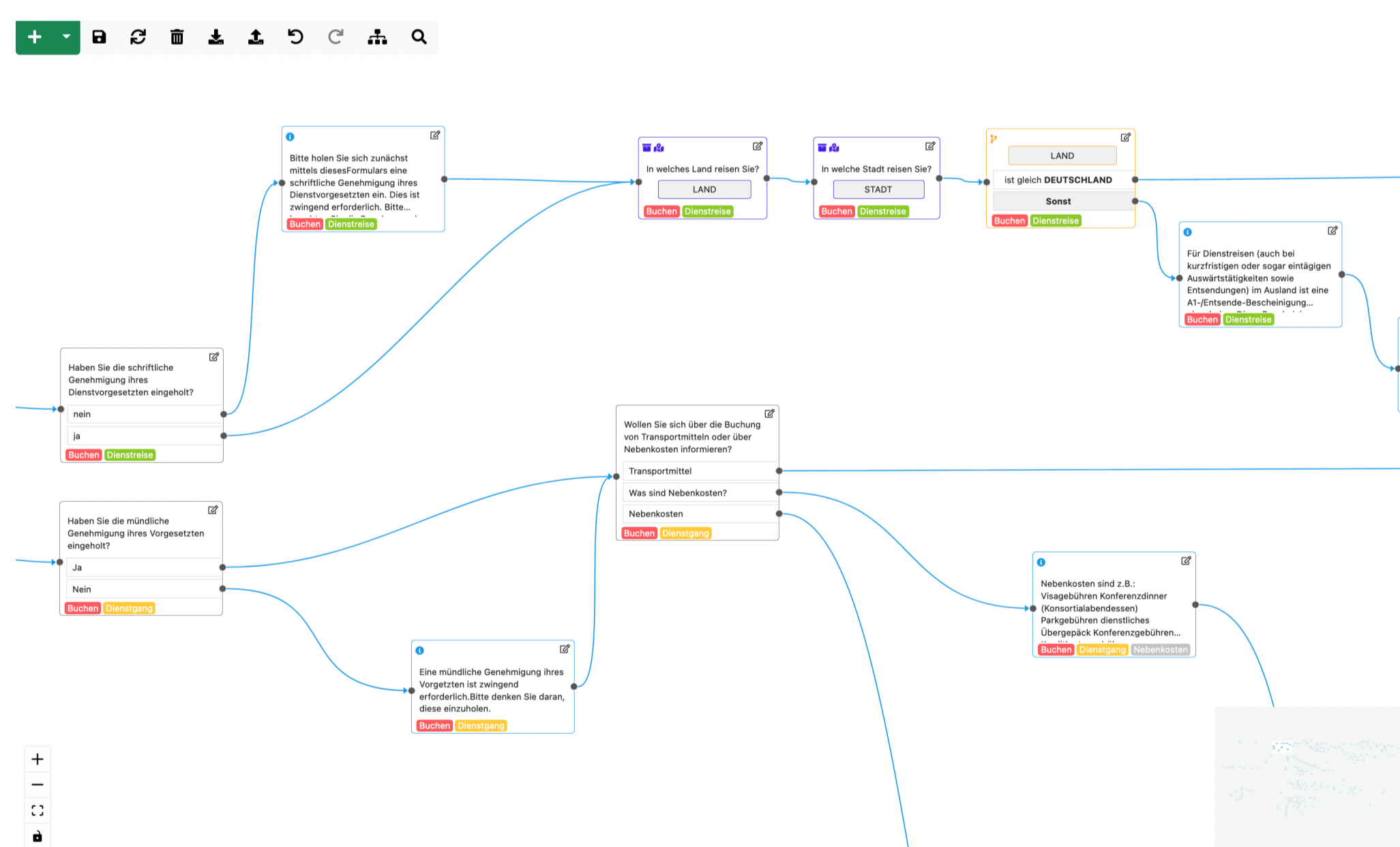


Figure 5. Graphic Dialog Designer Tool

**Application: Agility Lab Project**

- Project with university administration: Dialog system for easy access to business travel information (booking, reimbursement, travel risk management, ...)
- Developed a graphic user interface to allow non-technical, subject-area experts to create and maintain dialog trees, which define the behavior of a dialog agent
- The project is currently live as an alpha version

