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MTRD's Focus on Speech and Language Technologies

To improve the existing R&D capacity • of MTRD

- To assess speech enabled communication technologies
- RTD of audio-visual humancomputer interfaces
- RTD of voice-activated and multilingual applications
- RTD of multimodal biometrics



- Assessment of Communication Devices and Tools Intelligibility - Turkish
- Diagnostic Rhyme Test Communicability - MOS
- Test Speech Quality
- Acoustic Mixing
- Digital Mixing
- Simulating Special Acoustic Environments
- The only Infrastructure in Turkiye with its Semi-Anechoic Acoustic Examination Twin Rooms
- SOFTWARE DESIGN **IMPLEMENTATION** ASSESSMENT of HUMAN-SPEECH COMPUTER

MTRD

AUDIO-SPEECH & LANGUAGE **TECHNOLOGIES**

INTERACTION

COMMUNICATION

TECHNOLOGIE

- Multilingual Voice and Multimodal Interfaces
- Audio-visual Speech Processing
 - Audio-visual Speaker Recognition and biometric
 - Speech Enabled Navigation
- SLT for Disabled Persons
- e-Learning and e-Services
- Ambient Assisted Living
- Multilingual Mobile Devices
- Tactile and Haptic Systems
- Mobile Smart Tools
- Edutainment
- (Education+Entertainment) Multilingual Tools in Crisis
- Management and Security
- Semantic Web Applications
- Language Training Evaluation

SPECIALISED INFRASTRUCTURE **FOR ACOUSTIC**

EXAMINATION

- Multilingual Speech Recognition
- Large Vocabulary Speech Recognition
- Target Domain Speech Recognition
- Expertise in Turkish Phonetics & Semantics
- Speech and Language Understanding
- Keyword Spotting and Spoken Data Retrieval
- Distributed Multithreaded Speech Recognition
- Machine Translation (MT)
 - Structural MT
 - Statistical MT
 - Hybrid MT
- Topic Detection, Summarizing, Natural Language Processing, Semantics

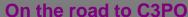
- Turkish Text-to-Speech (TTS)
- Multilingual Speech-to-Speech Translation

HARDWARE

DESIGN

IMPLEMENTATION

- Document Indexing and Topic Detection
- Music Signal Processing
- Music Information Retrieval
- Language Identification
- Accent Recognition
- Voice-enabled Command Control Systems
- **Automatic Dictation Systems**
- Speech and Audio Analysis
- Speech Enhancement and Noise Reduction
- Blind Source Seperation
- Voice Coding
- Knowledge management

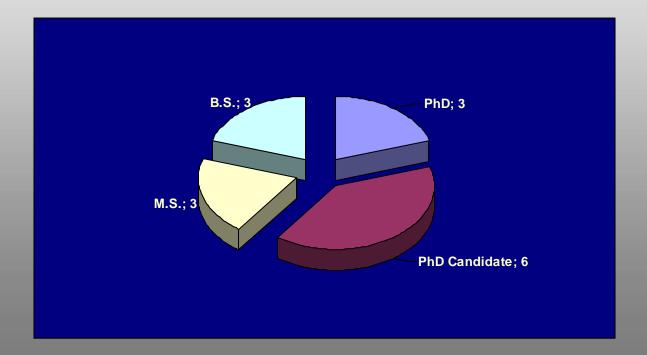




Who Are We?

MTRD Team:

- 15 Researchers, Electronics Engineers and Computer Scientists,
- Ph.D.'s and Grads from Top Turkish and US Universities (İTÜ, Koç, Bilkent, Boğaziçi, Sabancı, USC, Univ. of Washington, Rutgers University, etc.)
- Total of 50 researchers including comm. sys. Development groups. (hardware, software developers working on secure cell phones, voice encoders, etc.)





Where do we stand?

Speech Communication Assessment

- Assessing Turkish speech intelligibility (Nato's Diagnostic Rhyme Test)
- Only group in Turkey in possession of semianechoic acoustic chambers



Audience Test Chamber

Speaker Recognition

- Less than 3% EER in 500-speaker database in harsh conditions
- Less than %2 EER in 100-speaker audio-visual database

Speech Processing, Recognition

- 97% accuracy in speaker adapted ASR in Turkish broadcast news domain
- 85% accuracy in speaker independent ASR in Turkish broadcast news domain

UEKAE-MTRD→

• Only group in Turkey in possession of semi-anechoic acoustic chambers

Natural Lang. Processing and MT

- Top Scores in International Workshop on Spoker Language Translation (IWSLT).
- •2009 TR-EN parallel texts are provided by MTRD!

Phonetics, Synthesis

- Leadership in Turkish Speech Synthesis
- Domain-specific or general-purpose multilingual text-to-speech solutions

Music Signal Processing

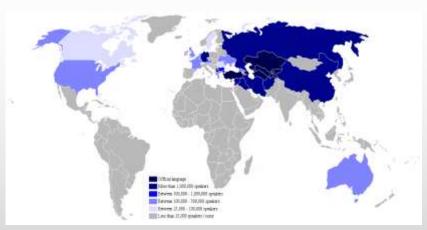
- Music tracking: Special focus on Turkish music
- · Audio copy detection, jingle detection



- Turkish Speech Processing Platform, for Turkish Army, finished in June 2009
- Turkey's eID project, now in pilot phase
- Turkish vocoders specific for various communication devices, finished in 2006 (used in MILCEP)
- TREN: Turkish Recognition ENgine: A general purpose engine capable of speech/speaker recognition and behaviroul activities detection/classification finished in 2007 (used in various projects)
- Music tracking system for royalty rights management (started in November 2009)
- Automatic Dictation System for Autopsy reporting (Finished in 2008)
- More...



