

## Documents

Ahrari Khalaf, A.<sup>a</sup>, Hassan Abdalla Hashim, A.<sup>a</sup>, Olowolayemo, A.<sup>b</sup>

**Mutual character dialogue generation with semi-supervised multitask learners and awareness**  
(2024) *International Journal of Information Technology (Singapore)*, 16 (3), pp. 1357-1363.

DOI: 10.1007/s41870-023-01720-x

<sup>a</sup> Department of Electrical and Computer Engineering, Faculty of Engineering, International Islamic University Malaysia (IIUM), Kuala Lumpur, Malaysia

<sup>b</sup> Department of Computer Science, Faculty of Information and Communication Technology, International Islamic University Malaysia (IIUM), Kuala Lumpur, Malaysia

**Abstract**

Consistent efforts have been ongoing to improve the friendliness and reliability of informal dialogue systems. However, most research focuses solely on mimicking human-like answers. Therefore, the interlocutors' awareness features of the dialogue system are left unexplored. Meanwhile, cognitive science research reveals that awareness is a crucial indicator of an effective, high-quality informal conversation. This research aims to boost the quality of the conversational generation system by factoring in awareness of the interlocutors in the design and training of the dialogue system model. The Generative Pre-Trained Transformer-2 (GPT-2) model was implemented into the Persona Perception (P2) Bot to achieve the objectives of this study. This was to precisely develop model's understanding, P2 Bot was implemented using a transmitter–receiver-based structure. The P2 Bot leverages mutual persona awareness to improve the quality of customized dialogue generation. GPT-2 is a 1.5B parameter transformer model that produces state-of-the-art accuracy in a zero-shot setting on seven of the eight evaluated language modeling datasets. The observations of the proposed model on a sizable open-source dataset, PERSONA-CHAT, proved successful, with improvement above the state-of-the-art baselines in both automatic measures and human assessments. The model has achieved 82.2% accuracy on Hits@1 performance metrics in the original data and 68.8% on the revised data. On the human evaluation, the model scored an average of 2.66, pointing out that the responses provided were coherent and informative. A dialogue generation model with character and awareness which can communicate like an informative human expert was introduced. This study presents the submerging of GPT-2 model on a mutual persona perception dialogue generating model. © The Author(s), under exclusive licence to Bharati Vidyapeeth's Institute of Computer Applications and Management 2024.

**Author Keywords**

Cognitive science; Conversational agent; Dialogue generation; Generative Pre-trained Transformer 2 (GPT-2); Natural language understanding (NLU)

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**Correspondence Address**

Olowolayemo A.; Department of Computer Science, Malaysia; email: akeem@iiium.edu.my

**Publisher:** Springer Science and Business Media B.V.

**ISSN:** 25112104

**Language of Original Document:** English

**Abbreviated Source Title:** Int. J. Inf. Technol.

2-s2.0-85184924228

**Document Type:** Article

**Publication Stage:** Final

**Source:** Scopus

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