KAIST

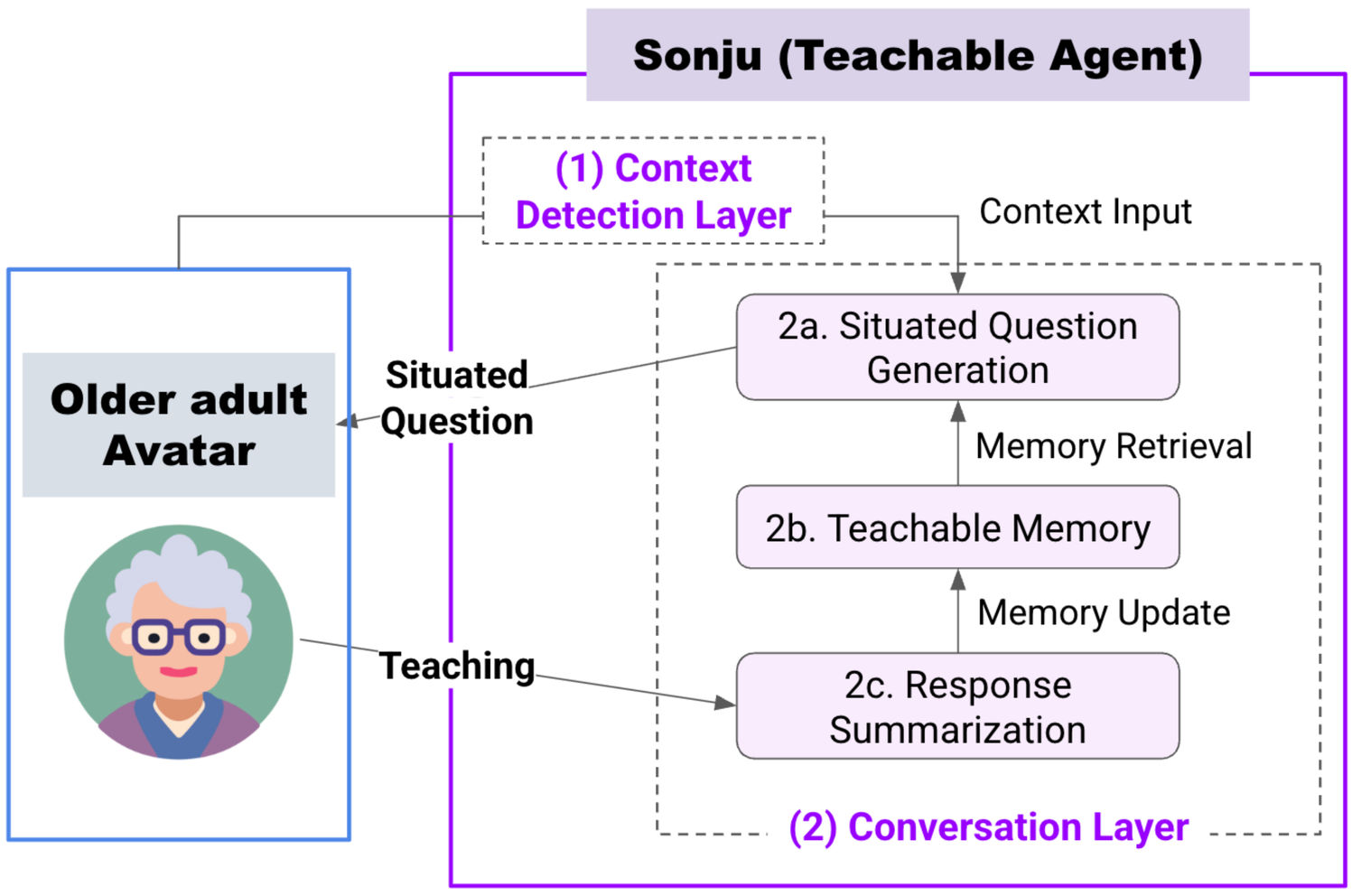
Sonju: A Context-Aware Teachable Agent for Eliciting Older Adults' Situated Knowledge

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Introduction

- **Sonju**: A **context-aware teachable agent** for **supporting older adults' generativity** through teaching
- Initial feasibility evaluation using **ExtraSensory dataset-based context detection** and **older-adult avatars with different self-disclosure levels**

System Design



(1) Context Detection Layer

- Everyday **activity inference** from sensing data
- Detected activity as context input to the Conversation Layer

(2) Conversation Layer

2a. Situated Question Generation

- **Context-aware questioning** based on detected activity
- **Relevant prior knowledge retrieved** from Teachable Memory

2b. Teachable Memory

- Structured **storage of older adults' tacit knowledge**

2c. Response Summarization

- Knowledge extraction from responses
- Teachable Memory update

Results

(1) Personalized Context Detection

Experimental setup
- 1 ExtraSensory dataset participant, 8 activity classes
- 3,548 train / 889 test instances
- 80/20 class-wise split

89.0% overall accuracy
on a held-out test set of 889 sensing instances

(2) Conversation Evaluation

Evaluated Sonju with **three self-disclosure** avatar profiles
- **Reserved**: Brief responses with minimal information
- **Moderate**: Moderate detail with occasional elaboration
- **Talkative**: Proactive elaboration on knowledge

Evaluation Dimension	Metric	Reserved	Moderate	Talkative
Conversation Quality	Naturalness	96.5%	95.7%	95.7%
	Personalization	100%	100%	91.7%
Generated QA Quality	Specific	80%	100%	80%
	Inferred	70%	100%	100%
Knowledge Extraction Quality	Correctness	100%	100%	100%
	Coverage	85.3%	93.8%	94.2%
	Completeness	94.9%	97.5%	99.4%

Key Takeaways

- **Comparable conversational quality** across self-disclosure avatar profiles
- **Higher knowledge coverage** with greater self-disclosure

Limitation & Future Work

- Limitation: Initial feasibility evaluation using an existing dataset and LLM-based older-adult avatars
- Future work: Real-world context detection with older adults and evaluation of Sonju's effects on generativity