



REMI: AN AI CONVERSATIONAL AGENT TO REMINISCE WITH PHOTOS

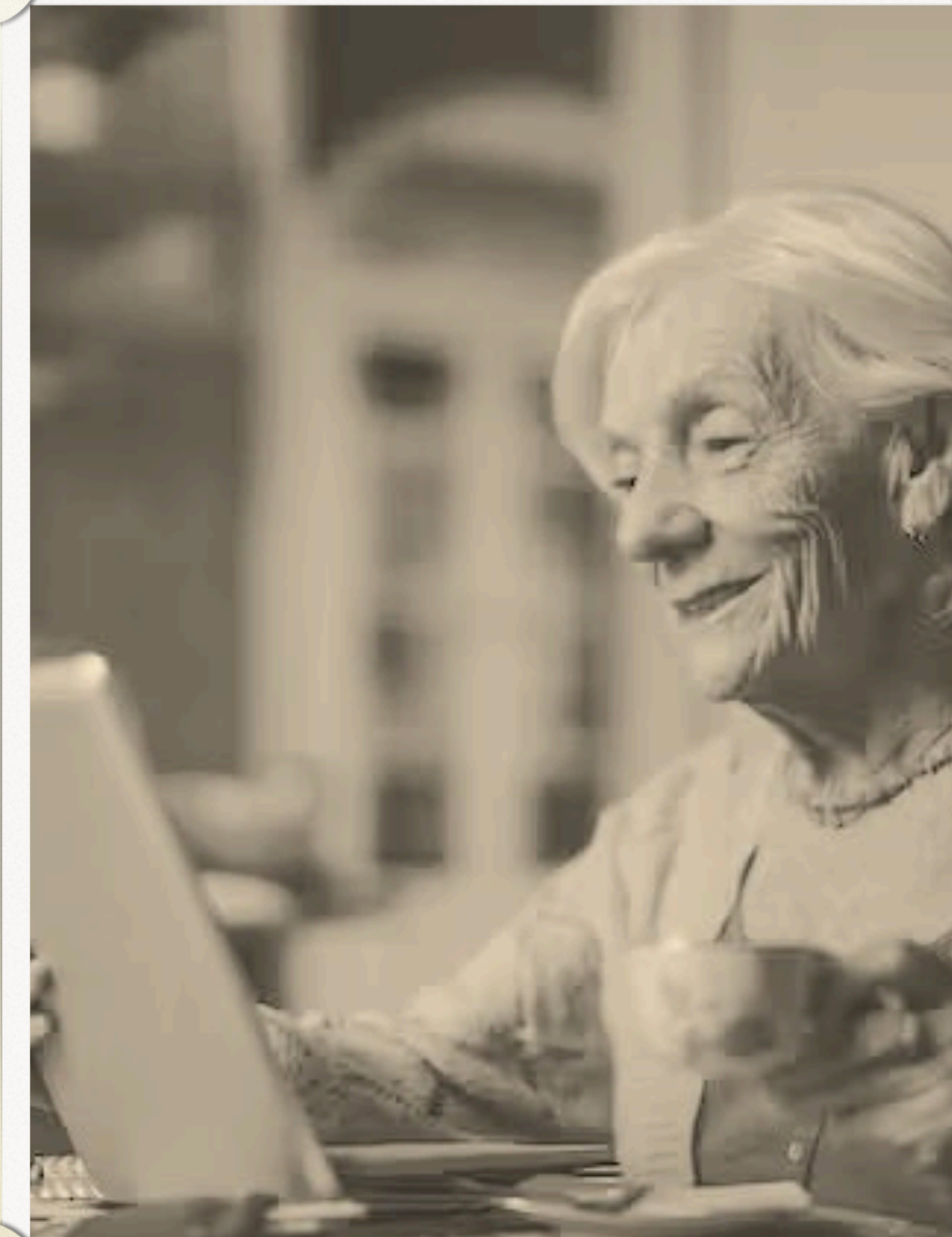
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INTRODUCTION

