AI+X 고급(1주차)

Class Introduction

반갑습니다!

Hello, World!

일단 양해 말씀

What are we learning in the Advanced Class?

AI+X Big Picture

?

Big Picture

	기초	중급	고급
AI 기술	EDA	ML	DL
AI 서비스	서비스 아이디어 발굴	서비스 기획 (리서치) 및 평가	AI 서비스 개발

Deep 기반 AI 모델링

Modality
Vision (영상)

시각지능 딥러닝 프로젝트

Best Practice (3개)

블랙박스를 이용한 도시정비 자동화 시스템

:27

START

Blackbox Urban Maintenance Automation System

BBUMAS

KT AIVLE TEAM 27

https://github.com/00ssum/KT-SMU-AI-project

2022 KT와 함께하는
상명 AI 경진대회

AI를 활용한 유기견 모니터링 시스템

Ani-Time

코칭: 오윤우 코치님

팀장: 조수민

팀원: 김유민
박채리
이한솔

https://github.com/softwareyong/kt_al_road_facility_maintenance.git

The Plan (1/2)

9/8 Intro
9/14 3 Ideas (데이터 수집 계획까지 포함)
(KT 교수님 지도)
9/22 Idea 확정, 데이터 수집 착수
9/29 추석

The Plan (2/2)

10/6 데이터 전처리 착수, 모델링 착수

10/13 모델링 지속

10/20 데이터 및 모델링 점검 (KT 교수님 지도)

10/27 모델링 개선 및 Back/Front 개발 착수

11/3 중간고사 발표 (KT 교수님 지도)

