I Cast Detect Thoughts

Learning to Converse and Guide with Intents and Theory-of-Mind in Dungeons and Dragons

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Quest for Dialogue

Understanding Intent in Conversations

In the realm of dialogue, humans naturally converse with **specific goals** in mind. However, AI often lacks the necessary intent, making Dungeons & Dragons an ideal context for exploration.

Goal-Driven Dialogue

Understanding conversations through intent and guidance

Intent Definition

Identifying the purpose behind each dialogue exchange.

Guidance Mechanism

Navigating conversations by providing relevant suggestions.

Action Alignment

Ensuring responses match the goals of the dialogue.

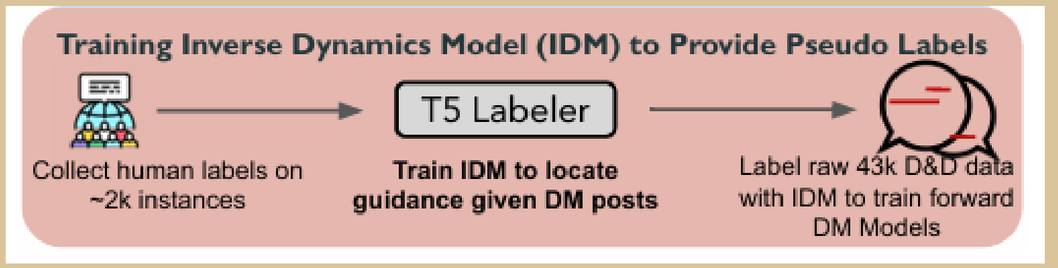
Grounded Communication

Establishing context to enhance conversational understanding.

Summoning the Dataset

Exploring the G-DRAGON Origins

The G-DRAGON dataset comprises **47,000 D&D dialogues** collected from Play-by-Post forums, providing rich insights into goal-driven conversations and enhancing AI training for better interaction modeling.



Forging the IDM

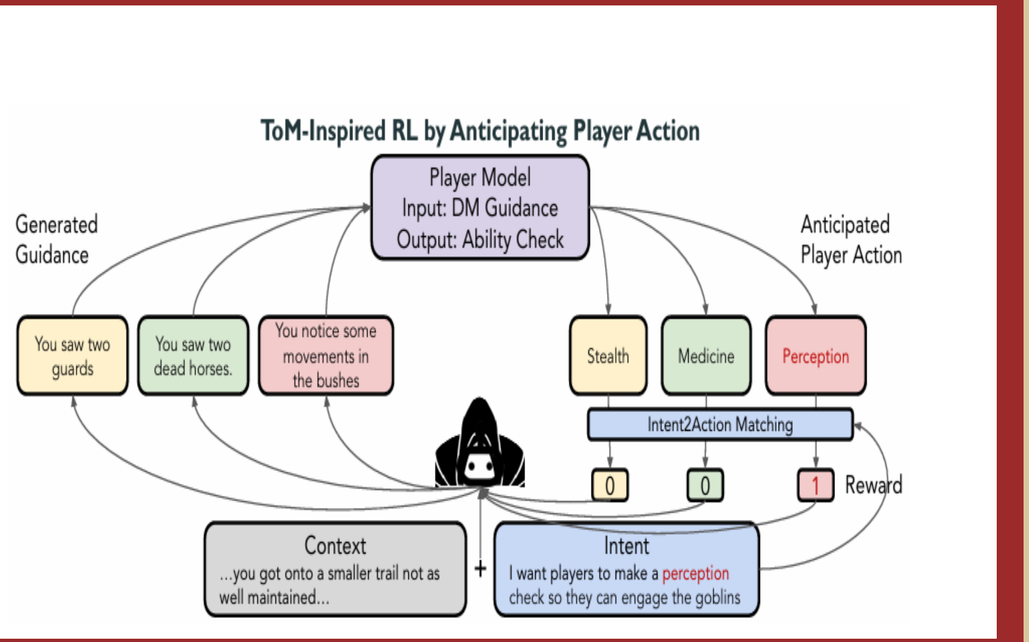
Introducing the Inverse Dynamics Model

The Inverse Dynamics Model automates labeling of dialogues, enhancing data accuracy by converting 2,500 human labels into 43,000 auto labels with a 70% accuracy rate.

Intent Spell

Exploring Explicit Intent Modeling in AI

This section delves into the **importance of explicit intent modeling**, detailing how AI utilizes mined intents to enhance goal alignment and improve communication through roleplay dynamics.



Theory-of-Mind Magic

Understanding Player Intent in Dialogue

This section explores how reinforcement learning and **theory-of-mind** enhance AI's ability to predict player actions and intents, improving the overall game experience in Dungeons & Dragons.

Trials of Evaluation

Assessing the Model's Performance Metrics

Fluency Assessment

Measures how naturally the AI communicates.

Groundedness Check

Evaluates contextual relevance in generated responses.

