



Challenges & Objectives

Challenges

- Population aged **65+** expected to **increase** from 17% in 2010 to 29% in 2060
- **Migrants** from Turkey in Germany with **low take-up of care services**, and from Maghreb in Spain with the need to **improve the knowledge of their health status**
- East European migrant care givers do not speak the language of the country and **lack care giving education**

Objectives

- **Dialogue management** in culture-specific, highly varying social contexts
- Vocal communication analysis in noisy and emotionally charged contexts for **Arabic, Polish, and Turkish**
- **Culture-specific** mimics and gesture analysis in emotionally charged contexts
- Web-oriented search of **medical and basic care information**
- **Semantic representation** and **reasoning** over heterogeneous knowledge spaces in the context of dialoguing
- Generation of integrated expressive **multimodal** and **multilingual** communication



Use Case 1

Natural Communication in Geriatrics

Interaction with elderly migrants with Turkish background and with their relatives

As **personal assistant** of an elderly migrant in a home for elderly:

- Help with prescriptions and daily routines
- Communication user - care personnel

As a **companion** of the relatives of an elderly migrant

- Information on the daily care and health conditions
- Experience reports with a similar disease profile
- Coaching of family members



Communication with care personnel with Polish migrant background

- **Medical background information** on topics related to health conditions
- Instructions on care of patients with specific health conditions
- Specific inquiries about the **health state and behavior of the patient** and their communication to the responsible nursing and medical services at DRK

Use Case 2

Natural Communication in Healthcare

Communication with North African migrants attending a hospital or medical centre

Guidance in **identifying and contacting** a medical specialist

- Mental health
- Infant care
- Gynecology
- Dental care
- Vaccination programs



Provision of information to North African migrants in a home setting

Guidance in **identifying and contacting** a medical specialist

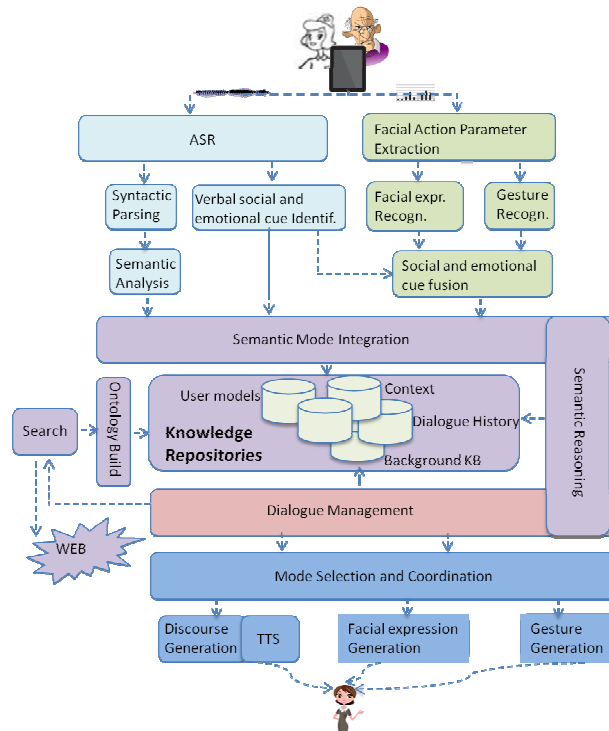
Guidance in **administrative procedures**

- getting an appointment
- obtaining certificates
- obtaining information about regulations of the sanitary system



Architecture

- **input processing layer:** analyzes the input from the move of the human dialogue counterpart
- **semantics processing layer:** fuses the output of its individual modules using semantic reasoning techniques and stored in knowledge repositories



- **dialogue management layer:** assesses the content of the move and plans agent reaction
- **information search layer:** searches information
- **communication layer:** selects and coordinates the different modi

Impact & Results

Impact

- Improve **multilingual speech processing**, bridging the gap between recognition and synthesis
- Increase automatic inferences capacities from rich context thanks to **improved language understanding**, sensed environments, and use of social media and agent's experience
- Lead an important minority of **citizens out of isolation**, play a role in mental and societal rehabilitation, support relatives of impaired patients, and integrate better valuable work force into the society

Results

- An integrated knowledge-based **information agent** platform
- **Standalone modules or services**, e.g. speech synthesis, face and gesture generation, etc.
- Modules provided under commercial, open source or freeware licenses

Contact

If you want to be informed or get involved with the progress of the project, please contact:

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KRISTINA concept

Vision

In Europe, migration is tradition, and this is not free of challenges. Especially in the case of care, migrants, often face a double challenge: (i) not to speak the language and not to be acquainted with the culture of the resident country, and (ii) be unfamiliar with the care and health administrations of the country.

Concept

KRISTINA will advance the state of the art in dialogue management, multimodal (vocal, facial and gestural) communication analysis and multimodal communication.

Overall goal

KRISTINA will research and develop technologies for a human-like socially competent and communicative agent that is run on mobile communication devices and that serves for migrants with language and cultural barriers in the host country as a trusted information provision party and mediator in questions related to basic care and healthcare.