**Research Application: Space Jam**

- **Goal:** to investigate what mental models users form about dialog agents in a collaborative game setting [3]
- **Setting:** Asymmetric collaborative dialog game (Fig. 6) where the user could see a game panel with a series of puzzles and the system had instructions to solve them
- **Findings:** Users saw dialog agent as intelligent and likeable (regardless of their perception of the game), but often over-estimated the agent’s abilities and projected human-attributes onto it, leading to miscommunication

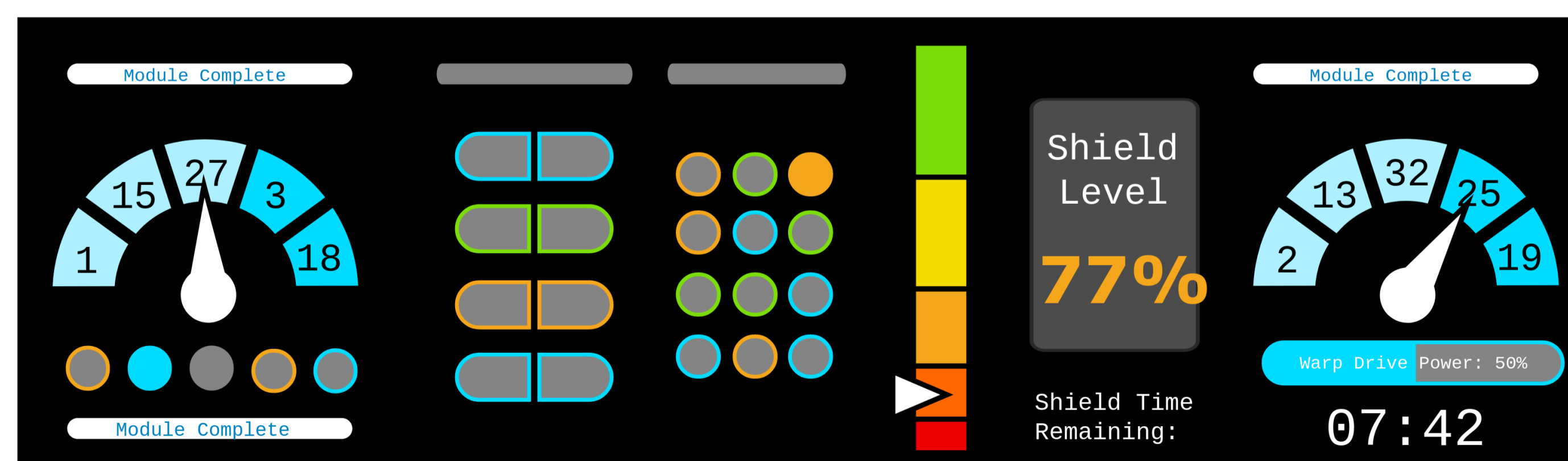


Figure 6. Game Interface for Space Jam experiment.

**References**

[1] Ortega, D., V ath, D., Weber, G., Vanderlyn, L., Schmidt, M., V olkel, M., ... & Vu, N. T. (2019, July). Adviser: A dialog system framework for education & research. In *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics: System Demonstrations* (pp. 93-98).

[2] Li, C. Y., Ortega, D., V ath, D., Lux, F., Vanderlyn, L., Schmidt, M., ... & Vu, N. T. (2020, July). ADVISER: A Toolkit for Developing Multi-modal, Multi-domain and Socially-engaged Conversational Agents. In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics: System Demonstrations* (pp. 279-286).

[3] Weitz, K., Vanderlyn, L., Vu, N. T., & Andre, E. (2021, November). “It’s our fault!”: Insights Into Users’ Understanding and Interaction With an Explanatory Collaborative Dialog System. In *Proceedings of the 25th Conference on Computational Natural Language Learning* (pp. 1-16).

[4] Vanderlyn, L., Weber, G., Neumann, M., V ath, D., Meyer, S., & Vu, N. T. (2021, November). “It seemed like an annoying woman”: On the Perception and Ethical Considerations of Affective Language in Text-Based Conversational Agents. In *Proceedings of the 25th Conference on Computational Natural Language Learning* (pp. 44-57).