Goal-Fulfillment Rate

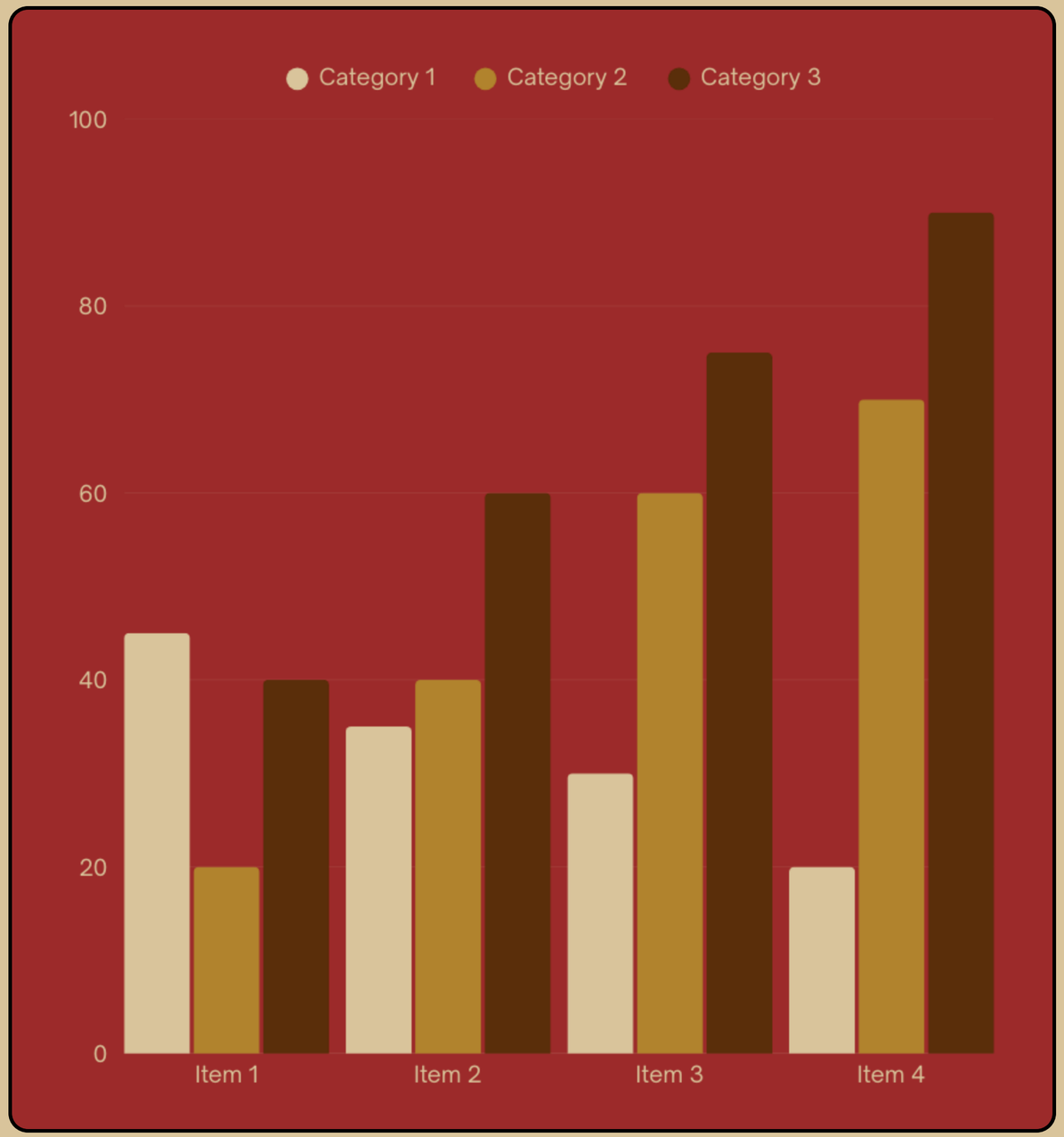
Determines success in achieving dialogue objectives.

Overall Effectiveness

Combines all metrics for comprehensive evaluation.

Performance Gains

The fantasy bar chart illustrates significant performance improvements in goal alignment and guidance, based on data from the G-DRAGON dataset and model evaluations.



The Example Spellbook

Comparing AI Dialogue Outputs

This section illustrates the **transformation of AI dialogues**, showcasing improvements in clarity and goal alignment before and after the implementation of intent modeling in D&D roleplay scenarios.

Allies in Research

Exploring relevant studies and collaborative connections

Goal-Driven Dialogue

Studies focus on AI conversation with intent.

Theory of Mind

Examines how AI understands human thoughts and actions.

D&D NLP Advances

Research leveraging Dungeons & Dragons for dialogue systems.

Pragmatics in AI

Investigates practical use of language in AI interactions.

Curses and Limitations

Acknowledging the constraints of our study

Our research is limited by a **single DM-player setup** and short context, posing challenges for broader applicability and future expansions in goal-driven dialogue systems.

The Treasure

The study reveals that **goal-driven AI dialogue**, enhanced by the G-DRAGON dataset and intent modeling, significantly improves communication, paving the way for future advancements in AI interactions.

Roll for your future

Thank you!