

Putting **Humans** in the **Natural Language Processing Loop**: A Survey

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TASK

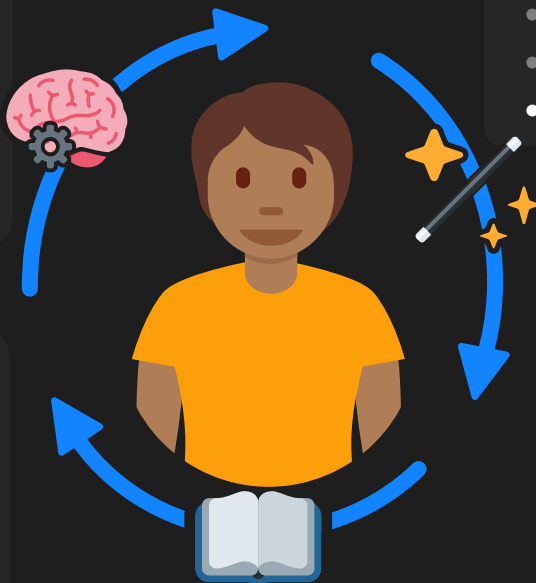
- Text classification
- Parsing & Entity Linking
- Topic Modeling
- Summarization & Translation
- Dialogue & QA System

GOAL

- Model Performance
- Model Interpretability
- Usability

INTERACTION

- UI: Graphical User Interface
- UI: Natural Language Interface
- Feedback: Binary & Scaled
- Feedback: Natural Language
- Feedback: Counterfactual Example
- Intelligent Interaction



FUTURE DIRECTION

- Feedback Evaluation
- Visualize Model Updates
- Help Users Provide Better Feedback
- Diverse User Background
- User Study to Evaluate the System
- Share Protocols, Tools, and Datasets

UPDATE METHOD

- Data Augmentation: Offline Model Update
- Data Augmentation: Online Model Update
- Model Direct Manipulation