Being in the fourth industrial revolution, which presents rapid technological changes, the older adult (OA) generation can find it challenging to keep up with advances and ways people socially interact through technology [1]. With technological exclusion, older adults are more likely to feel isolated, lonely, and excluded, even from advances to improve their health and well-being [2]. It can contribute to higher rates of disability and mental health issues, increasing the pressure and demand on the healthcare system. Other age-related issues, such as a lack of mobility and auditory dysfunction, can also exacerbate disengagement [3]. Work has already explored how increased social engagement can avert loneliness; however, new ways leveraging the advantages of artificial intelligence (AI) can create new ways of engaging the older adult demographic, creating meaningful encouragement to live happier and healthier.



We propose a conversational AI agent design concept called *Remi* to signify and celebrate reminiscence. *Remi* would be a networked digital photo frame. It can engage with older adults and simulate interactions with their loved ones through recognition of uploaded photos, conversation generation around the photographs and interactivity through natural language processing. *Remi* will allow users to upload old and recent photographs and videos into the device and even voice record anecdotes and memories around the imagery. Old photographs could be restored and turned into a few seconds of 'live photos' based on conversations with the user to reminisce with them. Beyond this processing, *Remi* will have a built-in personality to simulate and prompt conversations around a photograph. This would mean that older adults can interact and talk to *Remi* whenever they want and converse on demand. Whilst others have explored the concept of conversation agents and the combination of audio with photographs to support reminiscence among older adults [4, 5, 6], our novelty is the inclusion of AI to generate different recreations and expressions of the memory and conversational interactions.

Recreate Moments



Hey Remi, could you please make this photo live for me? I want to hear Sara's laughter once again!

U

R

Sure, I will try my best. Is this photo from your trip to Peak District in the Summer of 1985? Sara would be 8 years old then.

U

Yes, this is probably where she found her passion for flowers!

R

Perfect, let me recreate that moment for you. It will take just a second!

Prompt Conversations



R

Hey, Sara just shared the picture. It's your granddaughter's birthday next week. She will be turning 8! What about her gift? Have you thought of something? Flowers?



Create Intergenerational Bonds



R

Hey, do you remember what your granddaughter said to you on your shoulders?

Oh no, I do not remember.

U

R

Ayi! No worries, I bet you had a great time. Would you like me to ask your daughter?

Not now, she would be busy at work. I will call her later today - I hope that I don't forget to ask her about this.

U

R

Don't worry, I will remind you and send it when you are calling her!

A PICTURE SAYS A THOUSAND WORDS...

With this, we want to nurture a particular inter-generational bond using *Remi*. Grandparents can connect and engage with *Remi* to communicate, share, and keep in touch with their children and grandchildren. *Remi* can also connect loved ones who are not co-located or are unavailable due to different time zones. The memories of friends and family who have passed can also be brought back through the visual, audio and textual information *Remi* provides. The networked feature of the digital photo frame would enable authorised users to upload and send content to one another in real time. Feature notifications through the use of sound and colours will signify new content. The system will ensure data privacy and security measures through data encryption uploaded, transmitted and interacted with.

A PICTURE CAN SAY A THOUSAND DIFFERENT WORDS...

We are also beginning to consider the risks of such a technology and how such advancement could be misused. Firstly, the generative expressions of the system will only improve over time. In the beginning, the system may generate improper recreations of the memory, creating alternate possible realities. The personality of Remi will play a vital role in this generative exercise so that positive emotions are evoked. Furthermore, if the AI is trained to simulate the voice or characteristics of a loved one, it could blur the boundaries between the real and the artificial. Hence, it would be prudent to explain that users interact with an AI-simulated being, not their loved one. The network would have to be secure to ensure no bad players could access the device and imitate the older adult or user to gain access to intimate moments or personal details.

In this workshop, we look forward to exchanging learning and provocative conversations about design with our target population and other attendees. We also value feedback on our innovation and approach and are eager to join a multidisciplinary community for future collaborations.

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