How do we position ourselves?



- 83 mil. Turkish speakers
 (5 mil. in Europe)
- 180 mil. Turkic Lang. Speakers
- Less studied- agglutinative

Critical for e-Europe

MTRD -

Unique group which has expertise on both speech and text technologies in Turkish.



YOUR PARTNER IN TURKEY!



Collaboration possibilities...

- We have interest on FP7 and other international bilateral and/or multilateral projects in the related fields through
 - FP7 ICT, SEC, ICT-PSP, INFRA, Marie Curie calls including but not limited to
 - Digital libraries, digital content management
 - Multilingual web
 - Future Internet, Trustworthy ICT
 - Ambient Assisted Living, haptic and tactile portable devices
 - Living Labs
 - Digital Cultural Heritage
 - Crisis management
 - Border security
 - Transnational communication
 - eLearning
 - eParticipation and eGovernance
 - etc.
- Other international funds such as ARTEMIS, EUREKA, etc.
- Bilateral consortiums
- Capacity building projects and participation in networking events
- Participation in NoEs or CoEs.
- Sharing language sources

UEKA E

MTRD in FP7 & MULTISAUND

Multisaund Project:

Vision

- to become one of the leading RTD groups in speech and language processing;
- to be a prominent group especially in Turkish-related systems;

Mission

- to facilitate and improve its existing capacity to design and implement new secure and interactive technologies in the related fields;
- to be a partner of joint networks and projects in both national and international levels.

Bridging Multilingual Technologies



www.multisaund.eu

MULTilingualism Integrated to Speech & Audio UNDerstanding

REGPOT-2008-1

Project recevied full brick (15/15) from the Commission and started in 1st of April, 2009



Specific Objectives of MULTISAUND-2

- Specific Objective 5: Maximization of Potential Research Benefits (Scientific Steering Committee)
 - First meeting held in İstanbul (2 possible project ideas to be submitted to ICT 2011)
 - 3 Proposals submitted to ICT PSP 2010, ICT Call 5, REGPOT 2010
 - 2 or 3 proposals are being developed for ICT Call 7
 - Application to national projects (2 research projects, 1 capacity building)
 - Application to Turkish-Syrian bilateral joint research programme with 1 research project
 - Participation in renowned conferences with contribution to literature (IWSLT 2009, Interspeech 2010, SIU 2010, NIST Speaker Recognition Evaluation Workshop 2010, ACL 2010)
 - Participation in networking events (ESOF 2010, WIRE 2010, Workshop of the Networking initiative for ICT)
- Specific Objective 6: Improvement of S&T Capacity of Researchers (Training courses, short visits, participation to conferences)
 - Several meetings with researchers in Turkey, including ones from GSM operators
 - Collaboration with universities in NUTS-II regions in Turkey
 - Invitations to join network of excellence (Flarenet)



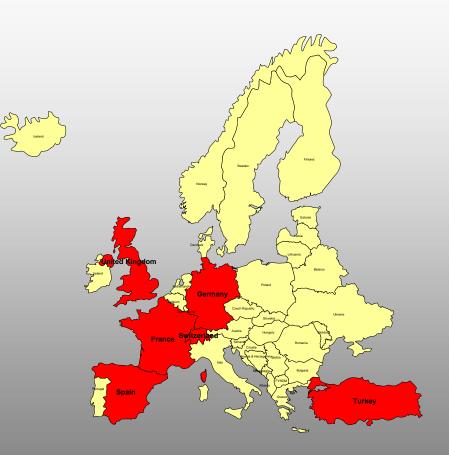
Increased Competitiveness



Steering Comittee

The committee members

- Dr. Baris Bozkurt, Izmir Institute of Technology, Turkey
- Prof.Dr. Andrzej Drygajlo, EPFL, Switzerland
- Prof. Dr. José A. R. Fonollosa,
 Polytechnic Univ. of Catalonia, Spain
- Dr. Hakan Erdogan, Sabanci University, Turkey
- Prof. Dr. Joseph-Jean Mariani, IMMI, France
- Prof. Steve Renals, University of Edinburgh, UK
- Prof. Mehmed Ozkan, Bogazici University, Turkey
- Dr Cristina Vertan, University of Hamburg, Germany





Recent Ideas...

Objective ICT-2011.5.3 - Patient Guidance Services (PGS), safety and healthcare record information reuse

Trusted-PGS - A Participative, Personalised and Trusted Patient Guidance Service





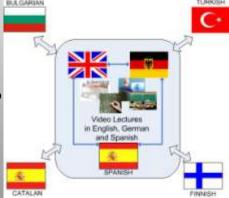
Objective ICT-2011.8.2 ICT for access to cultural resources

BIOTTOMATA - Multilingual Access to Digital European Historical Archives (Roman, Byzantine, Ottoman, etc.)

Objective ICT-2011.8.1 Technology-enhanced learning

PoliLearn: A portal that makes video lectures originally available in English accessible to speakers of Spanish, Turkish, Finnish and Bulgarian (or other languages).





Objective ICT-2011.4.2 - Language Technologies

Multilingual communication between S&R teams in crisis management (S2S) - including social factors and demography.



Contact Information

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