실전형 수업

Beyond Grades

Folio

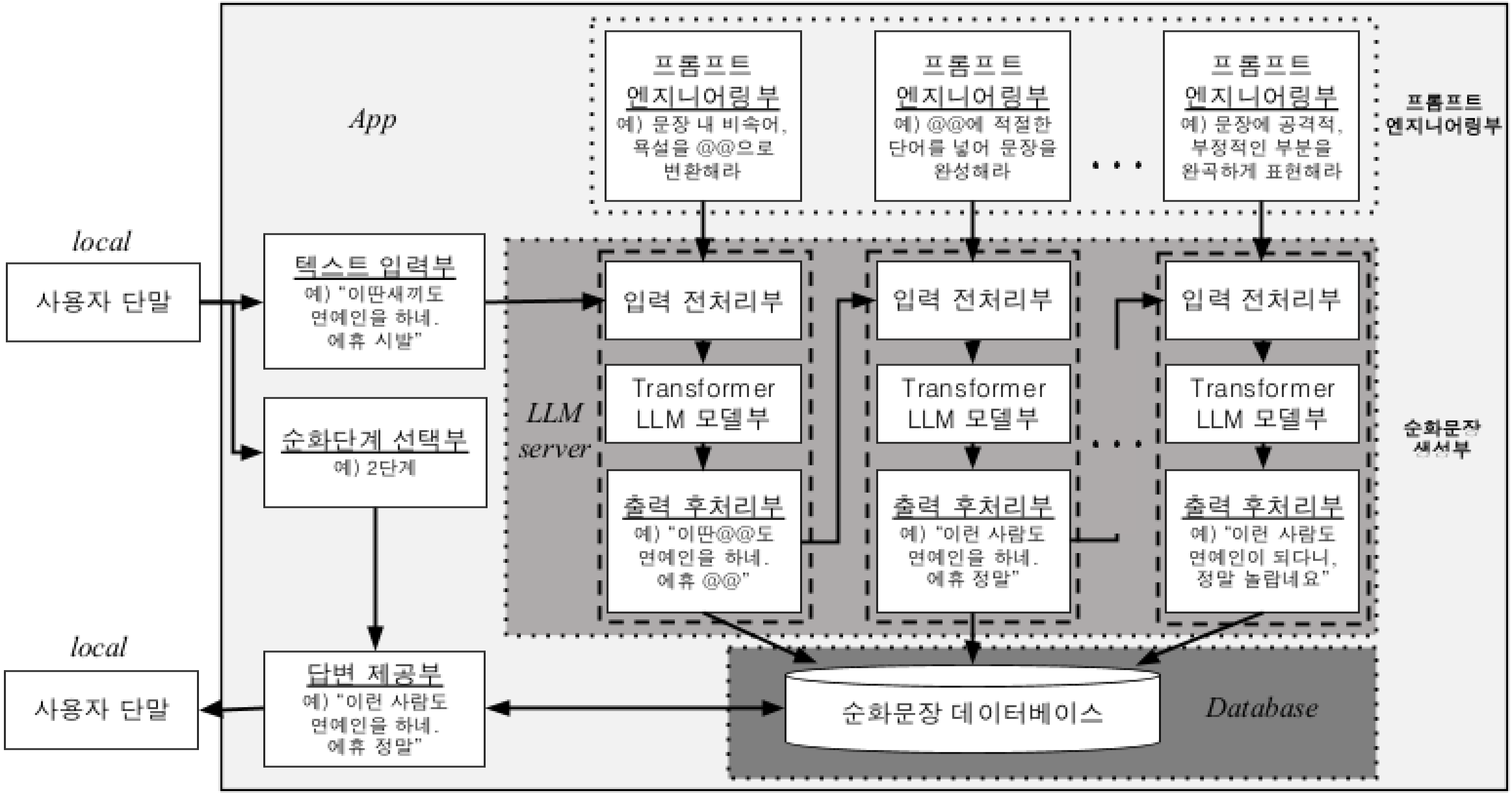
AI 모델링 기반 서비스 개발 최종 발표자료

플러스 알파

AI Service 논문 초안

AI Service 및 Interaction 특허 직발서 초안

RLHF Transfer LLM 딥러닝 기반 단계별 순화문장 생성장치



Title

Sehee Kim, Youjin Roh, Jinseok Kim, Jaehun Lim

Department ~

Abstract

1. Introduction

One pressing social issue nowadays is lack of exercise. While many are aware of the beneficial effects of exercise on our health, putting this awareness into practice often proves challenging. In fact, physical inactivity is being emphasized as a major contributor to chronic diseases. It elevates the risk of conditions like cardiovascular diseases, diabetes, obesity, osteoporosis, and depression. Inadequate daily physical activity can make it difficult to maintain a healthy lifestyle(1). Research also has demonstrated that exercise has positive effects on physiological responses, overall mortality rates, various diseases and disabilities, overall functional abilities, mental health, and quality of life. Moreover, study suggest that even moderate daily physical activity can yield significant health benefits(2). These findings collectively underscore the importance of regular exercise in promoting overall health and well-being. So, how can we encourage individuals to engage in regular exercise? To address this question, we have embarked on a mission to motivate people to incorporate exercise into their lives. Indeed, motivation plays a pivotal role in the success of sports players(3), highlighting its significance in the realm of physical activity. Consequently, motivation is a important role in the context of exercise.

2. Related Work

3. Method

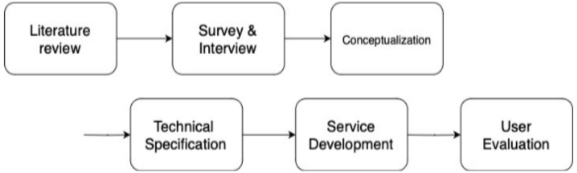


Fig 1. Design and Development Process

3.1. Literature Review

motivation can be categorized into two main types: intrinsic motivation and extrinsic motivation. Extrinsic motivation is associated with engaging in various activities as a means to an end rather than pursuing the activity itself. It involves engaging in behaviors driven by external stimuli or rewards. In contrast, intrinsic motivation involves pursuing an activity for its own sake, driven by the inherent enjoyment and satisfaction derived from engaging in the

Team Formation

1개팀 (6명)

Team Lead

(팀장 뽑으세요!)

Class Attendance
(10%)
Class Participation
(10%)

Self Introduction (근황)

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ISSN 1975-4736 ©MITA2023

Developing Empathetic Virtual Humans:

Mimicking User's Facial and Eye Responses

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Abstract— **The objective of developing a virtual human that can identify human emotions and demonstrate empathy has been pursued with the aim of gaining user trust, promoting likability, and fostering intentions for long-term engagement. Central to achieving affective empathy is the concept of motor mimicry. This paper details our efforts to enable a virtual human to identify and mimic a user's facial and eye responses over time. We utilized Convolutional Neural Network (CNN) and Support Vector Machine (SVM) classifiers for facial and eye response recognition, respectively and fused the responses at the decision level.**

Keywords—virtual human; virtual agent; digital human; ECA; metaverse; empathy; affect; emotion; multimodal

I. Introduction

Empathy is a multifaceted construct, ranging from affective and cognitive empathy, with several factors contributing to its manifestation, including empathic capability, experience, personality, and relationship dynamics (for a comprehensive review, refer to [1]). Efforts to engineer empathy within virtual humans are still in its early stages, confronted with the challenge of recognizing human affect, a complex process involving multiple verbal and nonverbal cues from human users. In this study, we present our efforts toward enabling a virtual human to identify the user's emotions by integrating and mirroring the user's eye and facial responses. We took this first step due to the understanding that motor mimicry serves as the cornerstone of affective empathy [2].

II. Method

In this section, we describe how our virtual human recognize and express empathy to users. We attempted to design a virtual human empathy expression process based on the theory of "emotional contagion" among the definitions of empathy [3]. Therefore, our design goal was to develop virtual humans express similar emotions to the user's emotional state. The developed prototype consists of recognizing the emotional

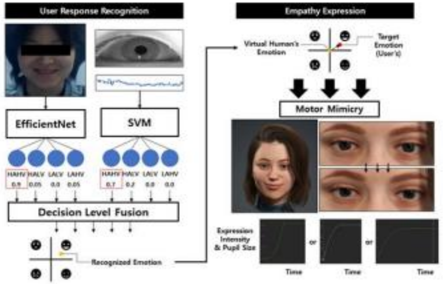

Fig. 1. Virtual Human Empathy Recognition and Expression Process

A. Data Acquisition

Datasets for training emotion recognition models were collected through the following experiment with 47 participants. As depicted in Figure 2, facial responses were collected by requesting the user to perform an imitation task that mimics the virtual human expression shown on the monitor, and then recording the user's face through a webcam during the task (30 fps, 1080p). As shown in Figure 3, eye responses were collected by presenting video stimuli designed to stimulate specific emotions and then recording pupil changes while the participant watched the video. Gazepoint's GP3 eye tracker was used to record the user's pupil changes (60 fps).

Virtual human facial expressions for imitation tasks and videos for emotion stimulation are designed based on Russell's dimensional emotion model [4]. Specifically, those were designed according to the four categories of the Valence-Arousal dimension by Russell (HAHV: High Arousal High Valence, HALV: High Arousal Low Valence, LALV: Low Arousal Low Valence, LAHV: Low Arousal High Valence).

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